

The Vimco ferrule and coil inserts on the following pages are used in concrete construction for several applications:

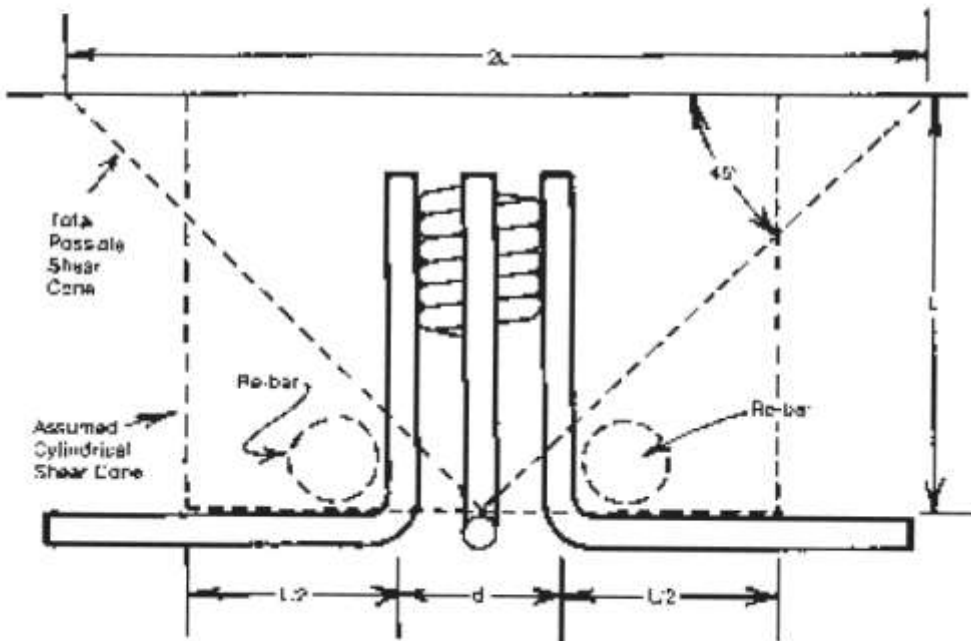
Application	Recommended Safety Factor
1. Permanent fastening devices	Architecturally Recommended Safety Factor
2. In-shop handling devices in precast yards	4.0 to 1.0 Safety Factor
3. Lifting inserts in precast panel erection	4.0 to 1.0 Safety Factor
4. Temporary form tie-back device	2.0 to 1.0 Safety Factor

Each of these applications are unique and demand a particular safety factor treatment.

All recommended working loads stated with a corresponding safety factor will only be applicable if:

1. Good, unworn bolts are used with proper insert penetration. Bolts must not "bottom out," but must be able to be tightened securely.
2. A full shear cone is permitted to be developed for each insert.
3. A straight tension force is applied.

Special edge conditions, corner conditions, thin slab conditions, combined stress loading and unusual impact conditions necessitate individual analysis and actual performance test. Vimco has complete laboratory facilities to test every unusual condition arising.



SHEAR CONE

The ultimate capacity of an insert in concrete may be predicted by the following formula:

Ultimate Capacity =

$$\sqrt{16 \text{ Con. Stgh. } [\pi (L + d) L]}$$

In order for the above formulation to come into play the insert must have sufficient mechanical strength to transmit the load to the concrete.

It is obvious that the ultimate capacity of the insert in concrete is proportional to the square root of the concrete strength and also directly proportional to the square of the insert depth.

CAUTION: Even though the above formulation is useful in predicting capacities, actual tests are the final proof of capacity.

NOTE: Wherever possible, an insert should be captured by reinforcing steel to enhance the integrity of the application.

TO ORDER: give diameter x length, (If relevant), item, and safe working load. (Add any special requirements.)

Example: 3/4" diameter x 6" Coil Loops, 3,750 lbs., electro zinc plated.

NOTE: All ferrule inserts are furnished as a standard with closed ferrules. Open ferrules available on special order.

