BONLE ELECTRIC

百纳（福州）进出口有限公司

BONLE (FUZHOU) INTERNATIONAL CO.,LTD.



www.bonle.com

Product Catalogue

Electrical Power Fittings



BONLE GROUP

- BONLE (FUZHOU) INTERNATIONAL CO., LTD.
- BONLE (FUJIAN) ELECTRIC MANUFACTURING CO., LTD.
- BONLE (MINQING) HIGH VOLTAGE PORCELAIN INSULATOR CO., LTD.
- BONLE (FUZHOU) HIGH VOLTAGE PORCELAIN INSULATOR CO.,
- BONLE (FUZHOU) ELECTRICAL APPLIANCES CO., LTD.
- BONLE(MINQING) HARDWARE PRODUCTS FACTORY
- BONLE(JIANGXI) CERAMIC CO., LTD.
- BONLE (FUZHOU) ELECTRICAL APPARATUS CO.,LTD.

Bonle Group (ISO9001:2008) Brief

The Bonle Group was established in 1992, and for the past 21 years we have been supplying various products to overseas customers for the electrical engineering industry, including, but not limited to, insulators, power fittings (spindles, cross arms, strain clamps), fuse cut outs, arrestors , and conductors.



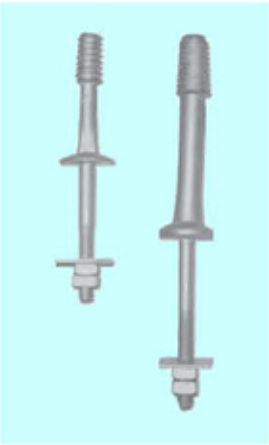
The electrical insulation products manufactured by the Bonle Group have been certified to KEMA, VDE, CE, SGS and TR standards of the China National centre for quality assurance and performance testing of insulators and surge arresters.

We got the ISO9001 certification in the year of 2004.We have been focusing on international tenders since 2005, for our overseas agents,the main of them are including Ethiopia, Nigeria, Libya, Egypt and Italy etc. At present, most of them are through the agents to supply the goods. and so far we have undertaken a number of national power distribution projects in Africa, where we have worked on large scale electrification projects, with the value of our successful tenders exceeding US$40 million. The National Electrical Power Companies of Nigeria and Ethiopia have listed the parameters of many products from our company as the tenders' parameters.





Insulator Pins For Wooden & Steel Cross Arms



Material: Drop-Forged Steel as per either ASTM A575 OR ASTM A576
NUT-as per ANSI C135.1

Strength: Cantilever Test : according to figure-IV, table-C & ANSI C135.17
Torsion Test: 1.728 kg-m of torque with tightening rotation of 180^0 . Tensile Test: after applying 1.728 kg-m of torque, it has to withstand minimum tensile load of 1,363.64 kg.

FINISH: Hot-Dip Galvanized as per ASTM A153

Packaging: 50 pcs.

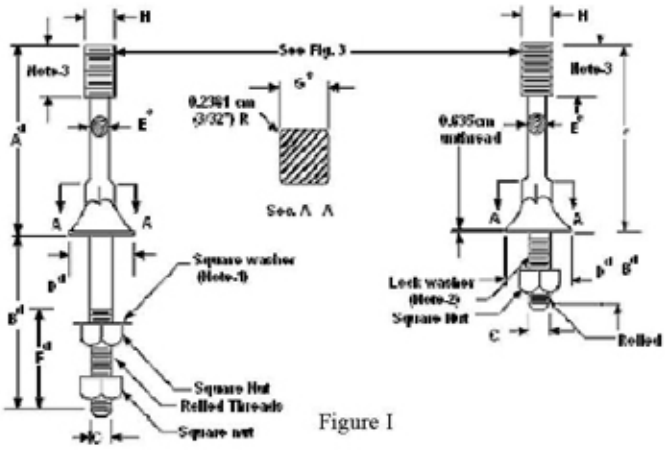


Figure I

Note 1: 5.715 cm (2-1/4")x0.47625 (3/16") square washer with 1.75 cm (11/16") hole

Note 2: galvanized extra duty helical carbon steel spring lock washer as per ANSI B 18.21.1

Note 3: length of lead thread shall be 4.445 cm^c (1-3/4")

allowable variations

a= 0.03968, b=0.07937 c= 0.15875, d=0.3175, x=0

(1/64") (1/32") (1/16") (1/8") (0")

a single letter subscript indicates that the plus and minus values are the same; for example, $f^d = f \pm 0.3175$ cm (1/8")

Dimension Of Insulator Pins For Wood Or Steel Cross Arms In Cm (Inch)

