

Standard Specifications for Fasteners

Standards for Fasteners from American Society for Testing and Materials (ASTM)

ASTM Fastener Standards

ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure and High Temperature Service.

This specification covers a variety of carbon and alloy steel nuts. These steel nuts are used with A 325 Bolts. Hughes Brothers uses Grade 2H.

ASTM A307 Standard Specification for Carbon Steel Bolts and Studs, 60,000 PSI Tensile Strength

This specification covers the chemical and mechanical requirements of two grades of carbon steel bolts and studs in sizes 1/4 inch through 4 inch. Grade A bolts are used for general applications.

ASTM A325 Standard Specification for High-Strength Bolts for Structural Steel Joints

This specification covers the chemical and mechanical requirements of various types of quenched and tempered steel bolts commonly known as "high strength structural bolts," intended for use in structural joints. Type 1, Bolts made of medium carbon steel. Type 3, Bolts having atmospheric corrosion resistance.

ASTM A394 Standard Specification for Zinc Coated Steel Transmission Tower Bolts

This specification covers the chemical and mechanical requirements of hexagon and squarehead zinc coated steel bolts and atmospheric corrosion resistant bolts in nominal thread diameters of 1/2, 5/8, 3/4, 7/8 and 1 inch for use in the construction of transmission towers, substations, and similar steel structures.

Type 0: Zinc coated bolts made of low or medium carbon steel.

Type 3: Bolts having atmospheric corrosion resistance and weathering characteristics comparable to that of steel covered in Specifications A242, A588 and A709.

ASTM A563 Standard Specification for Carbon and Alloy Steel Nuts

This specification covers chemical and mechanical requirements for eight grades of carbon and alloy steel nuts for general structural and mechanical uses on bolts, studs, and other externally threaded parts. Grade A nuts are used for general applications.

ASTM Steel Standards for Fasteners

ASTM A36 Standard Specification for Structural Steel Interchangeable with SAE C1018 Low Carbon, general purpose, special quality machinery steel. This specification covers carbon steel shapes, plates, and bars of structural quality for use in riveted, bolted, or welded construction of bridges and buildings, and for general structural purposes.

ASTM A242, A588, and A709 Standard Specifications for High Strength Low Alloy Structural Steels with enhanced atmospheric corrosion resistance.

ASTM A536 Ductile Iron Castings

This specification covers castings made of ductile iron, also known as spheroidal or nodular iron is used for eye nuts and washer nuts, Grade 65-45-12.

ASTM A320 Alloy Steel Bolting Material for Low-Temperature Service. This specification covers alloy steel bolting materials for pressure vessels, valves, flanges, and fittings for low-temperature service. The term "bolting material" as used in this specification covers rolled, forged, or strain hardened bars, bolts, screws, studs, and stud bolts. The material may be further processed by centerless grinding or by cold drawing. Austenitic stainless steel may be solution annealed or annealed and strain-hardened. Several grades are available.



ASTM Galvanizing Standards

ASTM A123 Standard Specification for Zinc (Hot Dip Galvanized) Coatings on Iron and Steel Products
This specification covers the requirements for zinc coating (galvanizing) by the hot dip process on iron and steel products made from rolled, pressed and forged shapes, castings, plates, bars and strips.
This specification covers both unfabricated products and fabricated products, for example, assembled steel products, structural steel fabrications, large tubes already bent or welded before galvanizing, and wire work fabricated from uncoated steel wire.
This specification also covers steel forgings and iron castings incorporated into pieces fabricated before galvanizing or which are too large to be centrifuged (or otherwise handled to remove excess galvanizing bath metal).

ASTM A153 Standard Specification for Zinc Coating (Hot Dip) on Iron and Steel Hardware
This specification covers zinc coatings applied by the hot dip process on iron and steel hardware.
This document is intended to be applicable to hardware items that are centrifuged or otherwise handled to remove excess galvanizing bath metal (free zinc).

Standards from American National Standards Institute & American Society of Mechanical Engineers

ANSI/ASME B1.1 Standard for Unified Inch Screw Threads (UN and UNR Thread Form)
This specification specifies the thread form, series, class, allowance, tolerance, and designation for unified screw threads.

ANSI/ASME B18.2.1 Standard for Square and Hex Bolts and Screws
This Standard is intended to cover the complete general and dimensional data for the various types of inch series square and hex bolts and screws.

ANSI/ASME B18.5 Standard for Round Head Bolts (Carriage Bolts)
This standard covers the complete general and dimensional data for the various types of inch series bolts generally classified as round head bolts.

ANSI/ASME B18.15 Standard for Forged Eyebolts
This standard is limited to dimensions and capacities for forged threaded eyebolts intended primarily for lifting applications.

ANSI/ASME 18.2.2 Standard for Square and Hex Nuts
This standard is intended to cover the complete general and dimensional data for the various types of inch series square and hex nuts.

Standards from the American National Standard Institute - Pole Line Hardware

ANSI C135.1 Standard for galvanized steel bolts and nuts for overhead line construction.
This standard covers carriage bolts, machine bolts, double arming bolts, double end bolts, and nuts commonly used in overhead line construction.

ANSI C135.2 Standard for threaded galvanized ferrous strand-eye anchor rods and nuts of overhead line construction.

ANSI C135.4 Standard for galvanized ferrous eyebolts and nuts for overhead line construction.

ANSI C135.5 Standard for galvanized ferrous eyenuts and eyelets for overhead line construction.

ANSI C135.14 Standard staples with rolled or slash points for overhead line construction.


Standards from the International Fasteners Institute

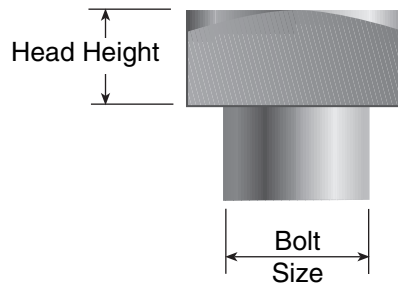
IFI 136 Standard for Studs and Bent Bolts
This standard covers the general and dimensional requirements for various types of studs and bent bolts, including threaded rod, J-bolts, L-bolts, U-bolts, and eyebolts (closed).

IFI 128 Standard for Hex Coupling Nuts
This standard covers the general and dimensional requirements for hex coupling nuts.



Dimension Table

Bolt Size	Nominal Width	Head Height	Nominal Width
3/8"	9/16"	1/4"	
1/2"	3/4"	21/64"	
5/8"	15/16"	27/64"	
3/4"	1-1/8"	1/2"	
7/8"	1-5/16"	19/32"	
1"	1-1/2"	21/32"	
1-1/4"	1-7/8"	27/32"	



Square Head Bolts

Hughes Brothers Square Head Machine Bolts are manufactured in accordance with ANSI C135.1 using SAE C1018 cold drawn or ASTM A36 steel. The machine bolts are galvanized in accordance with ASTM A153. Each bolt is shipped with an assembled nut. All bolts feature a 60° semi-cone point.

Following ANSI specifications, the unthreaded portion of any machine bolt is capable of being bent 180°, about a diameter equal to the diameter of the bolt without cracking the steel on the outside portion of the bend.

Shear Strengths

Bolt Diameter	Single Shear Through Threads	Single Shear Through Shaft
3/8"	-	-
1/2"	5,200 lbs.	7,950 lbs.
5/8"	8,330 lbs.	12,420 lbs.
3/4"	12,440 lbs.	17,890 lbs.
7/8"	17,270 lbs.	24,350 lbs.
1"	22,690 lbs.	31,800 lbs.
1-1/4"	36,590 lbs.	49,700 lbs.

Tensile Strengths

Bolt Diameter	Minimum Tensile Strength
3/8"	4,250 lbs.
1/2"	7,800 lbs.
5/8"	12,400 lbs.
3/4"	18,350 lbs.
7/8"	25,400 lbs.
1"	33,500 lbs.
1-1/4"	53,300 lbs.

Decimal Equivalency Chart		
Fraction	Decimal	HUGHES
1/4"	.2	2
3/8"	.3	3
1/2"	.5	5
5/8"	.6	6
3/4"	.7	7
7/8"	.8	8
1"	.1	10
1-1/8"	1.125	11
1-1/4"	1.25	12

Ordering Information

B 7 1 6 - 6

- Thread length in inches
- Bolt length in inches
- First digit in decimal equivalent (see chart)
- Designates square head machine bolts



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Square Head Bolts



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.	Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1/2" Square Head Bolts				3/4" Square Head Bolts			
B51-1/2-1-1/4	1/2" x 1-1/2"	250	20 lbs.	B72-1-3/4	3/4" x 2"	100	56 lbs.
B52-1-1/4	1/2" x 2"	250	23 lbs.	B72-1/2-1-3/4	3/4" x 2-1/2"	100	62 lbs.
B52-1/2-1-1/4	1/2" x 2-1/2"	250	25 lbs.	B73-1-3/4	3/4" x 3"	100	68 lbs.
B53-1-1/4	1/2" x 3"	250	28 lbs.	B74-2	3/4" x 4"	50	80 lbs.
B53-1/2-1-1/4	1/2" x 3-1/2"	200	31 lbs.	B75-2	3/4" x 5"	50	91 lbs.
B54-1-1/4	1/2" x 4"	100	33 lbs.	B76-3	3/4" x 6"	50	103 lbs.
B54-1/2-1-1/4	1/2" x 4-1/2"	100	36 lbs.	B77-3	3/4" x 7"	40	115 lbs.
B55-1-3/4	1/2" x 5"	100	39 lbs.	B78-4	3/4" x 8"	40	127 lbs.
B55-1/2-1-1/4	1/2" x 5-1/2"	100	41 lbs.	B710-4	3/4" x 10"	30	151 lbs.
B56-3	1/2" x 6"	100	44 lbs.	B712-6	3/4" x 12"	30	175 lbs.
B57-3	1/2" x 7"	100	49 lbs.	B714-6	3/4" x 14"	30	198 lbs.
B58-4	1/2" x 8"	100	55 lbs.	B716-6	3/4" x 16"	25	222 lbs.
B59-4	1/2" x 9"	50	60 lbs.	B718-6	3/4" x 18"	20	246 lbs.
B510-4	1/2" x 10"	50	65 lbs.	B720-6	3/4" x 20"	20	270 lbs.
B512-6	1/2" x 12"	50	76 lbs.	B722-6	3/4" x 22"	20	293 lbs.
B514-6	1/2" x 14"	50	87 lbs.	B724-6	3/4" x 24"	15	317 lbs.
5/8" Square Head Bolts				B726-6	3/4" x 26"	15	341 lbs.
B61-1/2-1-1/4	5/8" x 1-1/2"	100	31 lbs.	B728-8	3/4" x 28"	15	365 lbs.
B61-3/4-1-1/4	5/8" x 1-3/4"	100	33 lbs.	B730-8	3/4" x 30"	10	390 lbs.
B62-1-1/2	5/8" x 2"	100	35 lbs.	B732-8	3/4" x 32"	10	424 lbs.
B63-1-1/2	5/8" x 3"	100	44 lbs.				
B64-1-1/2	5/8" x 4"	100	52 lbs.				
B65-1-1/2	5/8" x 5"	100	60 lbs.				
B66-1-1/2	5/8" x 6"	50	68 lbs.				
B67-3	5/8" x 7"	50	77 lbs.				
B68-4	5/8" x 8"	50	85 lbs.				
B610-4	5/8" x 10"	50	101 lbs.				
B612-6	5/8" x 12"	40	118 lbs.				
B614-6	5/8" x 14"	40	134 lbs.				
B616-6	5/8" x 16"	40	151 lbs.				
B618-6	5/8" x 18"	30	167 lbs.				
B620-6	5/8" x 20"	30	184 lbs.				

Note: Other lengths available.

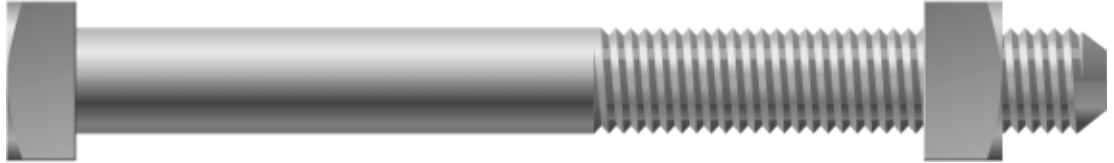


Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Square Head Bolts



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.	Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
7/8" Square Head Bolts				1" Square Head (cont.)			
B82-2	7/8" x 2"	50	83 lbs.	B1020-6	1" x 20"	10	496 lbs.
B82-1/2-2	7/8" x 2-1/2"	50	91 lbs.	B1022-6	1" x 22"	10	538 lbs.
B83-2	7/8" x 3"	50	93 lbs.	B1024-6	1" x 24"	10	581 lbs.
B84-2	7/8" x 4"	50	115 lbs.	B1026-6	1" x 26"	10	624 lbs.
B85-2-1/2	7/8" x 5"	50	131 lbs.	B1028-8	1" x 28"	5	667 lbs.
B86-2-1/2	7/8" x 6"	40	147 lbs.	B1030-8	1" x 30"	5	710 lbs.
B88-3	7/8" x 8"	30	180 lbs.				
B810-6	7/8" x 10"	25	212 lbs.	1-1/4" Square Head Bolts			
B812-6	7/8" x 12"	20	244 lbs.	B123-1/2-2	1-1/4" x 3-1/2"	20	259 lbs.
B814-6	7/8" x 14"	20	277 lbs.	B124-2	1-1/4" x 4"	20	275 lbs.
B816-6	7/8" x 16"	15	309 lbs.	B125-3	1-1/4" x 5"	20	308 lbs.
B818-6	7/8" x 18"	15	341 lbs.	B126-3	1-1/4" x 6"	20	341 lbs.
B820-6	7/8" x 20"	15	373 lbs.	B127-3	1-1/4" x 7"	15	374 lbs.
B822-6	7/8" x 22"	10	406 lbs.	B128-3	1-1/4" x 8"	10	407 lbs.
B824-6	7/8" x 24"	10	438 lbs.	B1210-4	1-1/4" x 10"	10	473 lbs.
B826-8	7/8" x 26"	10	470 lbs.	B1212-6	1-1/4" x 12"	10	539 lbs.
B828-8	7/8" x 28"	10	503 lbs.	B1214-6	1-1/4" x 14"	10	605 lbs.
B830-8	7/8" x 30"	10	535 lbs.	B1216-6	1-1/4" x 16"	5	671 lbs.
B832-8	7/8" x 32"	10	570 lbs.	B1218-6	1-1/4" x 18"	5	737 lbs.
				B1220-6	1-1/4" x 20"	5	803 lbs.
1" Square Head Bolts				B1222-6	1-1/4" x 22"	5	869 lbs.
B103-2	1" x 3"	40	137 lbs.	B1224-8	1-1/4" x 24"	5	935 lbs.
B103-1/2-2-1/2	1" x 3-1/2"	40	148 lbs.	B1226-8	1-1/4" x 26"	5	1000 lbs.
B104-2-3/4	1" x 4"	40	158 lbs.				
B105-3	1" x 5"	30	179 lbs.				
B106-2	1" x 6"	25	201 lbs.				
B108-4	1" x 8"	25	243 lbs.				
B1010-4	1" x 10"	20	285 lbs.				
B1012-6	1" x 12"	15	327 lbs.				
B1014-6	1" x 14"	15	369 lbs.				
B1016-6	1" x 16"	10	412 lbs.				
B1018-6	1" x 18"	10	454 lbs.				

Note: Other lengths available.



Hughes Brothers, Inc.

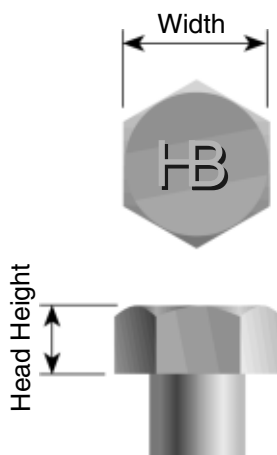
P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Hex Head Bolts

Dimension Table

Bolt Size	Nominal Width	Head Height
3/8"	9/16"	1/4"
1/2"	3/4"	11/32"
5/8"	15/16"	27/64"
3/4"	1-1/8"	1/2"
7/8"	1-5/16"	37/64"
1"	1-1/2"	43/64"
1-1/4"	1-7/8"	27/32"



Hughes Brothers Hex Head Bolts are manufactured in accordance with ANSI C135.1 and ASTM A307, using SAE C1018 cold drawn or ASTM A36 steel. Hex head bolts are galvanized in accordance with ASTM A153.

Each bolt is shipped with an assembled nut. All hex head bolts feature a 60° semi-cone point.

The unthreaded portion of any hex bolt is capable of being bent 180°, about a diameter equal to the diameter of the bolt without cracking the steel on the outside portion of the bend.

Shear Strengths for ANSI C135.1

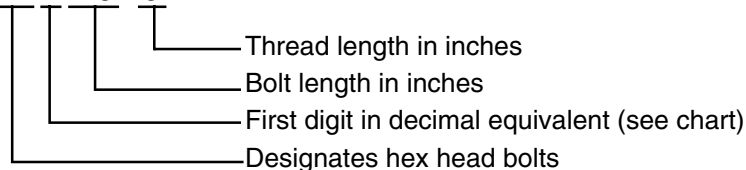
Bolt Diameter	Single Shear Through Threads	Single Shear Through Shaft
3/8"	-	-
1/2"	5,200 lbs.	7,950 lbs.
5/8"	8,330 lbs.	12,420 lbs.
3/4"	12,440 lbs.	17,890 lbs.
7/8"	17,270 lbs.	24,350 lbs.
1"	22,690 lbs.	31,800 lbs.
1-1/4"	36,590 lbs.	49,700 lbs.