FERRULE INSERTS



PLAIN FERRULE INSERT

N.C. Bolt Dia.	Threads per Inch	Bolt Length Accepted	C	D	Price
1/4"	20	3/4"	3/16"	1 1/4"	323.00
3/8"	16	3/4"	3/16"	1 1/4"	327.00
1/2"	13	1"	1/8"	1 3/8"	402.00
5/8"	11	1 1/8"	7/16"	1 3/4"	623.00
3/4"	10	1 1/2"	1"	1 3/4"	762.00
1"	8	1 3/4"	1 1/8"	1 3/4"	1,331.00
1 1/4"	7	1 3/4"	1 1/8"	2 1/2"	3,838.00



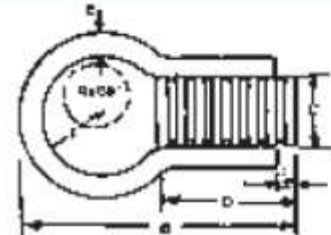
Safe working load at 4.0 to 1.0 safety factor

FERRULE THIN SLAB INSERT

N.C. Bolt Dia.	Dimensions			Safe Load Tension*	Concrete Strength P.S.I.	Price
	C	D	E			
1/4"	3/16"	1 1/4"	.225	300 lbs.	2,000	725.00
3/8"	3/16"	1 1/4"	.225	300 lbs.	2,000	800.00
1/2"	1/16"	1 3/8"	.225	500 lbs.	2,000	873.00
5/8"	7/16"	1 3/8"	.306	750 lbs.	2,000	1,055.00
3/4"	1"	1 3/8"	.306	750 lbs.	2,000	1,174.00
1"	1 3/8"	1 3/8"	.306	750 lbs.	2,000	1,962.00

FERRULE ROUND LOOP INSERT

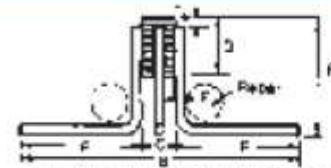
N.C. Bolt Dia.	Dimensions					Safe Load Tension*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
	B	C	D	E	F				
1/4"	2 3/4"	3/4"	1 1/4"	.243	1/2"	500 lbs.	2,000	3,000 lbs.	589.00
3/8"	2 3/4"	3/4"	1 1/4"	.243	1/2"	1,000 lbs.	2,000	3,000 lbs.	640.00
1/2"	2 3/4"	1 1/8"	1 3/8"	.243	1/2"	1,300 lbs.	2,000	6,000 lbs.	694.00
5/8"	3 1/4"	7/8"	1 1/2"	.262	3/4"	1,700 lbs.	2,000	13,500 lbs.	909.00
3/4"	3 1/4"	1"	1 1/2"	.262	3/4"	1,700 lbs.	2,000	13,500 lbs.	1,011.00
1"	6"	1 3/8"	1 1/2"	.262	1 1/4"	2,600 lbs.	2,000	13,500 lbs.	2,592.00



Safe working load at 4.0 to 1.0 safety factor

FERRULE SPIDER INSERT

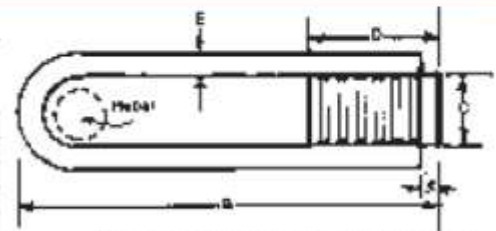
N.C. Bolt Dia.	Dimensions					Safe Load Tension*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
	B	C	D	E	F				
3/4"	7 1/8"	1"	1 1/2"	.306	3"	2,250 lbs.	2,000	27,000 lbs.	1,883.00
1"	9 1/8"	1 3/8"	1 1/2"	.306	4"	3,000 lbs.	2,000	27,000 lbs.	2,697.00