Item No.	Height above arm.	Length of shank	Nominal shank Diameter	Diameter of Base	Diameter of Shaft	Length of Thread	Square size	Diameter Lead Thread	Cross arm Type	Pin type
	A	B	C	D	E	F	G	H		
BN-11	(5) 12.7	(5-3/4) 14.6	(5/8) 1.5875	(2) 5.08	(5/8) 1.5875	(2-3/4) 6.985	(3/4) 1.905	(1) 2.54	Wood	Long Shank
BN-941	(5) 12.7	(1-1/2) 3.81	(5/8) 1.5875	(2) 5.08	(5/8) 1.5875	(1-1/4) 3.175	(3/4) 1.905	(1) 2.54	Steel	Short Shank
BN-1221	(10) 25.4	(7) 17.78	(3/4) 1.905	(3-1/2) 8.89	(1-1/8) 2.8575	(3) 7.62	N/A	(1-3/8) 3.4925	Wood	Long Shank
BN-1231	(10) 25.4	(1-3/4) 4.45	(3/4) 1.905	(3-1/2) 8.89	(1-1/8) 2.8575	(1-1/2) 3.81	N/A	(1-3/8) 3.4925	Steel	Short Shank

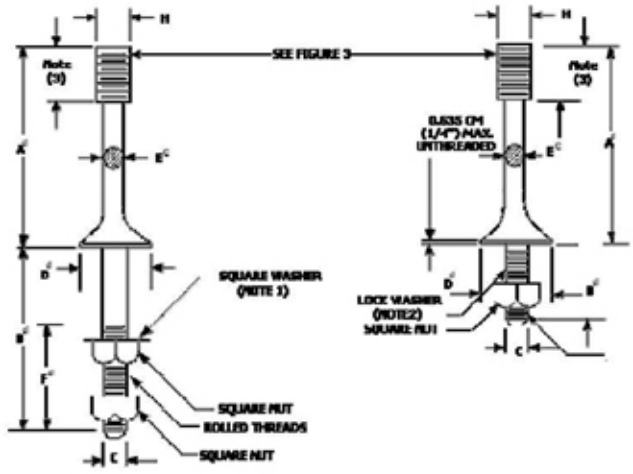


Figure II

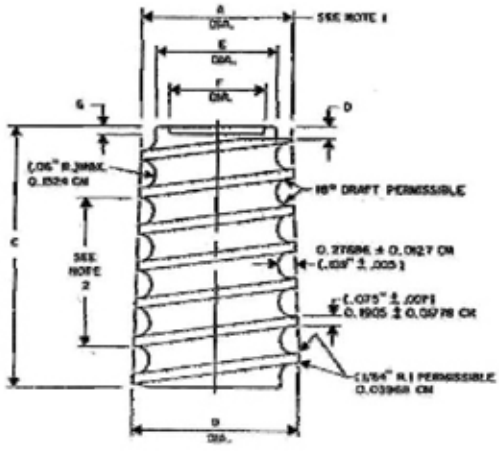


Figure III

Note 1: 7.62 cm (3")x 0.47625 cm (3/16") square washer with 2.06375 (13/16") hole.

Note 2: galvanized extra duty helical carbon steel spring lock washer conforming requirements of ANSI B18.21.1.

Note 3: length of lead thread shall be 5.3975 cm^{c} (2-1/8")

allowable variations:

a= 0.03968, b=0.07937 c= 0.15875 d=0.3175, x=0
(1/64") (1/32") (1/16") (1/8") (0")

a single letter subscript indicates that the plus and minus values are the same; for example, f^{d} = f ± 0.3175 cm (1/8")

Note 1: this is the diameter measure between the tapered lines projected along the outside surface of the threads at top extremity of the lead head. taper equals 0.15875(1/16") in diameter per cm (inch) in length.

Note 2: four (4) threads per 2.54 cm(1")

TABLE-B

Item No.	Unit	DIMENTION OF LEAD THREADS							
		LEAD HEAD	A	B	C	D	E	F	G
BN-11 & 941	CM INCHES	2.54 1	2.5654 1.010	2.84226 1.119	4.445 1.750	0.19843 5/64	2.06375 13/16	1.5875 5/8	0.11906 3/64
BN-1221 & BN-1231	CM INCHES	3.4925 1-3/8	3.5179 1.385	3.85572 1.518	5.4102 1.518	0.35718 9/64	2.8575 1-1/8	1.905 3/4	0.27781 7/64
ALLOWABLE VARIATIONS	CM		+0.0254 -0.0127	+0.0508 -0.0254	+0.1524 -0.1524				
	INCHES		+0.010 -0.005	+0.020 -0.010	+0.06 -0.06				