Tensile Strengths for ANSI C135.1

Bolt Diameter	Minimum Tensile Strength
3/8"	4,250 lbs.
1/2"	7,800 lbs.
5/8"	12,400 lbs.
3/4"	18,350 lbs.
7/8"	25,400 lbs.
1"	33,500 lbs.
1-1/4"	53,300 lbs.

Ordering Information

HB 7 1 6 - 6



Decimal Equivalency Chart

Fraction	Decimal	HUGHES
1/4"	.2	2
3/8"	.3	3
1/2"	.5	5
5/8"	.6	6
3/4"	.7	7
7/8"	.8	8
1"	.1	10
1-1/8"	1.125	11
1-1/4"	1.25	12

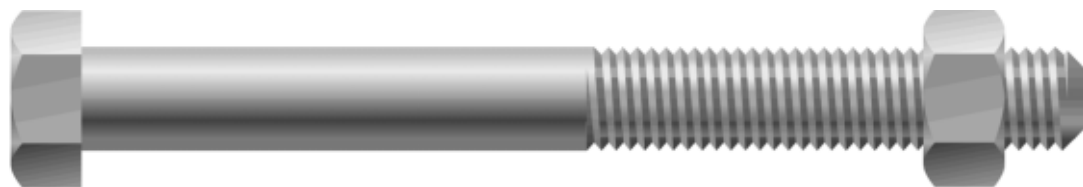


Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Hex Head Bolts



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1/2" Hex Head Bolts			
HB51-1/2-1-1/4	1/2" x 1-1/2"	250	20 lbs.
HB52-1-1/4	1/2" x 2"	250	23 lbs.
HB52-1/2-1-1/4	1/2" x 2-1/2"	250	25 lbs.
HB53-1-1/4	1/2" x 3"	250	28 lbs.
HB53-1/2-1-1/4	1/2" x 3-1/2"	200	31 lbs.
HB54-1-1/4	1/2" x 4"	100	33 lbs.
HB54-1/2-1-1/4	1/2" x 4-1/2"	100	36 lbs.
HB55-1-3/4	1/2" x 5"	100	39 lbs.
HB55-1/2-1-1/4	1/2" x 5-1/2"	100	41 lbs.
HB56-3	1/2" x 6"	100	44 lbs.
HB57-3	1/2" x 7"	100	49 lbs.
HB58-4	1/2" x 8"	100	55 lbs.
HB59-4	1/2" x 9"	50	60 lbs.
HB510-4	1/2" x 10"	50	65 lbs.
HB512-6	1/2" x 12"	50	76 lbs.
HB514-6	1/2" x 14"	50	87 lbs.

5/8" Hex Head Bolts			
HB61-1/2-1-1/4	5/8" x 1-1/2"	100	31 lbs.
HB61-3/4-1-1/4	5/8" x 1-3/4"	100	33 lbs.
HB62-1-1/2	5/8" x 2"	100	35 lbs.
HB63-1-1/2	5/8" x 3"	100	44 lbs.
HB64-1-1/2	5/8" x 4"	100	52 lbs.
HB65-1-1/2	5/8" x 5"	100	60 lbs.
HB66-1-1/2	5/8" x 6"	50	68 lbs.
HB67-3	5/8" x 7"	50	77 lbs.
HB68-4	5/8" x 8"	50	85 lbs.
HB610-4	5/8" x 10"	50	101 lbs.
HB612-6	5/8" x 12"	40	118 lbs.
HB614-6	5/8" x 14"	40	134 lbs.
HB616-6	5/8" x 16"	40	151 lbs.
HB618-6	5/8" x 18"	30	167 lbs.
HB620-6	5/8" x 20"	30	184 lbs.

Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
3/4" Hex Head Bolts			
HB72-1-3/4	3/4" x 2"	100	56 lbs.
HB72-1/2-1-3/4	3/4" x 2-1/2"	100	62 lbs.
HB73-1-3/4	3/4" x 3"	100	68 lbs.
HB74-2	3/4" x 4"	50	80 lbs.
HB75-2	3/4" x 5"	50	91 lbs.
HB76-3	3/4" x 6"	50	103 lbs.
HB77-3	3/4" x 7"	40	115 lbs.
HB78-4	3/4" x 8"	40	127 lbs.
HB710-4	3/4" x 10"	30	151 lbs.
HB712-6	3/4" x 12"	30	175 lbs.
HB714-6	3/4" x 14"	30	198 lbs.
HB716-6	3/4" x 16"	25	222 lbs.
HB718-6	3/4" x 18"	20	246 lbs.
HB720-6	3/4" x 20"	20	270 lbs.
HB722-6	3/4" x 22"	20	293 lbs.
HB724-6	3/4" x 24"	15	317 lbs.
HB726-6	3/4" x 26"	15	341 lbs.
HB728-8	3/4" x 28"	15	365 lbs.
HB730-8	3/4" x 30"	10	390 lbs.
HB732-8	3/4" x 32"	10	424 lbs.

Note: Other lengths available.

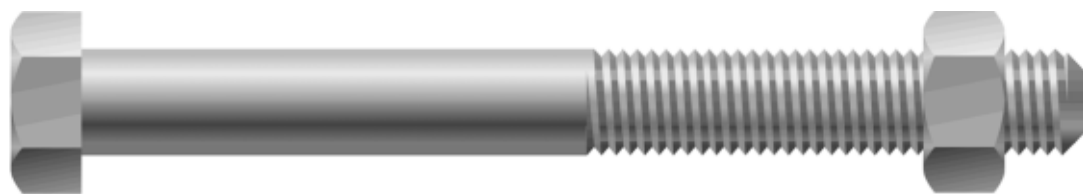


Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Hex Head Bolts



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
7/8" Hex Head Bolts			
HB82-2	7/8" x 2"	50	83 lbs.
HB82-1/2-2	7/8" x 2-1/2"	50	91 lbs.
HB84-2	7/8" x 4"	50	115 lbs.
HB85-2-1/2	7/8" x 5"	50	131 lbs.
HB86-2-1/2	7/8" x 6"	40	147 lbs.
HB88-3	7/8" x 8"	30	180 lbs.
HB810-6	7/8" x 10"	25	212 lbs.
HB812-6	7/8" x 12"	20	244 lbs.
HB814-6	7/8" x 14"	20	277 lbs.
HB816-6	7/8" x 16"	15	309 lbs.
HB818-6	7/8" x 18"	15	341 lbs.
HB820-6	7/8" x 20"	15	373 lbs.
HB822-6	7/8" x 22"	10	406 lbs.
HB824-6	7/8" x 24"	10	438 lbs.
HB826-8	7/8" x 26"	10	470 lbs.
HB828-8	7/8" x 28"	10	503 lbs.
HB830-8	7/8" x 30"	10	535 lbs.
HB832-8	7/8" x 32"	10	570 lbs.

1" Hex Head Bolts			
HB103-2	1" x 3"	40	137 lbs.
HB103-1/2-2-1/2	1" x 3-1/2"	40	148 lbs.
HB104-2-3/4	1" x 4"	40	158 lbs.
HB105-3	1" x 5"	30	179 lbs.
HB106-2	1" x 6"	25	201 lbs.
HB108-4	1" x 8"	25	243 lbs.
HB1010-4	1" x 10"	20	285 lbs.

Note: Cold weather bolts are available under ASTM A320 specifications. Cold weather bolts are necessary only in the most extreme circumstances. To order cold weather bolts, substitute an "FB" for the "B" prefix for all machine bolt sizes.

Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1" Hex Head Bolts (con't.)			
HB1012-6	1" x 12"	15	327 lbs.
HB1014-6	1" x 14"	15	369 lbs.
HB1016-6	1" x 16"	10	412 lbs.
HB1018-6	1" x 18"	10	454 lbs.
HB1020-6	1" x 20"	10	496 lbs.
HB1022-6	1" x 22"	10	538 lbs.
HB1024-6	1" x 24"	10	581 lbs.
HB1026-6	1" x 26"	10	624 lbs.
HB1028-8	1" x 28"	5	667 lbs.
HB1030-8	1" x 30"	5	710 lbs.

1-1/4" Hex Head Bolts			
HB123-1/2-2	1-1/4" x 3-1/2"	20	259 lbs.
HB124-2	1-1/4" x 4"	20	275 lbs.
HB125-3	1-1/4" x 5"	20	308 lbs.
HB126-3	1-1/4" x 6"	20	341 lbs.
HB127-3	1-1/4" x 7"	15	374 lbs.
HB128-3	1-1/4" x 8"	10	407 lbs.
HB1210-4	1-1/4" x 10"	10	473 lbs.
HB1212-6	1-1/4" x 12"	10	539 lbs.
HB1214-6	1-1/4" x 14"	10	605 lbs.
HB1216-6	1-1/4" x 16"	5	671 lbs.
HB1218-6	1-1/4" x 18"	5	737 lbs.
HB1220-6	1-1/4" x 20"	5	803 lbs.
HB1222-6	1-1/4" x 22"	5	869 lbs.
HB1224-8	1-1/4" x 24"	5	935 lbs.
HB1226-8	1-1/4" x 26"	5	1000 lbs.

Note: Other lengths available.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Type "O" Tower Bolts

Hughes Brothers Type "O" Tower Bolts are manufactured in accordance with ASTM A394. Type "O" Tower Bolts are hot dip galvanized in accordance with ASTM A153. Tower Bolts are shipped with an un-assembled hex nut.

Bolt threads are unified coarse thread series and class 2A tolerance as defined in ANSI/ASME B1.1. Threads are cut to conform to the following:

Tensile Strengths

Bolt Size	Minimum Tensile Strength
1/2"	10,500 lbs.
5/8"	16,700 lbs.
3/4"	24,700 lbs.
7/8"	34,200 lbs.
1"	44,850 lbs.

Shear Strengths

Bolt Size	Single Shear Through Threads	Single Shear Through Shaft
1/2"	6,950 lbs.	9,000 lbs.
5/8"	11,150 lbs.	14,100 lbs.
3/4"	16,650 lbs.	20,250 lbs.
7/8"	23,150 lbs.	27,600 lbs.
1"	30,400 lbs.	36,050 lbs.

Threads

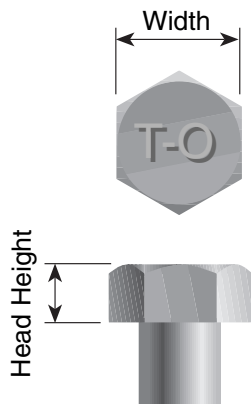
Bolt Size	Threads Per Inch
1/2"	13
5/8"	11
3/4"	10
7/8"	9
1"	8

Dimension Table

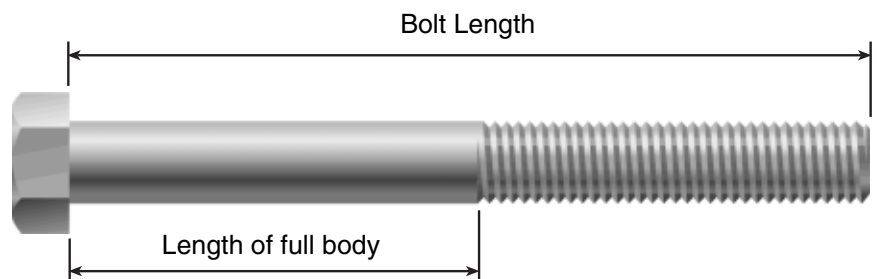
Bolt Dia.	Nominal Width	Head Height
1/2"	3/4"	11/32"
5/8"	15/16"	27/64"
3/4"	1-1/8"	1/2"
7/8"	1-5/16"	37/64"
1"	1-1/2"	43/64"

Stock Numbers for Bolt Diameters

Bolt Length	1/2"	5/8"	3/4"	7/8"	1"
1-1/4"	BT51-1/4	BT61-1/4	BT71-1/4	BT81-1/4	BT101-1/4
1-1/2"	BT51-1/2	BT61-1/2	BT71-1/2	BT81-1/2	BT101-1/2
1-3/4"	BT51-3/4	BT61-3/4	BT71-3/4	BT81-3/4	BT101-3/4
2-1/4"	BT52-1/4	BT62-1/4	BT72-1/4	BT82-1/4	BT102-1/4
2-1/2"	BT52-1/2	BT62-1/2	BT72-1/2	BT82-1/2	BT102-1/2



Note: Full body is the distance from the underside of the head to the first scratch of threads.



Ordering Information

BT 6 4-1/2 - 3-1/4

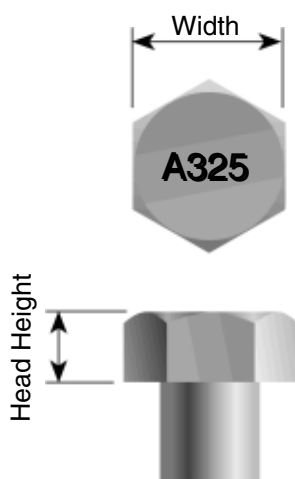
Full body length in inches
Bolt length in inches
The first digit in decimal equivalent (see chart on previous pages)
Designates type "O" tower bolt



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.



High Strength Bolts Grade A325 (Type 1 & Type 3)

Hughes Brothers High Strength Bolts are manufactured in accordance with ASTM A325. All Type 1 high strength bolts are hot dip galvanized in accordance with ASTM A153.

Each bolt is shipped with an assembled nut. All high strength bolts are hex head (see dimension table).

Dimension Table

Bolt Size	Nominal Width	Head Height
1/2"	7/8"	5/16"
5/8"	1-1/16"	25/64"
3/4"	1-1/4"	15/32"
7/8"	1-7/16"	35/64"
1"	1-5/8"	39/64"
1-1/4"	2"	25/32"

Tensile Strengths

Bolt Diameter	Minimum Tensile Strength
1/2"	17,050 lbs.
5/8"	27,100 lbs.
3/4"	40,100 lbs.
7/8"	55,450 lbs.
1"	72,700 lbs.
1-1/4"	105,000 lbs.

Decimal Equivalency Chart

Fraction	Decimal	HUGHES
1/4"	.2	2
3/8"	.3	3
1/2"	.5	5
5/8"	.6	6
3/4"	.7	7
7/8"	.8	8
1"	.1	10
1-1/8"	1.125	11
1-1/4"	1.25	12

Ordering Information

AB 7 1 6 - 6 CT

- Add suffix "CT" to get Type 3 bolt
- Thread length in inches
- Bolt length in inches
- The first digit in decimal equivalent (see chart)
- Designates high strength bolts

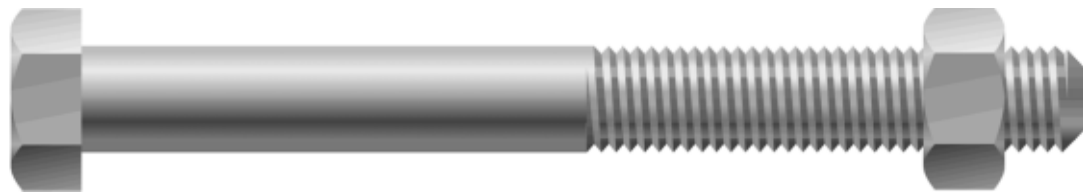


Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

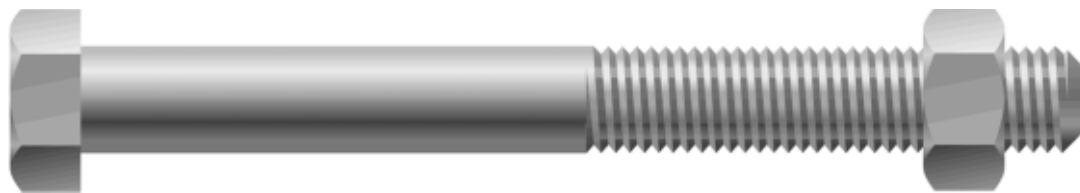
High Strength Bolts



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.	Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1/2" High Strength Bolts				3/4" High Strength Bolts			
AB51-1/2-1	1/2" x 1-1/2"	250	20 lbs.	AB72-1-3/8	3/4" x 2"	100	56 lbs.
AB52-1	1/2" x 2"	250	23 lbs.	AB72-1/2-1-3/8	3/4" x 2-1/2"	100	62 lbs.
AB52-1/2-1	1/2" x 2-1/2"	250	25 lbs.	AB73-1-3/8	3/4" x 3"	100	68 lbs.
AB53-1	1/2" x 3"	250	28 lbs.	AB74-1-3/8	3/4" x 4"	50	80 lbs.
AB53-1/2-1	1/2" x 3-1/2"	200	31 lbs.	AB75-1-3/8	3/4" x 5"	50	91 lbs.
AB54-1	1/2" x 4"	100	33 lbs.	AB76-1-3/8	3/4" x 6"	50	103 lbs.
AB54-1/2-1	1/2" x 4-1/2"	100	36 lbs.	AB77-3	3/4" x 7"	40	115 lbs.
AB55-1	1/2" x 5"	100	39 lbs.	AB78-4	3/4" x 8"	40	127 lbs.
AB55-1/2-1	1/2" x 5-1/2"	100	41 lbs.	AB710-4	3/4" x 10"	30	151 lbs.
AB56-1	1/2" x 6"	100	44 lbs.	AB712-4	3/4" x 12"	30	175 lbs.
AB57-3	1/2" x 7"	100	49 lbs.	AB714-6	3/4" x 14"	30	198 lbs.
AB58-4	1/2" x 8"	100	55 lbs.	AB716-6	3/4" x 16"	25	222 lbs.
AB59-4	1/2" x 9"	50	60 lbs.	AB718-6	3/4" x 18"	20	246 lbs.
AB510-4	1/2" x 10"	50	65 lbs.	AB720-6	3/4" x 20"	20	270 lbs.
AB512-4	1/2" x 12"	50	76 lbs.	AB722-6	3/4" x 22"	20	293 lbs.
AB514-6	1/2" x 14"	50	87 lbs.	AB724-6	3/4" x 24"	15	317 lbs.
5/8" High Strength Bolts				AB726-6	3/4" x 26"	15	341 lbs.
AB61-1/2-1-1/4	5/8" x 1-1/2"	100	31 lbs.	AB728-8	3/4" x 28"	15	365 lbs.
AB61-3/4-1-1/4	5/8" x 1-3/4"	100	33 lbs.	AB730-8	3/4" x 30"	10	390 lbs.
AB62-1-1/4	5/8" x 2"	100	35 lbs.	AB732-8	3/4" x 32"	10	424 lbs.
AB63-1-1/4	5/8" x 3"	100	44 lbs.	Note: Other lengths and specified thread lengths are available. Check with representatives or factory for availability.			
AB64-1-1/4	5/8" x 4"	100	52 lbs.				
AB65-1-1/4	5/8" x 5"	100	60 lbs.				
AB66-1-1/4	5/8" x 6"	50	68 lbs.				
AB67-3	5/8" x 7"	50	77 lbs.				
AB68-4	5/8" x 8"	50	85 lbs.				
AB610-4	5/8" x 10"	50	101 lbs.				
AB612-4	5/8" x 12"	40	118 lbs.				
AB614-6	5/8" x 14"	40	134 lbs.				
AB616-6	5/8" x 16"	40	151 lbs.				
AB618-6	5/8" x 18"	30	167 lbs.				
AB620-6	5/8" x 20"	30	184 lbs.				