Safe working load at 4.0 to 1.0 safety factor

FERRULE LOOP INSERT

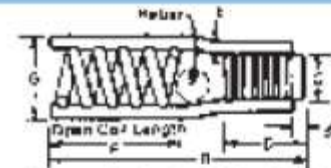
N.C. Bolt Dia.	Nominal Length	Dimensions				Safe Load Tension*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
		B	C	D	E				
1/2"	4"	4 1/8"	1 1/8"	1 3/8"	.225	2,250 lbs.	2,000	9,000 lbs.	783.00
1/2"	6"	6 1/8"	1 1/8"	1 3/8"	.225	2,250 lbs.	2,000	9,000 lbs.	801.00
3/4"	6"	6 1/8"	1"	1 3/8"	.306	3,750 lbs.	2,000	13,500 lbs.	1,080.00
3/4"	8"	8 1/8"	1"	1 3/8"	.306	3,750 lbs.	2,000	13,500 lbs.	1,157.00
1"	6"	6 1/8"	1 3/8"	1 3/8"	.375	4,500 lbs.	2,000	18,000 lbs.	1,901.00
1"	8"	8 1/8"	1 3/8"	1 3/8"	.375	4,500 lbs.	2,000	18,000 lbs.	1,980.00



Safe working load at 4.0 to 1.0 safety factor

FERRULE PLUS OPEN COIL INSERT

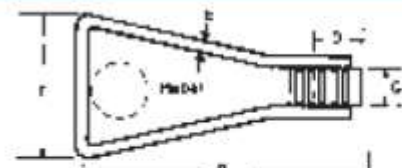
N.C. Bolt Dia.	Nominal Length	Dimensions					Safe Load Tension*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price	
		B	C	D	E	F					G
3/4"	4 1/2"	4 1/2"	1"	1 1/2"	.375	2 1/2"	1 7/8"	4,500 lbs.	2,000	18,000 lbs.	1,591.00
1"	5 1/2"	5 1/2"	1 3/8"	1 1/2"	.440	2 1/4"	2 1/8"	6,000 lbs.	2,000	24,000 lbs.	2,878.00
1 1/4"	7 1/2"	7 1/2"	1 3/8"	2 1/2"	.440	3"	2 3/4"	13,500 lbs.	2,000	54,000 lbs.	7,086.00



Safe working load at 4.0 to 1.0 safety factor

SINGLE FLARED FERRULE LOOP INSERT

N.C. Bolt Dia.	Nominal Length	Dimensions					Safe Load Tension*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
		B	C	D	E	Approx. F				
1/2"	4"	4 1/8"	1 1/8"	1 3/8"	.225	3"	2,250 lbs.	2,000	9,000 lbs.	684.00
1/2"	6"	6 1/8"	1 1/8"	1 3/8"	.225	3 1/2"	2,250 lbs.	2,000	9,000 lbs.	909.00
3/4"	6"	6 1/8"	1"	1 3/8"	.306	4 1/2"	3,750 lbs.	2,000	13,500 lbs.	1,020.00
3/4"	9"	9 1/8"	1"	1 3/8"	.306	5 1/2"	3,750 lbs.	2,000	13,500 lbs.	1,115.00



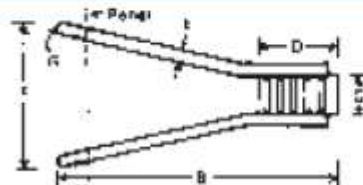
Safe working load at 4.0 to 1.0 safety factor

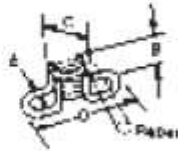
DOUBLE FLARED FERRULE LOOP INSERT

N.C. Bolt Dia.	Nominal Length	Dimensions					Safe Load Tension*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price	
		B	C	D	E	Approx. F					Approx. G
3/4"	9"	9 1/8"	1"	1 1/2"	.375	5 1/2"	5 1/2"	9,000 lbs.	2,000	36,000 lbs.	3,120.00
1"	12"	12 1/8"	1 3/8"	1 1/2"	.375	5 3/4"	5 3/4"	9,000 lbs.	2,000	36,000 lbs.	3,760.00

Safe working load 4.0 to 1.0 safety factor.

Note: Wherever possible insert should be captured with reinforcing steel.