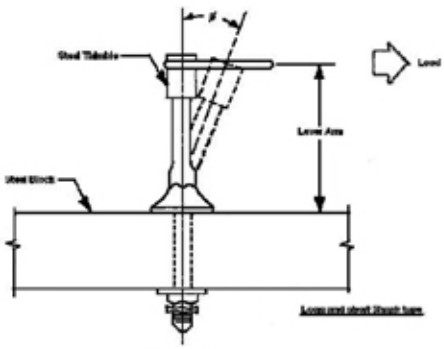


Figure IV

Note 1: the angle of deflection ø shall be measured as the rotation of the steel thimble in the plane defined by the axis of the thimble and load.

note 2: the load shall be applied at a point equal in height to the layer arm (pin height above arm), at a rate of approximately 1.016 cm (0.4") per minute, through a steel thimble screwed to the lead head.

Table C

Minimum Cantilever Test Load at 10°

Item No.	Minimum Load (kgs)	Minimum Load (lbs)
BN-11	455	1000
BN-941	455	1000
BN-1221	955	2100
BN-1231	955	2100

Pole Top Pin



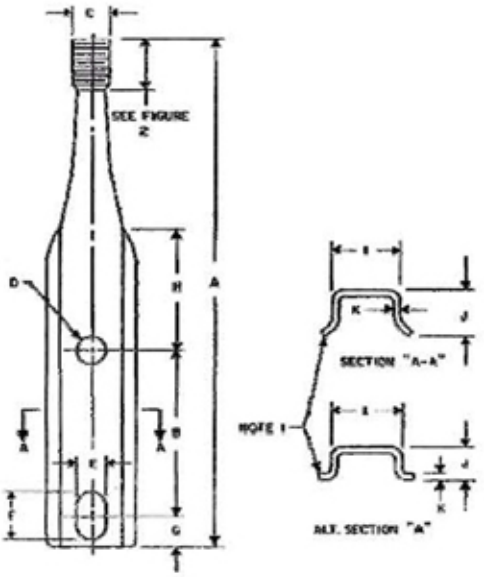
Material : Pins: Iron or Steel as per ANSI C135.22 Lead Thread: Lead Alloy

Strength : Pins: Cantilever Test : according to figure-III, table-1 & ANSI C135.17
Torsion Test: 1.728 kg-m of torque with tightening rotation of 180 degree.
Tensile Test: after applying 1.728 kg-m of torque, it will withstand min. tensile load of 1,363.64 kg.

Thread : Lead Thread made of Lead Alloy.

Finish : Both lead thread and pin shall be hot-dip galvanized as per ASTM A153, shall bear the manufacturer symbol/identification mark

Packaging: 50 pcs.



Note 1: channel legs may be flanged or otherwise formed to meet strength requirement.

Note 2: this dimension may be varied to provide required strength.

Note 3: this dimension shall not be less than 10.16 cm (4")

Figure I

Table A

Dimension of Poletop Pin in CM (inches)

	dimension of pole top pin:cm(inch)										
ITEM No	A	B	C	D	E	F	G	H	I	J	K
BN-21	50.8 (20)	20.32 (8)	2.54 (1)	1.74625 (11/16)	1.74625 (11/16)	3.175 (1-1/4)	2.54 (1)	SEE NOTE-3	4.7625 (1-7/8)	SEE NOTE-2	SEE NOTE-2
BN-1281	50.8 (20)	20.32 (8)	3.4925 (1-3/8)	1.74625 (11/16)	1.74625 (11/16)	3.175 (1-1/4)	2.54 (1)	SEE NOTE-3	4.7625 (1-7/8)	SEE NOTE-2	SEE NOTE-2
ALLOWABLE											
+CM	0.625	0.15875	SEE	0.07937	0.07937	0.15875	N/A	N/A	0.15875	N/A	N/A
-CM	0.3175	0.15875	FIG-2	0	0	0.15875	N/A	N/A	0.15875	N/A	N/A
+INCHES	1/4	1/16	SEE	1/32	1/32	1/16	N/A	N/A	1/16	N/A	N/A
-INCHES	1/8	1/16	FIG-2	0	0	1/16	N/A	N/A	1/16	N/A	N/A