High Strength Bolts



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
7/8" High Strength Bolts			
AB82-1-1/2	7/8" x 2"	50	83 lbs.
AB82-1/2-1-1/2	7/8" x 2-1/2"	50	91 lbs.
AB84-1-1/2	7/8" x 4"	50	115 lbs.
AB85-1-1/2	7/8" x 5"	50	131 lbs.
AB86-1-1/2	7/8" x 6"	40	147 lbs.
AB88-3	7/8" x 8"	30	180 lbs.
AB810-6	7/8" x 10"	25	212 lbs.
AB812-6	7/8" x 12"	20	244 lbs.
AB814-6	7/8" x 14"	20	277 lbs.
AB816-6	7/8" x 16"	15	309 lbs.
AB818-6	7/8" x 18"	15	341 lbs.
AB820-6	7/8" x 20"	15	373 lbs.
AB822-6	7/8" x 22"	10	406 lbs.
AB824-6	7/8" x 24"	10	438 lbs.
AB826-8	7/8" x 26"	10	470 lbs.
AB828-8	7/8" x 28"	10	503 lbs.
AB830-8	7/8" x 30"	10	535 lbs.
AB832-8	7/8" x 32"	10	570 lbs.

1" High Strength Bolts			
AB103-1-3/4	1" x 3"	40	137 lbs.
AB103-1/2-1-3/4	1" x 3-1/2"	40	148 lbs.
AB104-1-3/4	1" x 4"	40	158 lbs.
AB105-1-3/4	1" x 5"	30	179 lbs.
AB106-1-3/4	1" x 6"	25	201 lbs.
AB108-4	1" x 8"	25	243 lbs.

Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1" High Strength Bolts (con't.)			
AB1010-4	1" x 10"	20	285 lbs.
AB1012-4	1" x 12"	15	327 lbs.
AB1014-6	1" x 14"	15	369 lbs.
AB1016-6	1" x 16"	10	412 lbs.
AB1018-6	1" x 18"	10	454 lbs.
AB1020-6	1" x 20"	10	496 lbs.
AB1022-6	1" x 22"	10	538 lbs.
AB1024-6	1" x 24"	10	581 lbs.
AB1026-6	1" x 26"	10	624 lbs.
AB1028-8	1" x 28"	5	667 lbs.
AB1030-8	1" x 30"	5	710 lbs.

1-1/4" High Strength Bolts			
AB123-1/2-2	1-1/4" x 3-1/2"	20	259 lbs.
AB124-2	1-1/4" x 4"	20	275 lbs.
AB125-2	1-1/4" x 5"	20	308 lbs.
AB126-2	1-1/4" x 6"	20	341 lbs.
AB127-3	1-1/4" x 7"	15	374 lbs.
AB128-3	1-1/4" x 8"	10	407 lbs.
AB1210-4	1-1/4" x 10"	10	473 lbs.
AB1212-6	1-1/4" x 12"	10	539 lbs.
AB1214-6	1-1/4" x 14"	10	605 lbs.
AB1216-6	1-1/4" x 16"	5	671 lbs.
AB1218-6	1-1/4" x 18"	5	737 lbs.
AB1220-6	1-1/4" x 20"	5	803 lbs.
AB1222-6	1-1/4" x 22"	5	869 lbs.
AB1224-8	1-1/4" x 24"	5	935 lbs.
AB1226-8	1-1/4" x 26"	5	1000 lbs.

Note: Other lengths and specified thread lengths are available. Check with representatives or factory for availability.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.



Washer Head Bolts

Hughes Brothers Washer Head Bolts are manufactured in accordance with ANSI C135.1 using SAE C1018 cold drawn or ASTM A36 steel. Washer head bolts are hot dip galvanized in accordance with ASTM A153.

Each bolt is shipped with an assembled nut. All washer head bolts are square head (see dimension table) and feature a 60° semi-cone point.

The unthreaded portion of any washer head bolt is capable of being bent 180°, about a diameter equal to the diameter of the bolt without cracking the steel on the outside portion of the bend.

Dimension Table

Bolt Size	Nominal Width	Head Height	O.D. Nominal
1/2"	3/4"	21/64"	1-3/4"
5/8"	15/16"	27/64"	2-5/8"
3/4"	1-1/8"	1/2"	2-3/4"
7/8"	1-5/16"	19/32"	3"

Shear Strengths

Bolt Dia.	Single Shear Through Threads	Single Shear Through Shaft
1/2"	5,200 lbs.	7,950 lbs.
5/8"	8,330 lbs.	12,420 lbs.
3/4"	12,440 lbs.	17,890 lbs.
7/8"	17,270 lbs.	24,350 lbs.

Tensile Strengths

Bolt Diameter	Minimum Tensile Strength
1/2"	7,800 lbs.
5/8"	12,400 lbs.
3/4"	18,350 lbs.
7/8"	25,400 lbs.

Decimal Equivalency Chart

Fraction	Decimal	HUGHES
1/4"	.2	2
3/8"	.3	3
1/2"	.5	5
5/8"	.6	6
3/4"	.7	7
7/8"	.8	8
1"	.1	10
1-1/8"	1.125	11
1-1/4"	1.25	12

Ordering Information

WB 7 1 6 - 6

- Thread length in inches
- Bolt length in inches
- The first digit in decimal equivalent (see chart)
- Designates washer head bolts



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Washer Head Bolts



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1/2" Washer Head Bolts			
WB51-1/2-1-1/4	1/2" x 1-1/2"	250	31 lbs.
WB52-1-1/4	1/2" x 2"	250	34 lbs.
WB52-1/2-1-1/2	1/2" x 2-1/2"	250	36 lbs.
WB53-1-1/4	1/2" x 3"	250	38 lbs.
WB53-1/2-1-1/2	1/2" x 3-1/2"	200	40 lbs.
WB54-1-1/4	1/2" x 4"	100	45 lbs.
WB54-1/2-1-1/4	1/2" x 4-1/2"	100	47 lbs.
WB55-1-1/4	1/2" x 5"	100	49 lbs.
WB55-1/2-1-1/4	1/2" x 5-1/2"	100	51 lbs.
WB56-3	1/2" x 6"	100	54 lbs.
WB57-3	1/2" x 7"	100	58 lbs.
WB58-4	1/2" x 8"	100	63 lbs.
WB59-4	1/2" x 9"	50	67 lbs.
WB510-4	1/2" x 10"	50	72 lbs.
WB512-4	1/2" x 12"	50	81 lbs.
WB514-6	1/2" x 14"	50	90 lbs.

5/8" Washer Head Bolts			
WB61-1/2-1-1/4	5/8" x 1-1/2"	100	50 lbs.
WB61-3/4-1-1/4	5/8" x 1-3/4"	100	52 lbs.
WB62-1-1/2	5/8" x 2"	100	54 lbs.
WB63-1-1/2	5/8" x 3"	100	63 lbs.
WB64-1-3/4	5/8" x 4"	50	71 lbs.
WB65-1-3/4	5/8" x 5"	50	80 lbs.
WB66-3	5/8" x 6"	50	89 lbs.
WB67-3	5/8" x 7"	50	97 lbs.
WB68-4	5/8" x 8"	50	106 lbs.
WB610-4	5/8" x 10"	30	123 lbs.
WB612-4	5/8" x 12"	30	140 lbs.
WB614-6	5/8" x 14"	30	157 lbs.
WB616-6	5/8" x 16"	30	175 lbs.
WB618-6	5/8" x 18"	30	191 lbs.
WB620-6	5/8" x 20"	25	209 lbs.

Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
3/4" Washer Head Bolts			
WB72-1-3/4	3/4" x 2"	100	86 lbs.
WB72-1/2-1-3/4	3/4" x 2-1/2"	100	93 lbs.
WB73-1-3/4	3/4" x 3"	50	99 lbs.
WB73-2	3/4" x 3"	50	99 lbs.
WB74-1-3/4	3/4" x 4"	50	111 lbs.
WB75-1-3/4	3/4" x 5"	40	123 lbs.
WB76-3	3/4" x 6"	30	136 lbs.
WB77-3	3/4" x 7"	25	148 lbs.
WB78-4	3/4" x 8"	25	160 lbs.
WB710-4	3/4" x 10"	25	185 lbs.
WB712-6	3/4" x 12"	25	209 lbs.
WB714-6	3/4" x 14"	20	234 lbs.
WB716-6	3/4" x 16"	20	259 lbs.
WB718-6	3/4" x 18"	15	283 lbs.
WB720-6	3/4" x 20"	15	308 lbs.
WB722-6	3/4" x 22"	15	332 lbs.
WB724-6	3/4" x 24"	15	357 lbs.
WB726-6	3/4" x 26"	15	382 lbs.
WB728-6	3/4" x 28"	10	406 lbs.
WB730-8	3/4" x 30"	10	431 lbs.
WB732-8	3/4" x 32"	10	455 lbs.

Note: Other lengths available.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

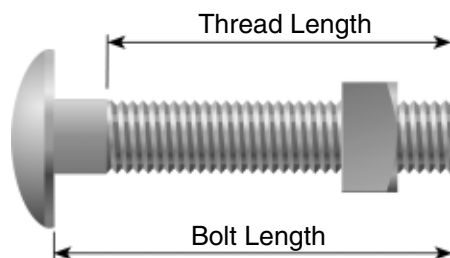
©2001 Hughes Brothers, Inc.

Washer Head Bolts



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.	Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
7/8" Washer Head Bolts				7/8" Washer Head Bolts			
WB82-2	7/8" x 2"	50	108 lbs.	WB816-6	7/8" x 16"	15	344 lbs.
WB82-1/2-2	7/8" x 2-1/2"	50	117 lbs.	WB818-6	7/8" x 18"	15	378 lbs.
WB84-2	7/8" x 4"	50	142 lbs.	WB820-6	7/8" x 20"	15	411 lbs.
WB85-2-1/2	7/8" x 5"	50	159 lbs.	WB822-6	7/8" x 22"	10	445 lbs.
WB86-3	7/8" x 6"	40	175 lbs.	WB824-6	7/8" x 24"	10	479 lbs.
WB88-3	7/8" x 8"	25	209 lbs.	WB826-8	7/8" x 26"	10	513 lbs.
WB810-3	7/8" x 10"	25	243 lbs.	WB828-8	7/8" x 28"	10	546 lbs.
WB812-6	7/8" x 12"	20	276 lbs.	WB830-8	7/8" x 30"	10	580 lbs.
WB814-6	7/8" x 14"	15	310 lbs.	WB832-8	7/8" x 32"	10	614 lbs.

Note: Other lengths available.



Carriage Bolts

Stock No.	Bolt Length Inches	Thread Length Inches	Unit Wt. Lbs.	Stock No.	Bolt Length Inches	Thread Length Inches	Unit Wt. Lbs.	Stock No.	Bolt Length Inches	Thread Length Inches	Unit Wt. Lbs.
3/8" Carriage Bolts*				1/2" Carriage Bolts				5/8" Carriage Bolts			
BC32-F	2	Full	.08	BC52-F	2	Full	.14	BC61-1/2-F	1-1/2	Full	.19
BC33-F	3	Full	.10	BC52-1/2-F	2-1/2	Full	.16	BC62-F	2	Full	.24
BC34-F	4	Full	.14	BC53-F	3	Full	.17	BC64-F	4	Full	.38
BC34-1/2-F	4-1/2	Full	.13	BC54-F	4	Full	.23	BC65-1/2-1-1/2	5-1/2	1-1/2	.46
BC35-F	5	Full	.14	BC55-F	5	Full	.30	BC66-F	6	Full	.52
BC35-1/2-F	5-1/2	Full	.16	BC55-1/2-1-1/2	5-1/2	1-1/2	.31	BC68-6	8	6	.58
BC36-F	6	Full	.17	BC56-F	6	Full	.32	3/4" Carriage Bolts			
BC37-6	7	6	.20	BC57-1-1/2	7	1-1/2	.41	BC72-F	2	Full	.46
BC38-3	8	3	.25	BC58-F	8	Full	.41	BC73-1-3/4	3	1-3/4	.46

*3/8" Carriage Bolts include hex nuts.



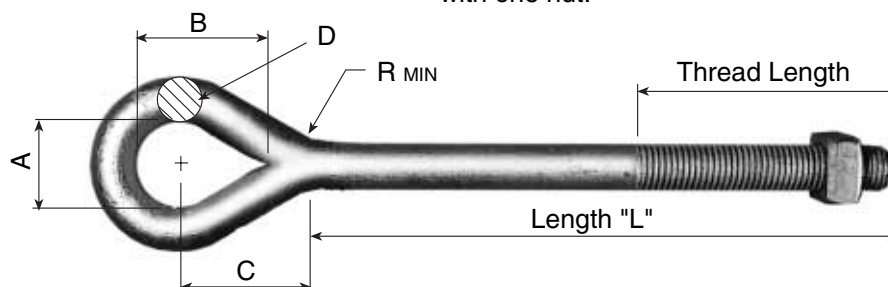
Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

2719 Oval Eyebolt

Hughes Brothers Oval Eyebolts are manufactured in accordance with ANSI C135.4. All oval eyebolts are hot dip galvanized in accordance with ASTM A153. Oval eyebolts are roll threaded and furnished assembled with one nut.



Bolt Dia.	A	B	C	D	R Min
5/8"	1-1/2"	2"	2"	35/64"	5/16"

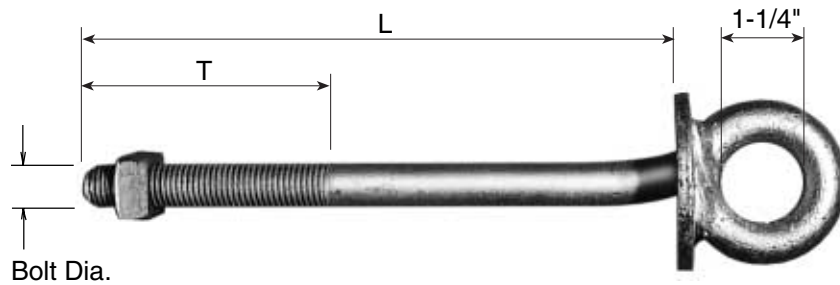
Minimum Tensile Strength 13,550 lbs.

Following ANSI C135.4 specifications, the unthreaded portion of eyebolts are capable of being bent 180° about a diameter equal to the shank without cracking the steel on the outside portion of the bend.

Ordering Information

Stock No.	Bolt Length	Thread Length	Weight 100 Pcs.
Oval Eyebolts			
2719.68-4	8"	4"	128 lbs.
2719.610-6	10"	6"	146 lbs.
2719.612-6	12"	6"	156 lbs.
2719.614-6	14"	6"	168 lbs.
2719.616-6	16"	6"	188 lbs.
2719.618-6	18"	6"	212 lbs.