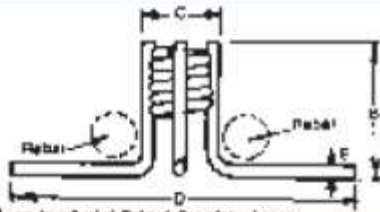




Safe working load at 4.0 to 1.0 safety factor

COIL THIN SLAB INSERT

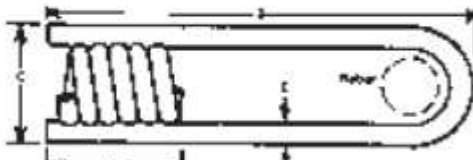
Dia.	Dimensions				Safe Working Load*	Concrete Strength P.S.I.	Price
	B	C	D	E			
1/2"	2 1/2"	1 3/4"	5"	.225	500 lbs.	2,000	739.00
3/4"	2 1/2"	1 3/4"	5 1/2"	.306	1,500 lbs.	2,000	834.00
1"	2 1/2"	2"	6"	.306	1,500 lbs.	2,000	1,253.00



Safe working load at 4.0 to 1.0 safety factor.

COIL SPIDER INSERT

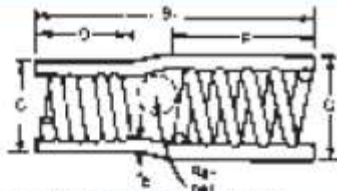
Dia.	Dimensions				Safe Working Load*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
	B	C	D	E				
3/4"	3"	1 3/4"	7 3/4"	.306	2,250 lbs.	2,000	27,000 lbs.	1,174.00
1"	4"	2"	9 3/4"	.306	2,500 lbs.	2,000	27,000 lbs.	1,486.00
1 1/4"	4"	2 1/4"	9 3/4"	.306	3,000 lbs.	2,000	27,000 lbs.	1,823.00
1 1/2"	4"	2 1/2"	9 3/4"	.306	3,500 lbs.	2,000	27,000 lbs.	1,850.00



Safe working load at 4.0 to 1.0 safety factor

COIL LOOP INSERT

Dia.	Dimensions				Safe Working Load*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
	B	C	D	E				
1/2"	4"	1 3/4"	1 3/4"	.225	2,250 lbs.	2,000	9,000 lbs.	347.00
1/2"	6"	1 3/4"	1 3/4"	.225	2,250 lbs.	2,000	9,000 lbs.	430.00
3/4"	6"	1 3/4"	1 3/4"	.306	3,750 lbs.	2,000	13,500 lbs.	549.00
3/4"	8"	1 3/4"	1 3/4"	.306	3,750 lbs.	2,000	13,500 lbs.	650.00
1"	6"	2"	2"	.375	4,500 lbs.	2,000	18,000 lbs.	857.00
1"	8"	2"	2"	.375	4,500 lbs.	2,000	18,000 lbs.	959.00

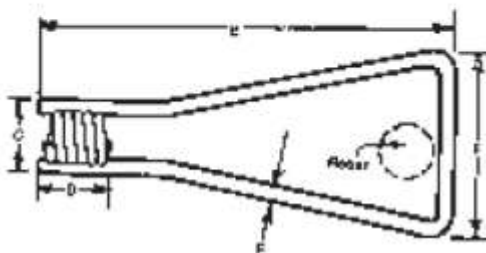


Safe working load at 4.0 to 1.0 safety factor

COIL PLUS OPEN COIL INSERT

* Four Strut.

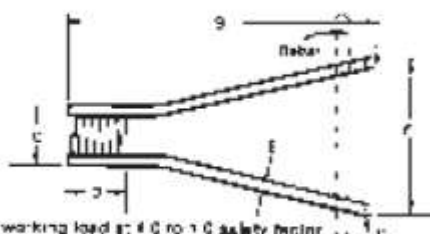
Dia.	Dimensions						Safe Working Load*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
	B	C	D	E	F	G				
3/4"	4 1/2"	1 3/4"	1 3/4"	.375	2 1/4"	1 1/8"	4,500 lbs.	2,000	18,000 lbs.	1,048.00
1"	5 1/2"	2 1/4"	2"	.440	2 1/4"	2 7/8"	6,000 lbs.	2,000	24,000 lbs.	1,982.00
1 1/4"	7 1/2"	2 3/4"	2"	.440	3"	2 1/4"	13,500 lbs.	2,000	54,000 lbs.	3,733.00