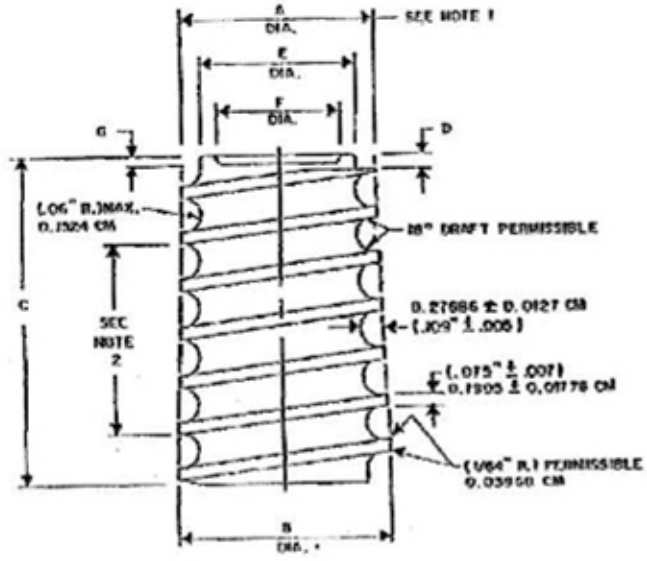


Figure II

Note 1: this is the diameter measured between the tapered lines projected along the outside surface of the threads at top extremity of the lead head. taper equals 0.15875(1/16") in diameter per cm (inch) in length.

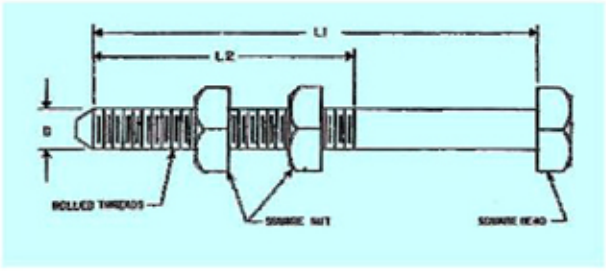
Note 2: four (4) threads per 2.54 cm (1").

Table B

DIMENSION OF LEAD THREAD									
Item no		LEAD HEAD	A	B	C	D	E	F	G
BN-21	CM INCHE	2.54 1	2.5684 1.010	2.64228 1.119	4.445 1.750	0.19843 5/64	2.06375 13/16	1.5875 5/8	0.11906 3/64
BN-1281	CM INCHE	3.4925 (1-3/8)	3.5179 1.385	3.85512 1.518	5.4102 2.130	0.35718 9/64	2.8578 1-1/8	1.905 3/4	0.27761 7/64
ALLOWABE VARIATIONS	CM		+0.0254 -0.0127	+0.0508 -0.0254	+0.1524 -0.1524				
	INCHES		+0.010 -0.005	+0.020 -0.010	+0.06 -0.06				

Machine Bolts





Material: Machine Bolts & Square Nuts - Steel as per ANSI C135.1

Strength: Tensile strength of machine bolt as per table 10 of ANSI C135.1Bending strength as per section 6.2 of ANSI C135.1

Thread: Rolled Thread as per class 2 of ANSI B1.1 & ANSI C135.1 & Nut shall be tapped according to ANSI C135.1 table 8