2720 Shoulder Eyebolt

Stock No.	Bolt Dia.	Length L	Thread T	Weight 100 Pcs.
1/2" Shoulder Eyebolts				
2720.54-1-1/8	1/2"	4"	1-1/8"	102 lbs.
2720.55-1-1/4	1/2"	5"	1-1/4"	110 lbs.
2720.56-3	1/2"	6"	3"	118 lbs.
2720.57-3	1/2"	7"	3"	126 lbs.
2720.58-4	1/2"	8"	4"	134 lbs.
2720.510-4	1/2"	10"	4"	142 lbs.
2720.512-4	1/2"	12"	4"	150 lbs.

Hughes Brothers Welded Shoulder Eyebolts feature a 3" round washer welded to an eyebolt. The 2720 shoulder eyebolts are manufactured from SAE C1018 cold drawn or ASTM A36 steel. All shoulder eyebolts are galvanized in accordance with ASTM A153. Each shoulder eyebolt is furnished with one nut.

5/8" Shoulder Eyebolts				
2720.64-3	5/8"	4"	3"	120 lbs.
2720.66-3	5/8"	6"	3"	168 lbs.
2720.68-4	5/8"	8"	4"	192 lbs.
2720.610-4	5/8"	10"	4"	204 lbs.
2720.612-6	5/8"	12"	4"	216 lbs.
2720.614-6	5/8"	14"	6"	235 lbs.
2720.616-6	5/8"	16"	6"	240 lbs.
2720.618-6	5/8"	18"	6"	250 lbs.
2720.620-6	5/8"	20"	6"	268 lbs.
2720.622-6	5/8"	22"	6"	288 lbs.
2720.624-6	5/8"	24"	6"	308 lbs.

3/4" Shoulder Eyebolts				
2720.74-3	3/4"	4"	3"	168 lbs.
2720.76-3	3/4"	6"	3"	200 lbs.
2720.78-4	3/4"	8"	4"	245 lbs.
2720.710-4	3/4"	10"	4"	270 lbs.
2720.712-6	3/4"	12"	4"	293 lbs.
2720.714-6	3/4"	14"	6"	320 lbs.
2720.716-6	3/4"	16"	6"	340 lbs.
2720.718-6	3/4"	18"	6"	360 lbs.
2720.720-6	3/4"	20"	6"	374 lbs.
2720.722-6	3/4"	22"	6"	396 lbs.
2720.724-6	3/4"	24"	6"	421 lbs.
2720.726-6	3/4"	26"	6"	443 lbs.
2720.728-8	3/4"	28"	8"	470 lbs.

Tensile Strengths

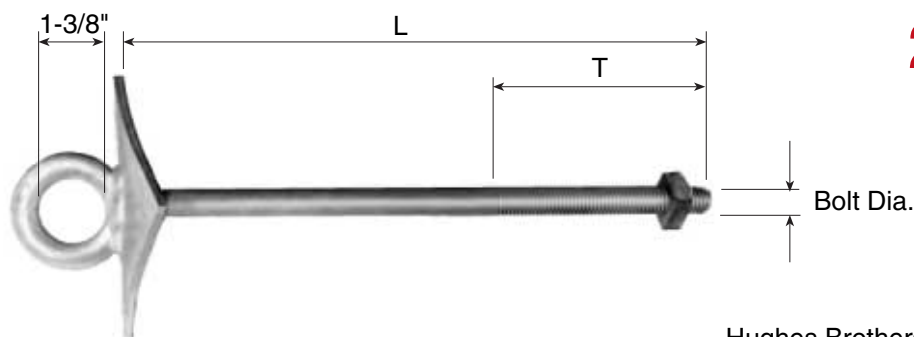
Bolt Diameter	Minimum Tensile Strength
1/2"	7,800 lbs.
5/8"	12,400 lbs.
3/4"	18,350 lbs.
7/8"	25,400 lbs.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.



2721 Shoulder Eyebolt

Hughes Brothers 2721 Welded Shoulder Eyebolt has a 4" curved washer welded to an eyebolt. The 2721 shoulder eyebolts are manufactured from SAE C1018 cold drawn or ASTM A36 steel, and are galvanized in accordance with ASTM A153. Each 2721 shoulder eyebolt is furnished with one nut.

Stock No.	Bolt Dia.	Length L	Thread T	Weight 100 Pcs.
1/2" Shoulder Eyebolts				
2721.54-1-1/8	1/2"	4"	1-1/8"	158 lbs.
2721.55-1-1/4	1/2"	5"	1-1/4"	166 lbs.
2721.56-3	1/2"	6"	3"	174 lbs.
2721.57-3	1/2"	7"	3"	182 lbs.
2721.58-4	1/2"	8"	4"	190 lbs.
2721.510-4	1/2"	10"	4"	198 lbs.
2721.512-4	1/2"	12"	4"	206 lbs.

5/8" Shoulder Eyebolts				
2721.64-3	5/8"	4"	3"	198 lbs.
2721.65-3	5/8"	5"	3"	212 lbs.
2721.66-3	5/8"	6"	3"	225 lbs.
2721.68-4	5/8"	8"	4"	232 lbs.
2721.610-4	5/8"	10"	4"	242 lbs.
2721.612-4	5/8"	12"	4"	262 lbs.
2721.614-6	5/8"	14"	6"	282 lbs.
2721.616-6	5/8"	16"	6"	299 lbs.
2721.618-6	5/8"	18"	6"	315 lbs.
2721.620-6	5/8"	20"	6"	325 lbs.
2721.622-6	5/8"	22"	6"	350 lbs.
2721.624-6	5/8"	24"	6"	366 lbs.

3/4" Shoulder Eyebolts				
2721.76-3	3/4"	6"	3"	249 lbs.
2721.78-4	3/4"	8"	4"	276 lbs.
2721.710-4	3/4"	10"	4"	303 lbs.
2721.712-4	3/4"	12"	4"	330 lbs.
2721.714-6	3/4"	14"	6"	357 lbs.
2721.716-6	3/4"	16"	6"	384 lbs.
2721.718-6	3/4"	18"	6"	411 lbs.
2721.720-6	3/4"	20"	6"	438 lbs.
2721.722-6	3/4"	22"	6"	465 lbs.
2721.724-6	3/4"	24"	6"	492 lbs.
2721.726-6	3/4"	26"	6"	519 lbs.
2721.728-8	3/4"	28"	8"	546 lbs.

Tensile Strengths

Bolt Diameter	Minimum Tensile Strength
1/2"	7,800 lbs.
5/8"	12,400 lbs.
3/4"	18,350 lbs.
7/8"	25,400 lbs.

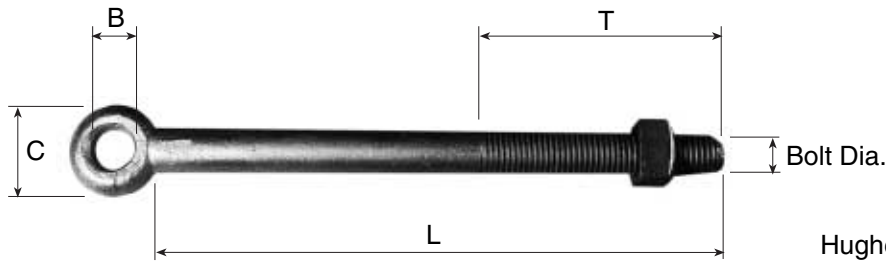
Stock No.	Bolt Dia.	Length L	Thread T	Weight 100 Pcs.
7/8" Shoulder Eyebolts				
2721.86-3	7/8"	6"	3"	316 lbs.
2721.88-4	7/8"	8"	4"	350 lbs.
2721.810-4	7/8"	10"	4"	386 lbs.
2721.812-6	7/8"	12"	6"	414 lbs.
2721.814-6	7/8"	14"	6"	479 lbs.
2721.816-6	7/8"	16"	6"	486 lbs.
2721.818-6	7/8"	18"	6"	519 lbs.
2721.820-6	7/8"	20"	6"	557 lbs.
2721.822-6	7/8"	22"	6"	570 lbs.
2721.824-6	7/8"	24"	6"	600 lbs.
2721.826-8	7/8"	26"	8"	653 lbs.
2721.828-8	7/8"	28"	8"	684 lbs.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.



2724 Forged Eyebolt

Tensile Strengths

Bolt Diameter	Minimum Tensile Strength
1/2"	7,800 lbs.
5/8"	12,400 lbs.
3/4"	18,350 lbs.
7/8"	25,400 lbs.

Hughes Brothers 2724 Forged Eyebolts are manufactured from SAE C1018 cold drawn or ASTM A36 steel. Hughes Brothers eyebolts are hot dip galvanized in accordance with ASTM A153. Each 2724 shoulder eyebolt is furnished with one nut.

Also available in 1" and 1-1/4" diameter rod by special order.

Stock No.	Bolt Dia.	L	T	B	C	Weight 100 Pcs.	Stock No.	Bolt Dia.	L	T	B	C	Weight 100 Pcs.
1/2" Forged Eyebolts							3/4" Forged Eyebolts						
2724.56-4	1/2"	6"	4"	11/16"	1-1/4"	39 lbs.	2724.74-2	3/4"	4"	2"	13/16"	1-7/8"	80 lbs.
2724.58-4	1/2"	8"	4"	11/16"	1-1/4"	51 lbs.	2724.75-3	3/4"	5"	3"	13/16"	1-7/8"	88 lbs.
2724.510-4	1/2"	10"	4"	11/16"	1-1/4"	62 lbs.	2724.76-3	3/4"	6"	3"	13/16"	1-7/8"	105 lbs.
2724.512-4	1/2"	12"	4"	11/16"	1-1/4"	73 lbs.	2724.77-3	3/4"	7"	3"	13/16"	1-7/8"	116 lbs.
2724.514-4	1/2"	14"	4"	11/16"	1-1/4"	84 lbs.	2724.78-4	3/4"	8"	4"	13/16"	1-7/8"	128 lbs.
2724.516-4	1/2"	16"	4"	11/16"	1-1/4"	95 lbs.	2724.710-4	3/4"	10"	4"	13/16"	1-7/8"	150 lbs.
2724.518-4	1/2"	18"	4"	11/16"	1-1/4"	107 lbs.	2724.712-4	3/4"	12"	4"	13/16"	1-7/8"	175 lbs.
2724.520-4	1/2"	20"	4"	11/16"	1-1/4"	117 lbs.	2724.714-6	3/4"	14"	6"	13/16"	1-7/8"	199 lbs.
5/8" Forged Eyebolts							2724.716-6	3/4"	16"	6"	13/16"	1-7/8"	219 lbs.
2724.64-2	5/8"	4"	2"	13/16"	1-5/8"	48 lbs.	2724.718-6	3/4"	18"	6"	13/16"	1-7/8"	246 lbs.
2724.64-3	5/8"	4"	3"	13/16"	1-5/8"	48 lbs.	2724.720-6	3/4"	20"	6"	13/16"	1-7/8"	271 lbs.
2724.65-3	5/8"	5"	3"	13/16"	1-5/8"	60 lbs.	2724.722-6	3/4"	22"	6"	13/16"	1-7/8"	295 lbs.
2724.66-3	5/8"	6"	3"	13/16"	1-5/8"	68 lbs.	2724.724-6	3/4"	24"	6"	13/16"	1-7/8"	321 lbs.
2724.68-4	5/8"	8"	4"	13/16"	1-5/8"	85 lbs.	2724.726-8	3/4"	26"	8"	13/16"	1-7/8"	345 lbs.
2724.610-4	5/8"	10"	4"	13/16"	1-5/8"	101 lbs.	2724.728-8	3/4"	28"	8"	13/16"	1-7/8"	369 lbs.
2724.612-4	5/8"	12"	4"	13/16"	1-5/8"	124 lbs.	7/8" Forged Eyebolts						
2724.614-6	5/8"	14"	6"	13/16"	1-5/8"	132 lbs.	2724.85-3	7/8"	5"	3"	15/16"	2-1/8"	108 lbs.
2724.616-6	5/8"	16"	6"	13/16"	1-5/8"	150 lbs.	2724.86-3	7/8"	6"	3"	15/16"	2-1/8"	126 lbs.
2724.618-6	5/8"	18"	6"	13/16"	1-5/8"	167 lbs.	2724.87-3	7/8"	7"	3"	15/16"	2-1/8"	145 lbs.
2724.620-6	5/8"	20"	6"	13/16"	1-5/8"	187 lbs.	2724.88-4	7/8"	8"	4"	15/16"	2-1/8"	163 lbs.
2724.622-6	5/8"	22"	6"	13/16"	1-5/8"	200 lbs.	2724.810-4	7/8"	10"	4"	15/16"	2-1/8"	201 lbs.
2724.624-6	5/8"	24"	6"	13/16"	1-5/8"	220 lbs.	2724.812-4	7/8"	12"	4"	15/16"	2-1/8"	237 lbs.
2724.626-8	5/8"	26"	8"	13/16"	1-5/8"	236 lbs.	2724.814-6	7/8"	14"	6"	15/16"	2-1/8"	276 lbs.
2724.628-8	5/8"	28"	8"	13/16"	1-5/8"	252 lbs.	2724.816-6	7/8"	16"	6"	15/16"	2-1/8"	308 lbs.
2724.630-8	5/8"	30"	8"	13/16"	1-5/8"	268 lbs.	2724.818-6	7/8"	18"	6"	15/16"	2-1/8"	344 lbs.
2724.632-8	5/8"	32"	8"	13/16"	1-5/8"	289 lbs.	2724.820-6	7/8"	20"	6"	15/16"	2-1/8"	379 lbs.
2724.634-8	5/8"	34"	8"	13/16"	1-5/8"	307 lbs.	2724.822-6	7/8"	22"	6"	15/16"	2-1/8"	407 lbs.
							2724.824-6	7/8"	24"	6"	15/16"	2-1/8"	452 lbs.
							2724.826-8	7/8"	26"	8"	15/16"	2-1/8"	467 lbs.

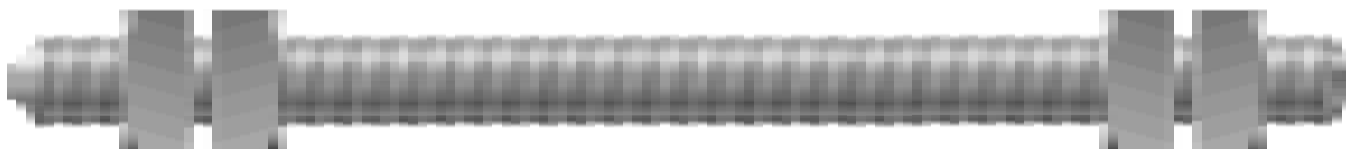


Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Threaded Rods (Double Arming Bolts)



Shear Strengths for ANSI C135.1

Bolt Diameter	Single Shear Through Threads	Single Shear Through Shaft
1/2"	5,200 lbs.	7,950 lbs.
5/8"	8,330 lbs.	12,420 lbs.
3/4"	12,440 lbs.	17,890 lbs.
7/8"	17,270 lbs.	24,350 lbs.
1"	22,690 lbs.	31,800 lbs.
1-1/4"	36,590 lbs.	49,700 lbs.

Hughes Brothers Threaded Rods are manufactured in accordance with ANSI C135.1 and ASTM A307, using ASTM A36 or SAE C1018 cold drawn steel. The threaded rods are hot dip galvanized in accordance with ASTM A153. Various ordering options are available for full thread, or any portion of thread. Standard thread length options are listed. Threaded rod with partial threads are furnished with one nut on each end unless otherwise specified. Full threaded rod (double arming bolts) are furnished with 4 nuts unless otherwise specified. The suffix "2N" designates only 2 nuts for full threaded rod.

Tensile Strengths for ANSI C135.1

Bolt Diameter	Minimum Tensile Strength
1/2"	7,800 lbs.
5/8"	12,400 lbs.
3/4"	18,350 lbs.
7/8"	25,400 lbs.
1"	33,500 lbs.
1-1/4"	53,300 lbs.