Safe working load at 4.0 to 1.0 safety factor

SINGLE FLARED COIL LOOP INSERTS

Dia.	Dimensions					Safe Working Load*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
	B	C	D	E	Approx. F				
1/2"	4"	1 3/4"	1 3/4"	.225	3"	2,250 lbs.	2,000	9,000 lbs.	480.00
1/2"	6"	1 3/4"	1 3/4"	.225	3 1/2"	2,250 lbs.	2,000	9,000 lbs.	554.00
3/4"	6"	1 3/4"	1 3/4"	.306	4 1/2"	3,750 lbs.	2,000	13,500 lbs.	837.00
3/4"	9"	1 3/4"	1 3/4"	.306	5 1/2"	3,750 lbs.	2,000	13,500 lbs.	1,115.00
3/4"	12"	1 3/4"	1 3/4"	.306	5 1/2"	3,750 lbs.	2,000	13,500 lbs.	1,157.00
3/4" (H)	9"	1 3/4"	1 3/4"	.375	5 1/2"	4,500 lbs.	2,000	18,000 lbs.	1,174.00
3/4" (H)	12"	1 3/4"	1 3/4"	.375	5 1/2"	4,500 lbs.	2,000	18,000 lbs.	1,331.00
1"	9"	2"	2"	.375	5 1/2"	4,500 lbs.	2,000	18,000 lbs.	1,174.00
1"	12"	2"	2"	.375	5 1/2"	4,500 lbs.	2,000	18,000 lbs.	1,331.00
1" (H)	9"	2 1/4"	2"	.440	5 3/4"	6,750 lbs.	2,000	27,000 lbs.	1,755.00
1" (H)	12"	2 1/4"	2"	.440	5 3/4"	6,750 lbs.	2,000	27,000 lbs.	1,900.00
1 1/4"	12"	2 3/4"	2"	.375	5 1/2"	4,500 lbs.	2,000	18,000 lbs.	1,823.00
1 1/4" (H)	12"	2 1/2"	2"	.440	5 3/4"	6,750 lbs.	2,000	27,000 lbs.	1,800.00
1 1/2"	12"	2 3/4"	2 3/4"	.440	5 3/4"	6,750 lbs.	2,000	27,000 lbs.	2,099.00



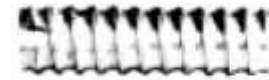
Safe working load at 4.0 to 1.0 safety factor

DOUBLE FLARED COIL LOOP INSERTS

Dia.	Dimensions					Safe Working Load*	Concrete Strength P.S.I.	Ultimate Mechanical Strength	Price
	B	C	D	E	Approx. F-G				
1"	12"	2"	2"	.375	5 1/2"	9,000 lbs.	2,000	36,000 lbs.	2,938.00
1 1/4"	12"	2 3/4"	2"	.375	5 1/2"	9,000 lbs.	2,000	36,000 lbs.	3,043.00
1 1/2"	12"	2 1/2"	2 3/4"	.375	5 1/2"	9,000 lbs.	2,000	36,000 lbs.	3,300.00
1" (H)	12"	2 1/4"	2"	.440	5 3/4"	13,500 lbs.	2,000	54,000 lbs.	3,665.00
1 1/4" (H)	12"	2 1/2"	2"	.440	5 3/4"	13,500 lbs.	2,000	54,000 lbs.	3,994.00
1 1/2" (H)	12"	2 3/4"	2 3/4"	.440	5 3/4"	13,500 lbs.	2,000	54,000 lbs.	4,148.00

SLOTTED SETTING STUD – STEEL

Dia. x length	Price	Wt. lbs.
½" x 2½"	240.00	17
¾" x 3"	346.00	40
1" x 3½"	448.00	70
1¼" x 3½"	501.00	113
1½" x 4"	560.00	165



*Available in plastic — P.O.A.