Decimal Equivalency Chart		
Fraction	Decimal	HUGHES
1/4"	.2	2
3/8"	.3	3
1/2"	.5	5
5/8"	.6	6
3/4"	.7	7
7/8"	.8	8
1"	.1	10
1-1/8"	1.125	11
1-1/4"	1.25	12

Ordering Information

TR	7	1	6	- F	2N	Designates only 2 nuts (full threaded rod only).
						Without the "2N" suffix, 4 nuts are always supplied on full threaded rod, or "NN" designates no nuts.
						Designates full threads
						Bolt length, in 2" increments
						First digit in decimal equivalent (see chart)
						Designates threaded rod



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Full Threaded Rods



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.	Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1/2" Full Threaded Rods				7/8" Full Threaded Rods			
TR512-F	1/2" x 12"	50	75 lbs.	TR812-F	7/8" x 12"	20	262 lbs.
TR514-F	1/2" x 14"	50	84 lbs.	TR814-F	7/8" x 14"	20	291 lbs.
TR516-F	1/2" x 16"	50	94 lbs.	TR816-F	7/8" x 16"	15	320 lbs.
TR520-F	1/2" x 20"	50	112 lbs.	TR818-F	7/8" x 18"	15	349 lbs.
TR522-F	1/2" x 22"	50	121 lbs.	TR820-F	7/8" x 20"	15	378 lbs.
TR524-F	1/2" x 24"	50	130 lbs.	TR822-F	7/8" x 22"	15	406 lbs.
5/8" Full Threaded Rods				TR824-F	7/8" x 24"	10	435 lbs.
TR612-F	5/8" x 12"	25	125 lbs.	TR826-F	7/8" x 26"	10	464 lbs.
TR614-F	5/8" x 14"	25	139 lbs.	TR828-F	7/8" x 28"	10	493 lbs.
TR616-F	5/8" x 16"	25	154 lbs.	TR830-F	7/8" x 30"	10	522 lbs.
TR620-F	5/8" x 20"	25	182 lbs.	TR832-F	7/8" x 32"	10	551 lbs.
TR622-F	5/8" x 22"	25	196 lbs.	TR834-F	7/8" x 34"	10	580 lbs.
TR624-F	5/8" x 24"	25	211 lbs.	TR836-F	7/8" x 36"	10	609 lbs.
3/4" Full Threaded Rods				TR838-F	7/8" x 38"	10	638 lbs.
TR712-F	3/4" x 12"	30	180 lbs.	TR840-F	7/8" x 40"	5	667 lbs.
TR714-F	3/4" x 14"	30	205 lbs.	TR842-F	7/8" x 42"	5	696 lbs.
TR716-F	3/4" x 16"	25	221 lbs.				
TR718-F	3/4" x 18"	25	242 lbs.				
TR720-F	3/4" x 20"	20	262 lbs.				
TR722-F	3/4" x 22"	20	283 lbs.				
TR724-F	3/4" x 24"	15	304 lbs.				
TR726-F	3/4" x 26"	15	325 lbs.				
TR728-F	3/4" x 28"	15	346 lbs.				
TR730-F	3/4" x 30"	15	366 lbs.				
TR732-F	3/4" x 32"	10	387 lbs.				
TR734-F	3/4" x 34"	10	408 lbs.				
TR736-F	3/4" x 36"	10	429 lbs.				
TR738-F	3/4" x 38"	10	449 lbs.				
TR740-F	3/4" x 40"	10	470 lbs.				
TR742-F	3/4" x 42"	10	491 lbs.				



Full Threaded Rods



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.	Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1" Full Threaded Rods				1-1/4" Full Threaded Rods			
TR1012-F	1" x 12"	15	356 lbs.	TR1212-F	1-1/4" x 12"	10	468 lbs.
TR1014-F	1" x 14"	15	392 lbs.	TR1214-F	1-1/4" x 14"	10	538 lbs.
TR1016-F	1" x 16"	15	431 lbs.	TR1216-F	1-1/4" x 16"	10	607 lbs.
TR1018-F	1" x 18"	10	468 lbs.	TR1218-F	1-1/4" x 18"	5	677 lbs.
TR1020-F	1" x 20"	10	506 lbs.	TR1220-F	1-1/4" x 20"	5	747 lbs.
TR1022-F	1" x 22"	10	544 lbs.	TR1222-F	1-1/4" x 22"	5	817 lbs.
TR1024-F	1" x 24"	10	581 lbs.	TR1224-F	1-1/4" x 24"	5	887 lbs.
TR1026-F	1" x 26"	10	619 lbs.	TR1226-F	1-1/4" x 26"	5	956 lbs.
TR1028-F	1" x 28"	5	656 lbs.	TR1228-F	1-1/4" x 28"	5	1026 lbs.
TR1030-F	1" x 30"	5	694 lbs.	TR1230-F	1-1/4" x 30"	5	1096 lbs.
TR1032-F	1" x 32"	5	732 lbs.	TR1232-F	1-1/4" x 32"	5	1166 lbs.
TR1034-F	1" x 34"	5	769 lbs.	TR1234-F	1-1/4" x 34"	5	1236 lbs.
TR1036-F	1" x 36"	5	807 lbs.	TR1236-F	1-1/4" x 36"	5	1305 lbs.
TR1038-F	1" x 38"	5	844 lbs.	TR1238-F	1-1/4" x 38"	4	1375 lbs.
TR1040-F	1" x 40"	5	882 lbs.	TR1240-F	1-1/4" x 40"	4	1445 lbs.
TR1042-F	1" x 42"	5	920 lbs.	TR1242-F	1-1/4" x 42"	4	1515 lbs.



Fasteners -Threaded Rods

Threaded Double End Rods



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
5/8" Threaded Double End Rods			
TR612-5	5/8" x 12"	30	136 lbs.
TR614-5	5/8" x 14"	30	142 lbs.
TR616-5	5/8" x 16"	25	160 lbs.
TR618-5	5/8" x 18"	25	173 lbs.
TR620-5	5/8" x 20"	20	187 lbs.
TR622-5	5/8" x 22"	20	204 lbs.
TR624-5	5/8" x 24"	15	224 lbs.
TR626-5	5/8" x 26"	15	236 lbs.
TR628-5	5/8" x 28"	15	256 lbs.
TR630-5	5/8" x 30"	15	264 lbs.
TR632-5	5/8" x 32"	10	284 lbs.
TR634-5	5/8" x 34"	10	298 lbs.
TR636-5	5/8" x 36"	10	325 lbs.
TR638-5	5/8" x 38"	10	339 lbs.
TR640-5	5/8" x 40"	10	351 lbs.
TR642-5	5/8" x 42"	10	365 lbs.

3/4" Threaded Double End Rods

TR712-5	3/4" x 12"	30	196 lbs.
TR714-5	3/4" x 14"	30	220 lbs.
TR716-5	3/4" x 16"	25	240 lbs.
TR718-5	3/4" x 18"	25	252 lbs.
TR720-5	3/4" x 20"	20	275 lbs.
TR722-5	3/4" x 22"	20	300 lbs.
TR724-5	3/4" x 24"	15	313 lbs.
TR726-5	3/4" x 26"	15	336 lbs.
TR728-5	3/4" x 28"	15	362 lbs.
TR730-5	3/4" x 30"	15	388 lbs.
TR732-5	3/4" x 32"	10	414 lbs.
TR734-5	3/4" x 34"	10	440 lbs.
TR736-5	3/4" x 36"	10	465 lbs.
TR738-5	3/4" x 38"	10	491 lbs.
TR740-5	3/4" x 40"	10	517 lbs.
TR742-5	3/4" x 42"	10	543 lbs.

Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
7/8" Threaded Double End Rods			
TR812-5	7/8" x 12"	20	222 lbs.
TR814-5	7/8" x 14"	20	256 lbs.
TR816-5	7/8" x 16"	15	290 lbs.
TR818-5	7/8" x 18"	15	324 lbs.
TR820-5	7/8" x 20"	15	358 lbs.
TR822-5	7/8" x 22"	15	392 lbs.
TR824-5	7/8" x 24"	10	425 lbs.
TR826-5	7/8" x 26"	10	455 lbs.
TR828-5	7/8" x 28"	10	493 lbs.
TR830-5	7/8" x 30"	10	527 lbs.
TR832-5	7/8" x 32"	10	561 lbs.
TR834-5	7/8" x 34"	10	595 lbs.
TR836-5	7/8" x 36"	10	629 lbs.
TR838-5	7/8" x 38"	10	662 lbs.
TR840-5	7/8" x 40"	10	696 lbs.
TR842-5	7/8" x 42"	10	730 lbs.

Note: The last digit of the stock number indicates the standard thread length at each end of the threaded double end rods.

Threaded double end rods are furnished with two square nuts.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Threaded Double End Rods



Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1" Threaded Double End Rods			
TR1012-5	1" x 12"	15	297 lbs.
TR1014-5	1" x 14"	15	341 lbs.
TR1016-5	1" x 16"	15	385 lbs.
TR1018-5	1" x 18"	15	429 lbs.
TR1020-5	1" x 20"	10	473 lbs.
TR1022-5	1" x 22"	10	517 lbs.
TR1024-5	1" x 24"	10	561 lbs.
TR1026-5	1" x 26"	10	605 lbs.
TR1028-5	1" x 28"	5	649 lbs.
TR1030-6	1" x 30"	5	693 lbs.
TR1032-6	1" x 32"	5	737 lbs.
TR1034-6	1" x 34"	5	781 lbs.
TR1036-6	1" x 36"	5	825 lbs.
TR1038-6	1" x 38"	5	869 lbs.
TR1040-6	1" x 40"	5	913 lbs.
TR1042-6	1" x 42"	5	957 lbs.

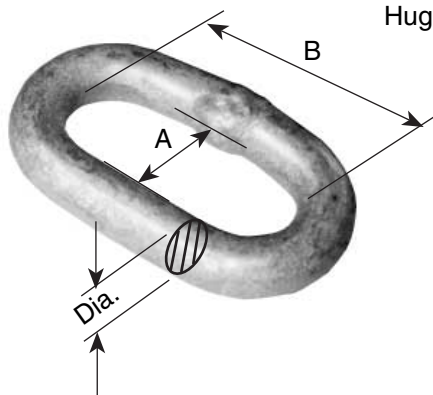
Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
1-1/4" Threaded Double End Rods			
TR1212-6	1-1/4" x 12"	10	468 lbs.
TR1214-6	1-1/4" x 14"	10	538 lbs.
TR1216-6	1-1/4" x 16"	10	607 lbs.
TR1218-6	1-1/4" x 18"	5	677 lbs.
TR1220-6	1-1/4" x 20"	5	747 lbs.
TR1222-6	1-1/4" x 22"	5	817 lbs.
TR1224-6	1-1/4" x 24"	5	887 lbs.
TR1226-6	1-1/4" x 26"	5	956 lbs.
TR1228-6	1-1/4" x 28"	5	1026 lbs.
TR1230-6	1-1/4" x 30"	5	1096 lbs.
TR1232-6	1-1/4" x 32"	5	1166 lbs.
TR1234-6	1-1/4" x 34"	5	1236 lbs.
TR1236-6	1-1/4" x 36"	5	1305 lbs.
TR1238-6	1-1/4" x 38"	4	1375 lbs.
TR1240-6	1-1/4" x 40"	4	1445 lbs.
TR1242-6	1-1/4" x 42"	4	1515 lbs.

Note: The last digit of the stock number indicates the standard thread length at each end of the threaded double end rods.

Threaded double end rods are furnished with two square nuts.

Chain Links

Hughes Brothers Chain Links are formed from ASTM A36 steel.



Stock No.	Dia.	A	B	Weight 100 Pcs.
1329-B	5/8"	1"	3"	73 lbs.
1329-B1	1/2"	1"	2-1/4"	41 lbs.
1329-B3	9/16"	1"	3"	59 lbs.

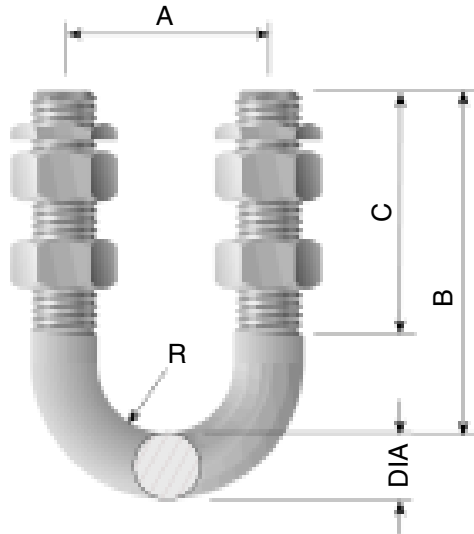


Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

U-Bolts

Hughes Brothers U-Bolts are used primarily on steel angle H-frame cross ties.

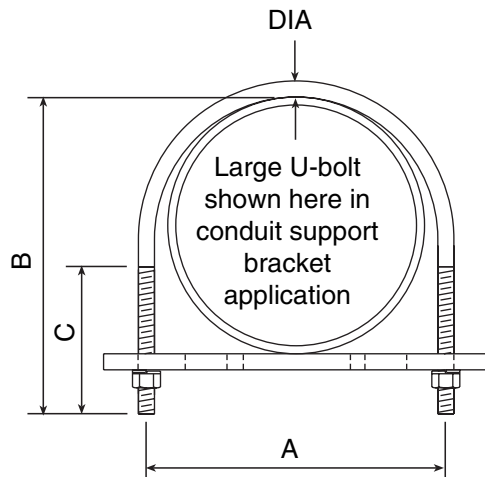


Stock No.	Bolt Dia.	A	B	C	R	Weight 100 Pcs.
U-Bolt without Nuts						
1327	5/8"	3"	4-1/8"	2"	1-3/16"	76 lbs.
1328-A	1/2"	1-1/2"	3"	1-1/2"	1/2"	50 lbs.
1328-B	1/2"	1-1/2"	2-1/2"	1-3/4"	1/2"	50 lbs.
1327-A	5/8"	3"	5-1/8"	3"	1-3/16"	76 lbs.
1329-A*	5/8"	2"	3-3/4"	2"	11/16"	66 lbs.
1330-A	5/8"	1-1/2"	3-5/8"	2"	7/16"	63 lbs.

U-Bolt, with 4 nuts and 2 locknuts

1327-CPT	5/8"	3"	3-1/2"	2"	1-3/16"	114 lbs.
1328-A-CPT	1/2"	1-1/2"	2-1/2"	1-1/2"	1/2"	116 lbs.
1328-B-CPT	1/2"	1-1/2"	2-1/2"	1-3/4"	1/2"	116 lbs.
1327-A-CPT	5/8"	3"	4-1/2"	3"	1-3/16"	132 lbs.
1329-A-CPT*	5/8"	2"	3-1/8"	2"	11/16"	116 lbs.
1330-A-CPT	5/8"	1-1/2"	3"	2"	7/16"	96 lbs.

*Uses square nuts.



Stock No.	Dia.	"A"	"B"	"C"	Pipe / Conduit Size
-----------	------	-----	-----	-----	---------------------

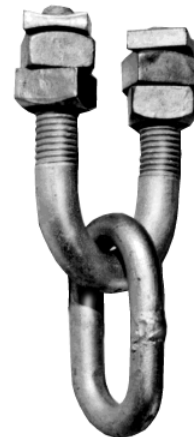
U-Bolt, with 2 hex nuts & 2 split lock washers (for conduit support brackets)

AS2477.2	3/8"	2-7/8"	3-1/4"	2-1/4"	2"
AS2477.3	3/8"	7"	7-3/4"	4"	6"
AS2477.5	3/8"	6"	6-1/2"	3-1/4"	5"
AS2477.6	3/8"	4-3/4"	5-1/2"	3"	4"
B1964.1A	1/2"	3-1/4"	4"	2-5/8"	2"
B1964.1B	1/2"	5"	6"	3"	4"
B1964.1C	1/2"	7"	8"	4"	6"

1329 U-Bolt & Chain Link Assembly

To order Hughes Brothers 1329 U-Bolt and Chain Link Assembly, specify the following:

Stock No.	Item Description	Weight 100 Pcs.
1329.5	5/8" U-Bolt & 1/2" Link Assembly	160 lbs.
1329.6	5/8" U-Bolt & 5/8" Link Assembly	190 lbs.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

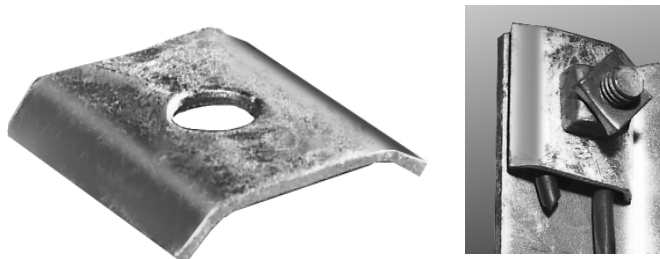
©2001 Hughes Brothers, Inc.

Stock No.	Bolt Dia.	Max. Wire Dia.	Std. Pkg.	Weight 100 Pcs.
2718.3	3/8"	7/16"	250	8 lbs.
2718.5	1/2"	7/16"	250	9 lbs.
2718.6	5/8"	7/16"	250	19 lbs.
2718.7	3/4"	7/16"	250	18 lbs.
2718.8	7/8"	7/16"	250	18 lbs.
2718.10	1"	7/16"	250	16 lbs.
2718.33*	3/8"x1-1/2"	7/16"	250	19 lbs.
2718.55*	1/2"x1-1/2"	7/16"	200	29 lbs.
2718.66*	5/8"x1-3/4"	7/16"	100	53 lbs.

*Includes bonding clip, carriage bolt, nut, and locknut.

2718 Bonding Clip

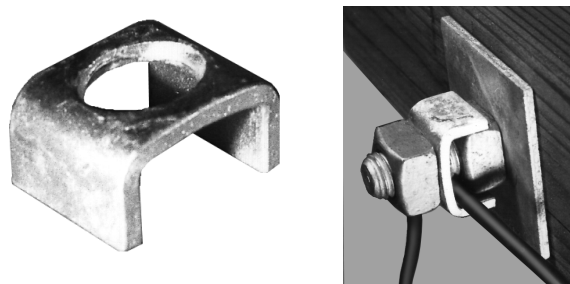
The Hughes Brothers 2718 Bonding Clip is used to attach the ground wire to any flat steel surface. The mounting bolt is not included, unless specified.



Stock No.	Bolt Dia.	Max. Wire Dia.	Std. Pkg.	Weight 100 Pcs.
2727.5	1/2"	5/16"	500	10 lbs.
2727.6	5/8"	5/16"	500	10 lbs.
2727.7	3/4"	5/16"	250	14 lbs.
2727.8	7/8"	5/16"	250	20 lbs.
2727.10	1"	7/16"	150	26 lbs.
2727.12	1-1/4"	7/16"	150	26 lbs.

2727 Bonding Clip

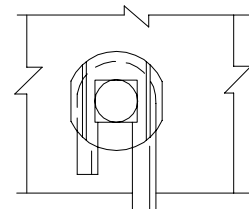
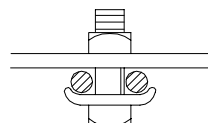
The Hughes Brothers 2727 Bonding Clip provides a simple and practical method of bonding the threaded end of bolts. Nut ordered separately.



GWB 51-1/2 Bonding Bolt

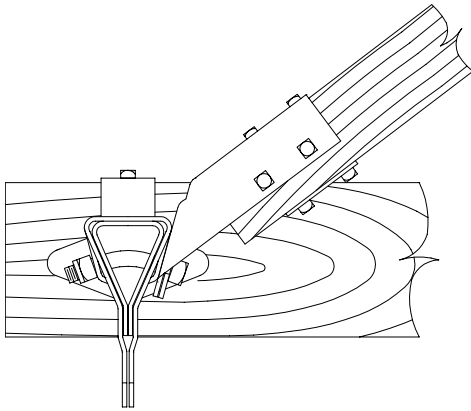
The Hughes Brothers Ground Wire Bonding Bolt is a simple method of attaching the ground wire to a flat steel surface. The lipped washer is an integral part of the bolt, acting as a clamp to hold the ground wire securely in place.

Stock No.	Bolt Dia.	Length	Max. Wire Dia.	Std. Pkg.	Weight 100 Pcs.
GWB51-1/2	1/2"	1-1/2"	7/16"	200	32 lbs.



Hughes Brothers, Inc.

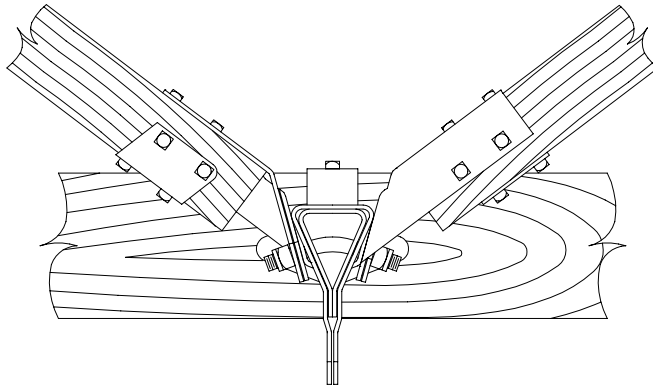
P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149



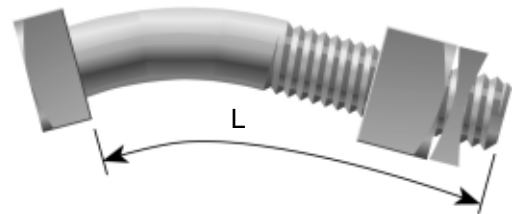
2722 Bent Bolt & Stud

Hughes Brothers 2722 Bent Bolts and Bent Studs are used primarily for connecting transmission braces to spacer fittings in transmission double arm assemblies. They are manufactured from SAE C1018 cold drawn or ASTM A36 steel. All bent bolts and bent studs are galvanized in accordance with ASTM A153.

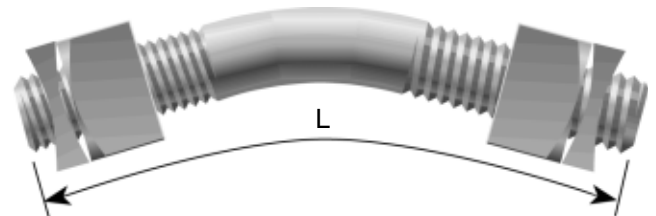
Each bent bolt is furnished with a nut and locknut. Each bent stud is furnished with two nuts and two locknuts.



2722 Bent Bolt



2722 Bent Stud



Stock No.	Item Description	Length L	Bend Radius	Full Body Length	Weight 100 Pcs.
Bent Bolts					
2722.1A-B	3/4" Bent Bolt	6"	3-3/8"	2-3/4"	109 lbs.
2722.1B-B	7/8" Bent Bolt	6"	3-3/8"	2-3/4"	158 lbs.
2722.2A*	7/8" Bent Bolt	7-1/2"	3-3/8"	4-1/4"	182 lbs.
Bent Studs					
2722.1C-B	3/4" Bent Stud	8"	3-3/8"	2-1/2"	133 lbs.
2722.1D-B	7/8" Bent Stud	8"	3-3/8"	2-1/2"	182 lbs.
2722.2B*	7/8" Bent Stud	10"	3-3/8"	4-1/2"	230 lbs.

Tensile Strengths and Shear Strengths of Hughes Brothers 2722 Bent Bolts and Bent Studs conform to ANSI C135.1.

*RUS accepted item - features recessed nut.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

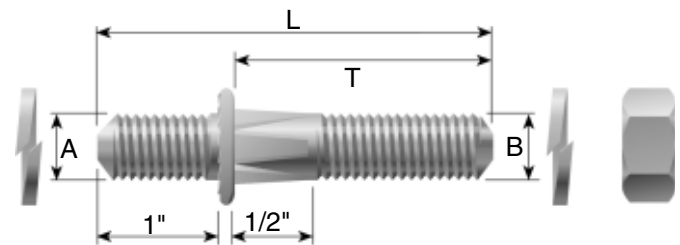
Insulator Mounting Studs

Hughes Brothers Insulator Mounting Studs are manufactured in accordance with ANSI C135.1. The insulator mounting studs are threaded to diameters specified in ANSI C29.7 and are galvanized in accordance with ASTM A153.

Insulator mounting studs are furnished assembled with hardware as shown. Tensile strengths of Hughes Brothers insulator mounting studs are the same as the tensile strengths of Hughes Brothers machine bolts. (See page E-3.)

The serrated collar and lock washer ensure a tight hardware connection. Longer studs, for wood crossarms feature a wrench shoulder below the serrated collar.

For Use on Steel



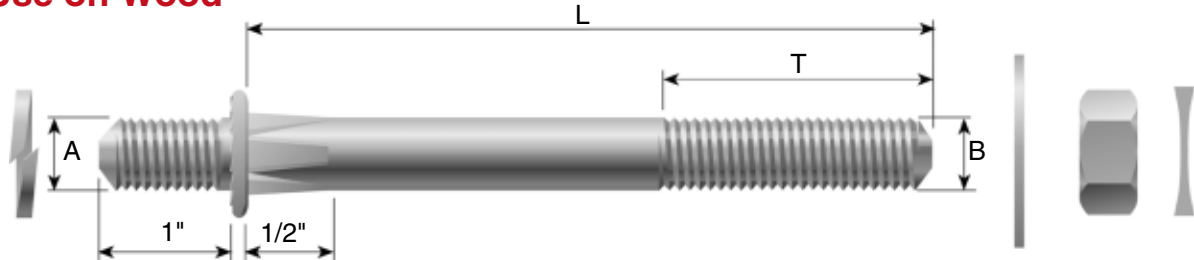
Stock No.	"L"	"T"	"A"	"B"	Weight 100 Pcs.
2750.1A	2-7/8"	1-3/4"	3/4"	5/8"	43 lbs.
2750.2A	2-1/4"	1-1/8"	3/4"	5/8"	37 lbs.
2750.4A	3-5/8"	2-1/2"	3/4"	5/8"	51 lbs.
2751.1A	3"	1-7/8"	3/4"	3/4"	63 lbs.
2751.3A	3-7/8"	2-3/4"	3/4"	3/4"	73 lbs.
2751.4A	3-1/2"	2-3/8"	3/4"	3/4"	68 lbs.
2755.1A	3-3/16"	2"	7/8"	7/8"	63 lbs.
2755.3A	4-3/16"	3"	7/8"	7/8"	73 lbs.
2755.4A	5-3/16"	4"	7/8"	7/8"	68 lbs.

Standard Package: 100



Insulator Mounting Studs

For Use on Wood



Stock No.	"L"	"T"	"A"	"B"	Weight 100 Pcs.
2752 Mounting Studs					
2752.1A	7"	4"	3/4"	5/8"	118 lbs.
2752.2A	7-1/2"	6"	3/4"	5/8"	121 lbs.
2752.3A	8"	6"	3/4"	5/8"	125 lbs.
2752.4A	9"	6"	3/4"	5/8"	132 lbs.
2752.5A	10"	6"	3/4"	5/8"	139 lbs.
2752.6A	11"	6"	3/4"	5/8"	146 lbs.
2752.7A	14"	6"	3/4"	5/8"	167 lbs.
2752.8A	16"	6"	3/4"	5/8"	181 lbs.
2752.9A	12"	6"	3/4"	5/8"	153 lbs.

Standard Package: 40

2753 Mounting Studs					
2753.1A	7"	4"	3/4"	3/4"	140 lbs.
2753.2A	8"	6"	3/4"	3/4"	152 lbs.
2753.3A	9"	6"	3/4"	3/4"	163 lbs.
2753.4A	10"	6"	3/4"	3/4"	172 lbs.
2753.5A	11"	6"	3/4"	3/4"	183 lbs.
2753.6A	12"	6"	3/4"	3/4"	194 lbs.
2753.7A	14"	6"	3/4"	3/4"	214 lbs.
2753.8A	16"	6"	3/4"	3/4"	234 lbs.

Standard Package: 30

2754 Mounting Studs					
2754.1A	7-1/2"	4"	7/8"	7/8"	168 lbs.
2754.2A	8"	4"	7/8"	7/8"	175 lbs.

Standard Package: 30

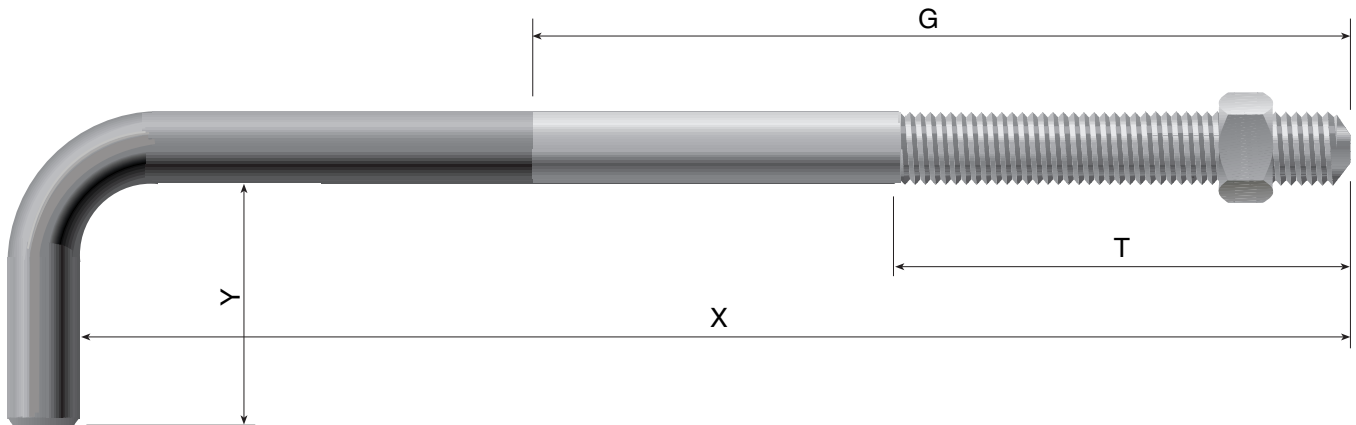
**Hughes Brothers, Inc.**

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Anchor Bolts

Hughes Brothers Anchor Bolts are manufactured from SAE C1018 cold drawn or ASTM A36 steel. The threads meet ANSI / ASME B1.1 specifications. The minimum bend radius is equal to the diameter of the anchor bolt.



Ordering Information

A N B 1 0 3 6 - 8 B 6 G 2 0

- Galvanizing length (G) from threaded end, in inches, or "F" for fully galvanized
- Bend length (Y) in inches
- Thread length (T) in inches
- Rod length (X) in inches
- Rod diameter (see table)
- Designates anchor bolt

Rod Diameter Table

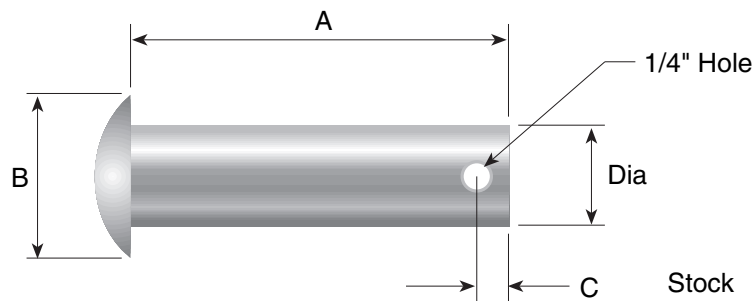
Rod Diameter	Decimal Equivalent
5/8"	6
3/4"	7
7/8"	8
1"	10
1-1/8"	11
1-1/4"	12
1-3/8"	13



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.



2743 Clevis Pins

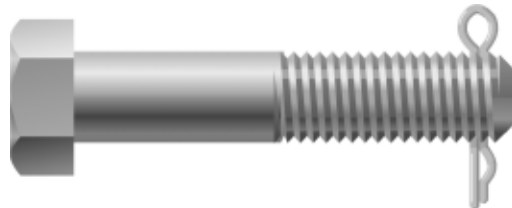
(Round flat head may be substituted depending on availability)

Stock No.	Dia.	A	B	C	Weight 100 Pcs.
2743.62-1/4	5/8"	2-1/4"	1-1/16"	1/4"	19 lbs.
2743.64-1/2	5/8"	4-1/2"	1-1/16"	1/4"	46 lbs.
2743.65	5/8"	5"	1-1/16"	1/4"	48 lbs.
2743.72	3/4"	2"	1-1/16"	1/4"	36 lbs.
2743.72-1/4	3/4"	2-1/4"	1-1/16"	1/4"	37 lbs.
2743.72-1/2	3/4"	2-1/2"	1-1/16"	1/4"	38 lbs.
2743.72-3/4	3/4"	2-3/4"	1-1/16"	1/4"	39 lbs.
2743.82-3/4	7/8"	2-3/4"	1-3/16"	3/8"	51 lbs.
2743.83	7/8"	3"	1-3/16"	3/8"	55 lbs.
2743.84	7/8"	4"	1-3/16"	3/8"	73 lbs.

Drilled Bolts

To order any bolt drilled and with a AS2531.1D cotter pin, add suffix "D" after the bolt length as follows:

B 8 3 D - 2



AS2531 Cotter Keys

Hughes Brothers AS2531 Cotter Keys are made of stainless steel.



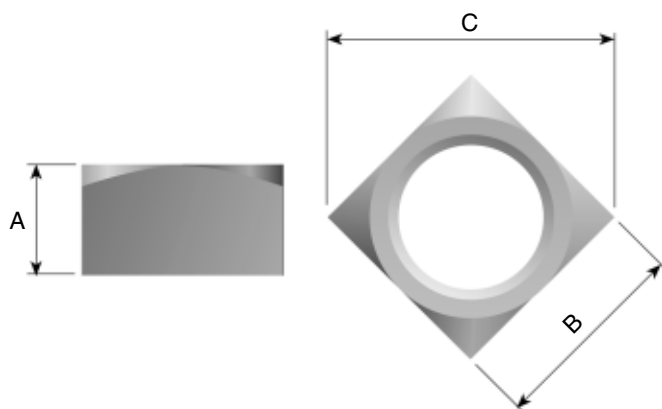
Stock No.	Item Description
AS2531.1A	3/16" x 1"
AS2531.1H	3/16" x 1-1/2"
AS2531.1E	1/8" x 1-1/2"
AS2531.1D	3/16" x 1-1/4" (humpback)



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.



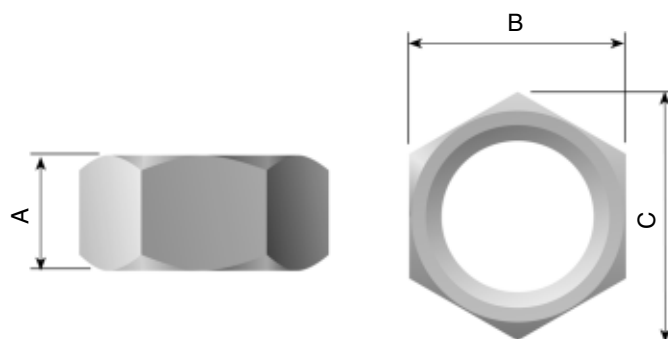
Square Nuts

Hughes Brothers Square nuts are compatible with all ANSI C135.1 hardware. Nuts are tapped oversize in accordance with ASTM A563 for proper fit on galvanized bolts.

Stock No.	Item Description	A	B	C	Weight 100 Pcs.
N30	3/8"	21/64"	5/8"	7/8"	2.3 lbs.
N50	1/2"	7/16"	13/16"	1-1/8"	5 lbs.
N60	5/8"	35/64"	1"	1-3/8"	9 lbs.
N70	3/4"	21/32"	1-1/8"	1-1/2"	15 lbs.
N80	7/8"	49/64"	1-5/16"	1-3/4"	24 lbs.
N100	1"	7/8"	1-1/2"	2"	37 lbs.