ETHAFOAM SETTING PLUG

Dia. x 4"	Price	Wt. lbs.
½"	344.00	1
¾"	368.00	1
1"	392.00	1
1¼"	416.00	1
1½"	440.00	1



PLASTIC SETTING CAP

Dia. for Ferrules	Price	Wt. lbs.
¾"	23.00	1
½"	30.00	1
¾"	37.00	1
¾"	44.00	1
1"	51.00	1
1¼"	58.00	1



LIFTING EYE BOLTS

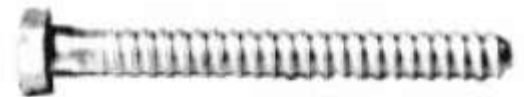
Dia. for Coil inserts	SWL @ 4.0-1.0" Straight Tension	Price	Wt. lbs.
¾" x 3"		8,000.00	2
1" x 3½"		12,400.00	3
1¼" x 3½"		20,000.00	5
1½" x 6"		28,000.00	8

Note: Proper length of all eyebolts and lifting bolts is required to prevent "bottoming," which will prevent tightening. A tight connection is required to prevent hardware slippage, bolt bending and spalling of concrete.



LIFTING COIL BOLT

Dia. for Coil inserts	Price	Wt. lbs.
¾" x 3"	1,157.00	43
1" x 3½"	3,309.00	110
1¼" x 3½"	5,284.00	195
1½" x 6"	15,000.00	530



SWIVEL LIFTING PLATE

Diameter x "B"	Price	Wt. lbs.
¾" x 1½"	45,000.00	4
1" x 1½"	46,000.00	5
1½" x 2½"	130,000.00	10
1" x 2" (DUO)	POA	7
1¼" x 2¼" (DUO)	POA	16
1½" x 2½" (DUO)	POA	16



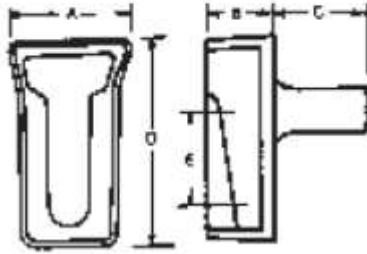
Std. ¾", 1" & 1½"



Duo. 1", 1¼" & 1½"



MALLEABLE CAST INSERTS



SHELF ANGLE INSERT*



LONG SHELF ANGLE INSERT*



EXAMPLE

N.C. Bolt Dia.	Dimensions					Price	Wt. lbs.
	A	B	C	D	E		
1/2"	2 1/16	1 1/32	1 15/16	3 3/8	1 3/8	2,400.00	100
3/4"	2 5/16	1 3/16	2 1/2	3 7/8	1 3/4	2,600.00	108
3/4" L	2 5/16	1 1/4	2 3/8	5 1/2	3	4,800.00	229



ASKEW HEAD BOLT*

Diameter Length	5/8"		3/4"	
	Price	Wt. lbs.	Price	Wt. lbs.
1 1/2"	1,100.00	22	1,253.00	25
2"	1,200.00	28	1,365.00	31
2 1/2"	1,350.00	34	1,504.00	37
3"	1,450.00	40	2,489.00	43

*All N.C. Threaded



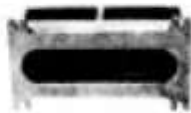
ROUND WASHER

Round Washer	168.00	8	168.00	10
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SQUARE NUT*

Square Nut	480.00	10	513.00	12
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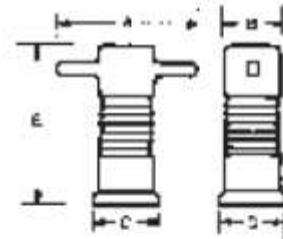


ADJUSTABLE INSERT*

Price	Wt. lbs.
3,993.00	180

N.C. Bolt Dia.	Dimensions					Price	Wt. lbs.
	A	B	C	D	E		
1/2"	2 3/4	3/8	1 1/8	1 3/4	2 1/2	2,116.00	35
5/8"	3	1 1/8	1 3/8	2	3 1/2	2,153.00	60
3/4"	3	1 1/8	1 3/8	2	3 1/2	2,308.00	60
7/8"	3 1/2	1 3/8	1 1/2	2 1/2	3	2,946.00	90
1"	3 1/2	1 3/8	1 1/2	2 1/2	3	3,120.00	90

THREADED INSERT*



***NOTE:** Recommended working load for all bolts used as permanent structural connections is based on AISC Specification 1.5.2. All bolts used in bearing type connections with an applied shear load shall have a working load based on 10,000 PSI on the root area of the threaded portion: 5/8" diameter bolts = 2,020 LBS., 3/4" diameter bolts = 3,020 LBS.