Hex Nuts

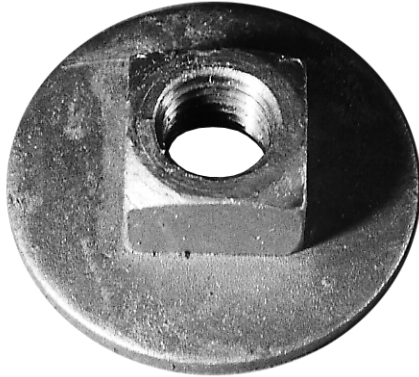
Hughes Brothers Hex Nuts are compatible with all ANSI C135.1 hardware. Hex nuts are tapped oversize in accordance with ASTM A563.



Stock No.	Item Description	A	B	C	Weight 100 Pcs.
HN30	3/8"	21/64"	9/16"	5/8"	2 lbs.
HN50	1/2"	7/16"	3/4"	7/8"	4 lbs.
HN60	5/8"	35/64"	15/16"	1"	9 lbs.
HN70	3/4"	41/64"	1-1/8"	1-1/4"	10 lbs.
HN80	7/8"	3/4"	1-5/16"	1-1/2"	20 lbs.
HN100	1"	55/64"	1-1/2"	1-5/8"	27 lbs.
HN120	1-1/4"	1-1/16"	1-7/8"	2-1/8"	55 lbs.



2745 Welded Washer Nut



Hughes Brothers 2745 Welded Washer Nut has a 3/16" x 3" round washer which is welded to a standard square nut.

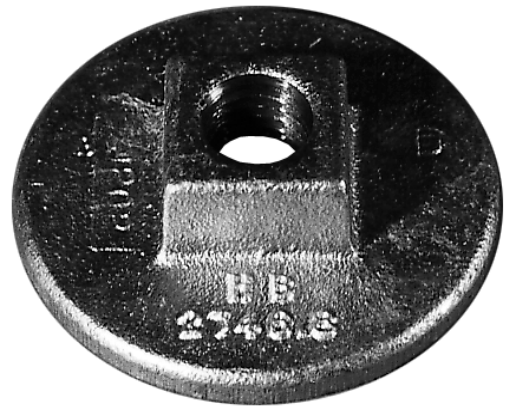
Stock No.	Bolt Dia.	Std. Pkg.	Weight 100 Pcs.
2745.5*	1/2"	100	26 lbs.
2745.6	5/8"	100	46 lbs.
2745.7	3/4"	100	49 lbs.
2745.8	7/8"	100	60 lbs.

*2" Washer

2746 Cast Washer Nut

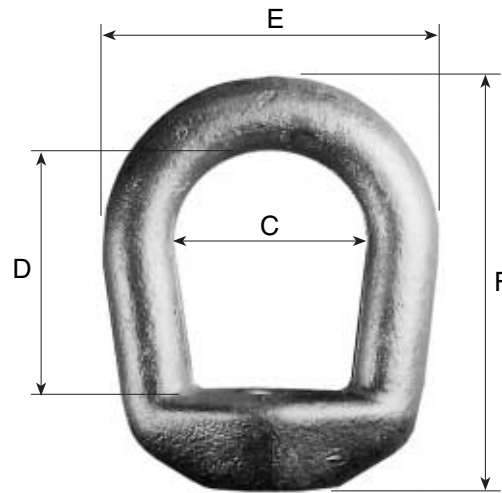
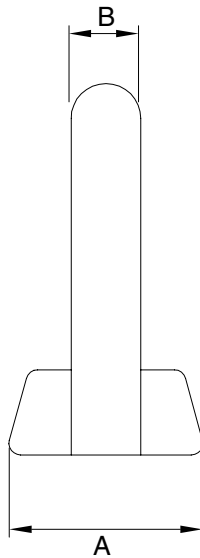
Hughes Brothers 2746 Cast Washer Nuts are cast from ASTM A536, grade 65-45-12 ductile iron.

Stock No.	Bolt Dia.	Washer Dia.	Std. Pkg.	Weight 100 Pcs.
2746.6	5/8"	2-1/2"	100	47 lbs.
2746.7	3/4"	3"	100	65 lbs.
2746.8	7/8"	3-3/4"	50	106 lbs.
2746.10	1"	3-3/4"	50	106 lbs.



Oval Eye Nuts

Hughes Brothers Oval Eye Nuts have strength and dimensions are per ANSI C135.5.



EN80 & EN100 forged



EN50, EN60 & EN70 cast

Part Number	Bolt Dia.	A	B	C	D	E	F	Ultimate Tensile Strength	Wt / lbs	Std Pkg Quantity
EN50	1/2	1-3/8	9/16	1-1/2	1-3/4	2-5/8	3	7,800	.5	100
EN60	5/8	1-3/8	9/16	1-1/2	1-3/4	2-5/8	3	13,550	.6	100
EN70	3/4	1-3/8	9/16	1-1/2	1-3/4	2-5/8	3	20,050	.6	100
EN80	7/8	1-7/8	3/4	2	2-5/8	3-1/2	4-5/16	25,400	1.5	25
EN100	1	1-7/8	3/4	2	2-5/8	3-1/2	4-5/16	33,500	1.5	25





Locknuts

Stock No.	Description	Std. Pkg.	Weight 100 Pcs.
MF50	1/2" Square Locknut	1,000	2.3 lbs.
MF60	5/8" Square Locknut	1,000	3.9 lbs.
MF70	3/4" Square Locknut	700	5.4 lbs.
MF80	7/8" Square Locknut	500	7.2 lbs.
MF100	1" Square Locknut	400	11.7 lbs.

Hex Locknuts

Stock No.	Description	Std. Pkg.	Weight 100 Pcs.
MFH50	1/2" Hex Locknut	1,000	2.1 lbs.
MFH60	5/8" Hex Locknut	1,000	2.6 lbs.
MFH70	3/4" Hex Locknut	500	4.6 lbs.
MFH120	1-1/4" Hex Locknut	300	11.7 lbs.



Split Lock Washers



Stock No.	Bolt Dia.	Std. Pkg.	Weight 100 Pcs.
SLW30	3/8"	1,000	.6 lbs.
SLW50	1/2"	1,000	2.0 lbs.
SLW60	5/8"	1,000	2.5 lbs.
SLW70	3/4"	1,000	4.2 lbs.
SLW80	7/8"	500	6.3 lbs.
SLW100	1"	500	8.9 lbs.
SLW120	1-1/4"	250	16.3 lbs.



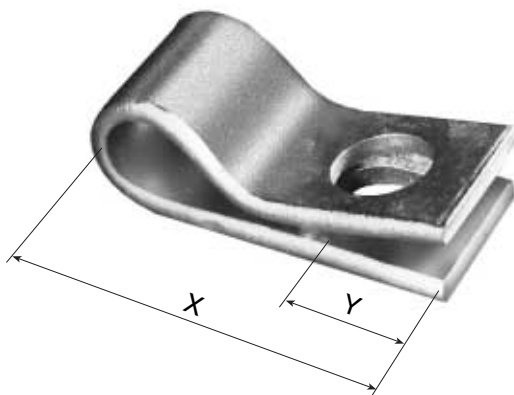
	Stock No.	Bolt Dia.	Std. Pkg.	Weight 100 Pcs.
Standard	SLW2-30	3/8"	1,000	2.6 lbs.
	SLW2-50	1/2"	1,000	2.7 lbs.
	SLW2-60	5/8"	500	4.5 lbs.
	SLW2-70	3/4"	500	7.7 lbs.
	SLW2-80	7/8"	500	10.5 lbs.
	SLW2-100	1"	250	23.2 lbs.
Heavy	SLW2-30H	3/8"	NA	2.9 lbs.
	SLW2-50H	1/2"		3.1 lbs.
	SLW2-60H	5/8"		4.9 lbs.
	SLW2-70H	3/4"		8.2 lbs.
Extra Heavy	SLW2-60EM	5/8"		5.3 lbs.
	SLW2-70EM	3/4"		8.7 lbs.
	SLW2-80EM	7/8"		12.5 lbs.
	SLW2-100EM	1"		16.2 lbs.

Double Coil Spring Lock Washers



2702 Spring Washer

Hughes Brothers 2702 Spring Washers are used in bolted wood to steel connections to keep the connections tight and static proof.



Stock No.	Bolt Size	X	Y	Hole Size	Std. Pkg.	Weight 100 Pcs.
2702.5	1/2"	2-1/2"	5/8"	9/16"	100	23 lbs.
2702.6	5/8"	3-1/2"	1"	11/16"	50	92 lbs.
2702.7	3/4"	3-1/2"	1"	13/16"	50	88 lbs.
2702.8	7/8"	3-1/2"	1"	15/16"	50	87 lbs.
2702.10	1"	3-1/2"	1"	1-1/16"	50	85 lbs.
2702.12	1-1/4"	3-3/4"	1-1/16"	1-3/8"	50	91 lbs.

PAL Locknuts



Stock No.	Bolt Dia.	Weight 100 Pcs.
PL30	3/8"	.1 lbs.
PL50	1/2"	.7 lbs.
PL60	5/8"	1.0 lbs.
PL70	3/4"	1.6 lbs.
PL80	7/8"	2.3 lbs.
PL100	1"	2.6 lbs.



Hughes Brothers, Inc.

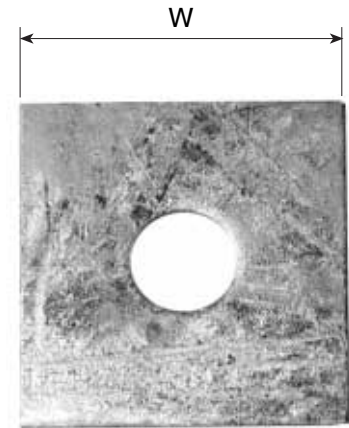
P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Square Washers

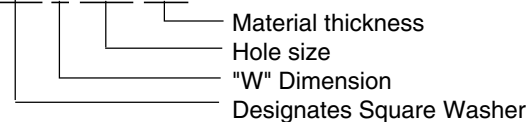
Hughes Brothers Square Washers are galvanized in accordance with ASTM A153 standards.

Stock No.	Bolt Size	Hole Size	"W"/ Thickness	Std. Pkg.	Weight 100 Pcs.
SW2-50	1/2"	9/16"	2" x 2" x 1/4"	200	25 lbs.
SW2-50-1/8	1/2"	9/16"	2" x 2" x 1/8"	200	12 lbs.
SW2-1/4-50	1/2"	9/16"	2-1/4" x 2-1/4" x 1/4"	200	34 lbs.
SW3-50	1/2"	9/16"	3" x 3" x 1/4"	100	62 lbs.
SW2-60	5/8"	11/16"	2" x 2" x 1/4"	200	25 lbs.
SW2-1/4-60	5/8"	11/16"	2-1/4" x 2-1/4" x 1/4"	200	34 lbs.
SW2-1/4-60-3/16	5/8"	11/16"	2-1/4" x 2-1/4" x 3/16"	200	26 lbs.
SW2-1/2-60	5/8"	11/16"	2-1/2" x 2-1/2" x 1/4"	200	42 lbs.
SW3-60	5/8"	11/16"	3" x 3" x 1/4"	100	63 lbs.
SW4-60	5/8"	11/16"	4" x 4" x 1/4"	50	113 lbs.
SW2-70	3/4"	13/16"	2" x 2" x 1/4"	200	25 lbs.
SW2-70-1/8	3/4"	13/16"	2" x 2" x 1/8"	200	12 lbs.
SW2-1/4-70	3/4"	13/16"	2-1/4" x 2-1/4" x 1/4"	200	34 lbs.
SW2-1/4-70-3/16	3/4"	13/16"	2-1/4" x 2-1/4" x 3/16"	200	26 lbs.
SW3-70	3/4"	13/16"	3" x 3" x 1/4"	100	63 lbs.
SW3-70-3/8	3/4"	13/16"	3" x 3" x 3/8"	100	95 lbs.
SW4-70	3/4"	13/16"	4" x 4" x 1/4"	50	113 lbs.
SW4-70-3/8	3/4"	13/16"	4" x 4" x 3/8"	50	170 lbs.
SW2-1/2-80	7/8"	15/16"	2-1/2" x 2-1/2" x 1/4"	200	63 lbs.
SW3-80	7/8"	15/16"	3" x 3" x 1/4"	100	63 lbs.
SW3-80-3/8	7/8"	15/16"	3" x 3" x 3/8"	100	95 lbs.
SW3-1/2-80-3/8	7/8"	15/16"	3-1/2" x 3-1/2" x 3/8"	100	130 lbs.
SW4-80	7/8"	15/16"	4" x 4" x 1/4"	50	113 lbs.
SW4-80-3/8	7/8"	15/16"	4" x 4" x 3/8"	50	170 lbs.
SW3-100	1"	1-1/16"	3" x 3" x 1/4"	100	63 lbs.
SW3-1/2-100	1"	1-1/16"	3-1/2" x 3-1/2" x 1/4"	100	87 lbs.
SW3-1/2-100-3/8	1"	1-1/16"	3-1/2" x 3-1/2" x 3/8"	100	130 lbs.
SW4-100	1"	1-1/16"	4" x 4" x 1/4"	50	113 lbs.
SW4-100-3/8	1"	1-1/16"	4" x 4" x 3/8"	50	170 lbs.
SW6-100-3/8	1"	1-1/16"	6" x 6" x 3/8"	25	334 lbs.
SW6-100-1/2	1"	1-1/16"	6" x 6" x 1/2"	25	445 lbs.



Ordering Example:

SW 6-100-3/8



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.



Round Washers

Hughes Brothers Round Washers are galvanized in accordance with ASTM A153 standards.

Stock No.	Bolt Size	Hole Size	Outside Dia.	Thickness	Std. Pkg.	Weight 100 Pcs.
RW1-30	3/8"	7/16"	1"	14 ga.	1,000	2 lbs.
RW2-30	3/8"	7/16"	2"	11 ga.	200	21 lbs.
RW1-3/8-50	1/2"	9/16"	1-3/8"	10 ga.	500	3 lbs.
RW1-1/2-50	1/2"	9/16"	1-1/2"	11 ga.	500	10 lbs.
RW2-50	1/2"	9/16"	2"	1/4"	200	21 lbs.
RW1-1/2-60	5/8"	11/16"	1-1/2"	11 ga.	500	10 lbs.
RW2-60	5/8"	11/16"	2"	1/4"	200	21 lbs.
RW3-60	5/8"	11/16"	3"	1/4"	100	50 lbs.
RW2-70	3/4"	13/16"	2"	1/4"	200	21 lbs.
RW3-70	3/4"	13/16"	3"	1/4"	100	50 lbs.
RW2-80	7/8"	15/16"	2"	1/4"	200	21 lbs.
RW3-80	7/8"	15/16"	3"	1/4"	100	45 lbs.
RW3-100	1"	1-1/16"	3"	1/4"	100	42 lbs.

Beveled Washers

Stock No.	Bolt Dia.	Weight 100 Pcs.
BW-1/2	1/2"	9 lbs.
BW-5/8	5/8"	13 lbs.
BW-3/4	3/4"	15 lbs.
BW-7/8	7/8"	34 lbs.



Square Curved Washers

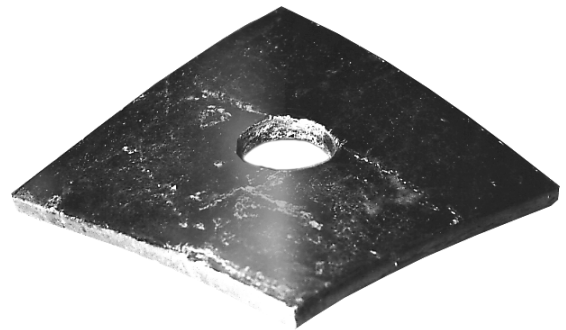


Hughes Brothers Square Curved Washers are curved edge-to-edge. Square curved washers are galvanized in accordance with ASTM A153.

Stock No.	Bolt Size	Hole Size	Outside Dimensions/ Thickness	Std. Pkg.	Weight 100 Pcs.
SCW3-60	5/8"	11/16"	3" x 3" x 1/4"	100	63 lbs.
SCW3-70	3/4"	13/16"	3" x 3" x 1/4"	100	63 lbs.
SCW4-60	5/8"	11/16"	4" x 4" x 1/4"	50	113 lbs.
SCW4-70	3/4"	13/16"	4" x 4" x 1/4"	50	113 lbs.
SCW4-80	7/8"	15/16"	4" x 4" x 1/4"	50	113 lbs.
SCW4-100	1"	1-1/16"	4" x 4" x 1/4"	50	113 lbs.

Curved Washers

Hughes Brothers Curved Washers are curved corner-to-corner to make a diamond shaped washer. Curved washers are galvanized in accordance with ASTM A153.



Stock No.	Bolt Size	Hole Size	Outside Dimensions/ Thickness	Std. Pkg.	Weight 100 Pcs.
CW60	5/8"	11/16"	4" x 4" x 1/4"	50	113 lbs.
CW70	3/4"	13/16"	4" x 4" x 1/4"	50	113 lbs.
CW80	7/8"	15/16"	4" x 4" x 1/4"	50	113 lbs.
CW100	1"	1-1/16"	4" x 4" x 1/4"	50	113 lbs.
CW80-3/8	7/8"	15/16"	4" x 4" x 3/8"	40	162 lbs.
CW100-3/8	1"	1-1/16"	4" x 4" x 3/8"	40	162 lbs.
CW80-1/2	7/8"	15/16"	4" x 4" x 1/2"	30	216 lbs.
CW100-1/2	1"	1-1/16"	4" x 4" x 1/2"	30	216 lbs.

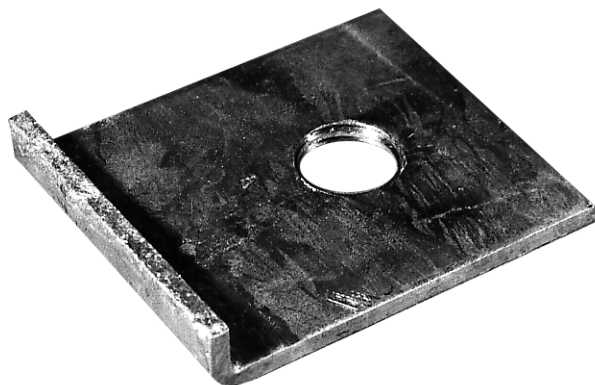


Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Tapped Flange Washers



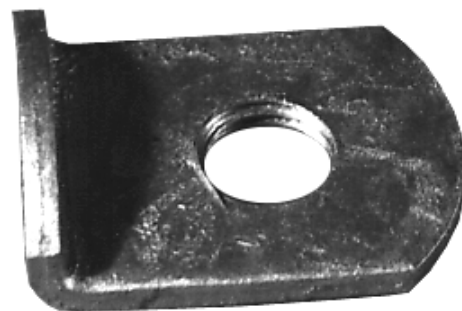
Hughes Brothers Tapped Flange Washers are used under insulator pins where crossarm braces are attached or wherever a static proof connection is required. The flange provides a means for tightening the washer using a crescent wrench.

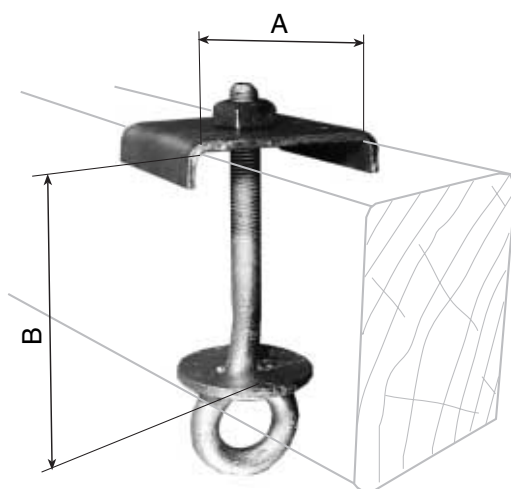
Stock No.	Bolt Size	Outside Dimensions/ Thickness	Std. Pkg.	Weight 100 Pcs.
FW50T	1/2"	3" x 3" x 3/16"	100	66 lbs.
FW60T	5/8"	3" x 3" x 3/16"	100	66 lbs.
FW70T	3/4"	3" x 3" x 3/16"	100	66 lbs.
FW80T	7/8"	3" x 3" x 3/16"	100	66 lbs.

Tapped Lip Washers

Hughes Brothers Tapped Lip Washers are used for crossarm anti-split bolts and where crossarm braces attach to the crossarm. The lip provides a means for tightening the washer with a crescent wrench. The tapped through hole and nut provide a secure double nut connection.

Stock No.	Bolt Size	Outside Dimensions/ Thickness	Std. Pkg.	Weight 100 Pcs.
LW50T	1/2"	2" x 2" x 3/16"	250	23 lbs.
LW60T	5/8"	2" x 2" x 3/16"	250	23 lbs.
LW70T	3/4"	2" x 2" x 3/16"	250	23 lbs.





2824 Eye Bolt & Saddle Assemblies

Hughes Brothers 2824 Eye Bolt & Saddle Assemblies are used for phase attachment of suspension insulators. The 3/16" x 4" saddle washer features a tapped through hole. By tapping the washer through hole, a double nut connection between the washer and eye bolt is made, ensuring tight, radio frequency static proof hardware.

Ordering Information:

Example for an Eye Bolt & Saddle Assembly:

2 8 2 4 .5 - "A" - "B"

Arm depth 4.5" to 9.5"
 Arm width 3" to 6"
 Rod size (.5) for 5/8" or (.6) for 3/4"

To Order just a Saddle Washer:

Stock No.	Tapped Hole	Through Hole
2824.1B-*	1/2"	-
2824.1C-*	5/8"	-
2824.1D-*	3/4"	-
2824.1E-*	-	13/16"
2824.1F-*	-	15/16"
2824.1G-*	7/8"	-

* Specify width of crossarm.

Example: **2824.1C-3-3/4** = 3-3/4" crossarm



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

Gimlet Point Lag Screws

For maximum holding strength, Hughes Brothers Gimlet Point Lag Screws should be installed with a wrench, rather than a hammer.

Stock No.	Item Description	Std. Pkg.	Weight 100 Pcs.
LS21-1/4	1/4" x 1-1/4"	1,000	2 lbs.
LS22-1/2	1/4" x 2-1/2"	1,000	4 lbs.
LS5/16-2	5/16" x 2"	1,000	4 lbs.
LS32-1/2	3/8" x 2-1/2"	500	8 lbs.
LS33	3/8" x 3"	500	8 lbs.
LS34	3/8" x 4"	500	10 lbs.
LS36	3/8" x 6"	250	15 lbs.
LS52	1/2" x 2"	500	11 lbs.
LS53	1/2" x 3"	250	15 lbs.
LS53-1/2	1/2" x 3-1/2"	250	20 lbs.
LS54	1/2" x 4"	250	20 lbs.
LS55	1/2" x 5"	250	25 lbs.
LS56	1/2" x 6"	200	29 lbs.
LS57	1/2" x 7"	150	40 lbs.
LS64	5/8" x 4"	150	32 lbs.
LS64-1/2	5/8" x 4-1/2"	150	35 lbs.
LS65	5/8" x 5"	150	40 lbs.



E



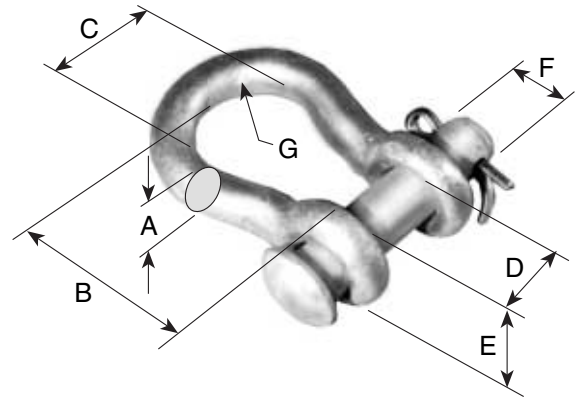
Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

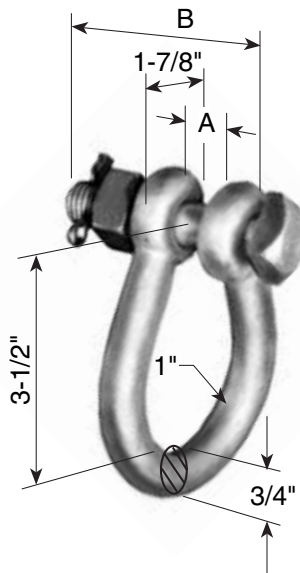
2865 Shackles

Hughes Brothers 2865 Shackles are forged from ASTM A36 steel.



Stock No.	A	B	C	D	E	F	G	Ultimate Strength	Std. Pkg.	Weight 100 Pcs.
2865.1	1/2"	2-5/16"	1-1/2"	13/16"	1-1/4"	5/8"	3/4"	18,000 lbs	50	72 lbs.
2865.2	5/8"	2-1/2"	1-3/4"	1-1/16"	1-5/8"	3/4"	7/8"	25,000 lbs	40	143 lbs.
2865.3	3/4"	3"	2"	1-1/4"	1-7/8"	7/8"	1"	35,000 lbs	20	215 lbs.
2865-B1*	1/2"	2-5/16"	1-1/2"	13/16"	1-1/4"	5/8"	3/4"	18,000 lbs	50	72 lbs.
2865-B2*	5/8"	2-1/2"	1-3/4"	1-1/16"	1-5/8"	3/4"	7/8"	25,000 lbs	40	143 lbs.
2865-B3*	3/4"	3"	2"	1-1/4"	1-7/8"	7/8"	1"	35,000 lbs	20	215 lbs.

*Includes bolt, nut and cotter instead of pin and cotter.



2866 Twisted Shackles

Hughes Brothers 2866 Twisted Shackles are forged from ASTM A36 steel. The shackle comes complete with a 3/4" bolt, nut and cotter.

Stock No.	A	B	Ultimate Strength	Std. Pkg.	Weight 100 Pcs.
2866	1/2"	3-1/2"	25,000 lbs.	25	220 lbs.
2866-A	1-1/8"	4"	25,000 lbs.	25	241 lbs.
2866-B	5/8"	3-1/2"	25,000 lbs.	25	220 lbs.



Hughes Brothers, Inc.

P.O. Box 159 / 210 N. 13th / Seward, NE 68434 / Phone (402) 643-2991 / Fax (402) 643-2149

©2001 Hughes Brothers, Inc.

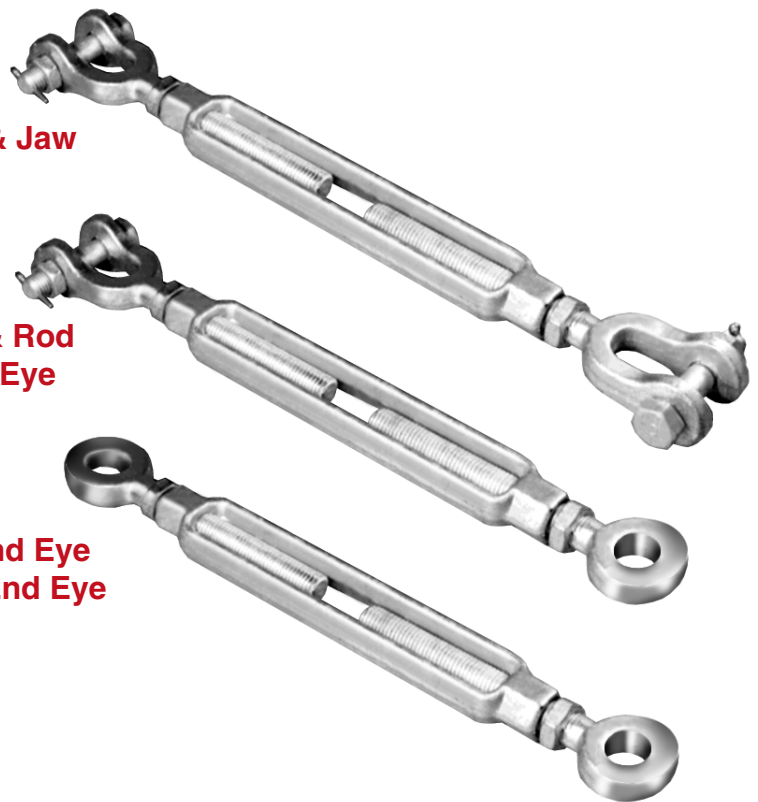
AS2545 Turnbuckles

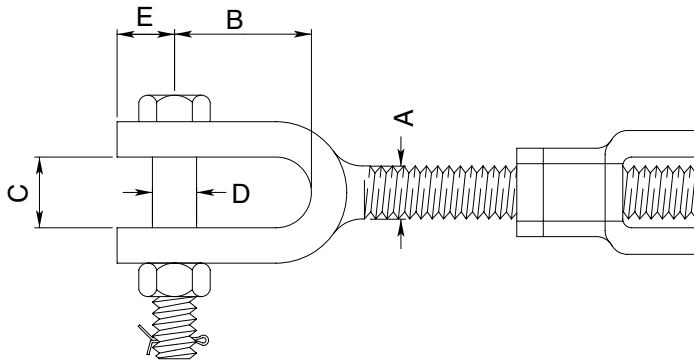
Hughes Brothers Turnbuckles are forged from carbon steel. They are normally furnished with a bolt, nut and cotter in the jaw of the turnbuckle. Rod end eyes have a hole size 1/16" larger than the rod size.

Jaw & Jaw

**Jaw & Rod
End Eye**

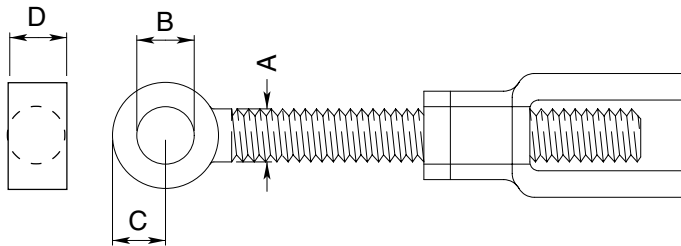
**Rod End Eye
& Rod End Eye**





Jaw Dimensions

A	B	C	D	E
3/4"	1-27/32"	15/16"	5/8"	13/16"
7/8"	1-31/32"	1-5/32"	3/4"	29/32"
1"	2-13/32"	1-3/16"	7/8"	1-1/16"

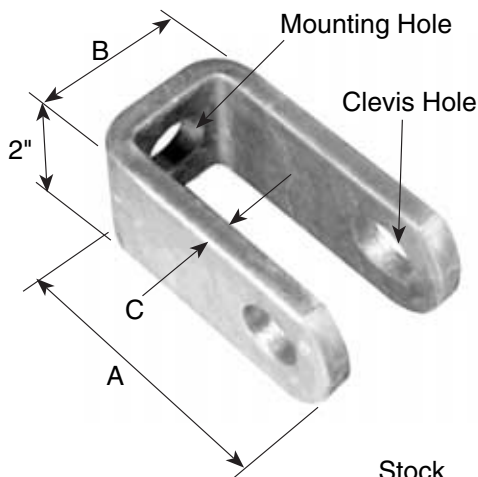


Eye Dimensions

A	B	C	D
3/4"	13/16"	27/32"	3/4"
7/8"	15/16"	15/16"	7/8"
1"	1-1/16"	1-1/16"	1"

Stock No.	size	Description	CC Length @ Midposition	Ultimate Strength	Weight 100 Pcs.	Min Length	Max Length
AS2545-Z	3/4" x 6"	Jaw & Jaw	18-1/2"	28,000	450 lbs.	15-1/2"	21-1/2"
AS2545-BB		Jaw & Rod End	18"	28,000	450 lbs.	15"	21"
AS2545-A	3/4" x 9"	Jaw & Jaw	22"	28,000	525 lbs.	17-1/2"	26-1/2"
AS2545-B		Jaw & Rod End	22"	28,000	525 lbs.	17-1/2"	26-1/2"
AS2545-X		Rod End & Rod End	17-1/2"	28,000	525 lbs.	13"	22"
AS2545-FF	3/4" x 12"	Jaw & Jaw	27"	28,000	600 lbs.	21"	33"
AS2545-BBB		Jaw & Rod End	25"	28,000	600 lbs.	19"	31"
AS2545-T	7/8" x 6"	Jaw & Jaw	20-1/2"	35,000	600 lbs.	17-1/2"	23-1/2"
AS2545-TT		Jaw & Rod End	20-1/2"	35,000	600 lbs.	17-1/2"	23-1/2"
AS2545-C	7/8" x 12"	Jaw & Jaw	29"	35,000	850 lbs.	23"	35"
AS2545-D		Jaw & Rod End	27"	35,000	850 lbs.	21"	33"
AS2545-Y		Rod End & Rod End	27"	35,000	850 lbs.	21"	33"
AS2545-E	1" x 12"	Jaw & Jaw	30"	45,000	1200 lbs.	24"	36"
AS2545-F		Jaw & Rod End	30"	45,000	1200 lbs.	24"	36"





AS2277 Clevis

The Hughes Brothers AS2277 Clevis allows for a simple method for making a jaw or clevis connection at the pole. The clevis is used with standard machine bolts, sold separately.

Stock No.	A	B	C	Clevis Hole	Mtg. Hole	Ultimate Tensile* Strength	Std. Pkg.	Weight 100 Pcs.
AS2277	4"	2-1/4"	3/8"	15/16"	15/16"	25,000 lbs.	30	172 lbs.
AS2277-A	4"	2-1/4"	3/8"	13/16"	13/16"	18,350 lbs.	30	177 lbs.
AS2277-B	4"	2-1/4"	3/8"	1-1/16"	13/16"	18,350 lbs.	30	170 lbs.
AS2277-F	4-3/4"	1-13/16"	1/4"	13/16"	11/16"	12,400 lbs.	30	140 lbs.
AS2277-G	4-3/4"	2"	1/4"	13/16"	13/16"	18,350 lbs.	30	144 lbs.
AS2277-H	6-3/4"	2"	1/4"	13/16"	13/16"	18,350 lbs.	30	196 lbs.
AS2277-J	4-1/2"	2-1/4"	3/8"	1"	15/16"	25,400 lbs.	30	198 lbs.

* Controlled by bolt strength.