Finish: Hot-Dip galvanized as per ASTM A153

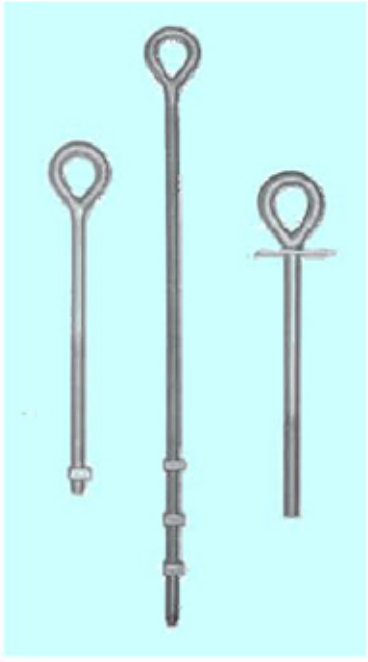
Packaging: As per Table A

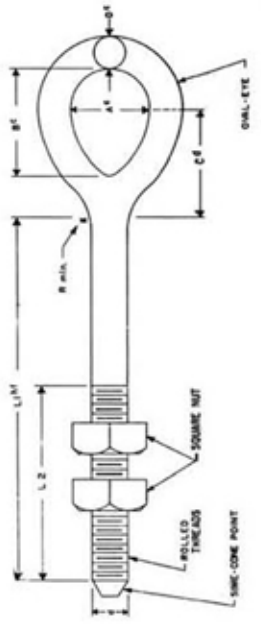
Table A

Dimension of the machine bolt

Item no	Dimension in cm(Inches) Units			Ultimate Tensile Strength in Kg (lbs)	Number of Threads per 2.54 cm (Inches)	Quantity per package
	D	L-1	L-2			
BN-31	1.27(1/2)	3.81(1-1/2)	2.54(1)	3,538(7800)	5.1181(13)	250
BN-41	1.27(1/2)	15.24(6)	7.62(3)	3,538(7800)	5.1181(13)	200
BN-41.1	1.27(1/2)	20.32(8)	10.16(4)	3,538(7800)	5.1181(13)	200
BN-41.2	1.27(1/2)	25.40(10)	15.24(6)	3,538(7800)	5.1181(13)	200
BN-41.3	1.27(1/2)	30.48(12)	7.62(3)	3,538(7800)	5.1181(13)	200
BN-51	1.5875(5/8)	15.24(6)	10.16(4)	5,624(12400)	4.3307(11)	100
BN-61	1.5875(5/8)	20.32(8)	10.16(4)	5624(12400)	4.3307(11)	100
BN-71	1.5875(5/8)	25.40(10)	10.16(4)	5624(12400)	4.3307(11)	50
BN-81	1.5875(5/8)	30.48(12)	15.24(6)	5624(12400)	4.3307(11)	50
BN-91	1.5875(5/8)	35.56(14)	15.24(6)	5624(12400)	4.3307(11)	50
BN-101	1.5875(5/8)	40.64(16)	15.24(6)	5624(12400)	4.3307(11)	50
BN-111	1.5875(5/8)	45.72(18)	15.24(6)	5624(12400)	4.3307(11)	50
BN-121	1.5875(5/8)	50.80(20)	15.24(6)	5624(12400)	4.3307(11)	50
BN-131	1.905(3/4)	20.32(8)	10.16(4)	8324(18350)	3.9370(10)	50
BN-141	1.905(3/4)	25.40(10)	10.16(4)	8324(18350)	3.9370(10)	50
BN-151	1.905(3/4)	30.48(12)	15.24(6)	8324(18350)	3.9370(10)	50
BN-161	1.905(3/4)	35.56(14)	15.24(6)	8324(18350)	3.9370(10)	50
BN-171	1.905(3/4)	40.64(16)	15.24(6)	8324(18350)	3.9370(10)	50
BN-951	1.5875(5/8)	3.81(1-1/2)	3.175(1-1/4)	5624(12400)	4.3307(11)	30

Oval-Eye Bolts





Material: Bolts-as per ANSI C135.4 Nuts-as per ANSI C135.4
Strength: Tensile strength of bolt & nut as per Section 6 of ANSI C135.4 Bending strength as per section 6.2 of ANSI C135.4
Thread: Rolled Thread as per class 2 of ANSI B1.1 & ANSI C135.1 & Nut shall be tapped according to ANSI C135.1 table 8
Finish: Hot-Dip galvanized as per ASTM A153
Packaging: 50 pcs

Allowable Variations:
C=0.15875 cm(1/16"), d=0.317 cm (1/8"), f= 0.635 cm (1/4"), h=1.27cm (1/2")
Single - letter superscript indicates that plus and minus value are the same, a double-letter superscript indicates that the plus value is that of the first letter and the minus value is that of the second letter.

Dimension of oval eye bolt

Item no	Dimension in cm(Inches)								Ultimate Tensile Strength Kg (lbs)	Thread per 2.54 Cm (Inches)
	A	B	C	D	d	L1	L2	R		
BN-181	3.81 (1-1/2)	5.08 (2)	5.08 (2)	1.38906 (35/64)	1.5875 (5/8)	20.32 (8)	10.16 (4)	0.794 (5/16)	5624 (12,400)	11
BN-191	3.81 (1-1/2)	5.08 (2)	5.08 (2)	1.38906 (35/64)	1.5875 (5/8)	25.4 (10)	10.16 (4)	0.794 (5/16)	5624 (12,400)	11
BN-201	3.81 (1-1/2)	5.08 (2)	5.08 (2)	1.38906 (35/64)	1.5875 (5/8)	30.48 (12)	15.24 (6)	0.794 (5/16)	5624 (12,400)	11
BN-211	3.81 (1-1/2)	5.08 (2)	5.08 (2)	1.38906 (35/64)	1.5875 (5/8)	35.56 (14)	15.24 (6)	0.794 (5/16)	5624 (12,400)	11
BN-221	3.81 (1-1/2)	5.08 (2)	5.08 (2)	1.38906 (35/64)	1.5875 (5/8)	45.72 (18)	15.24 (6)	0.794 (5/16)	5624 (12,400)	11

Double Arming Bolts

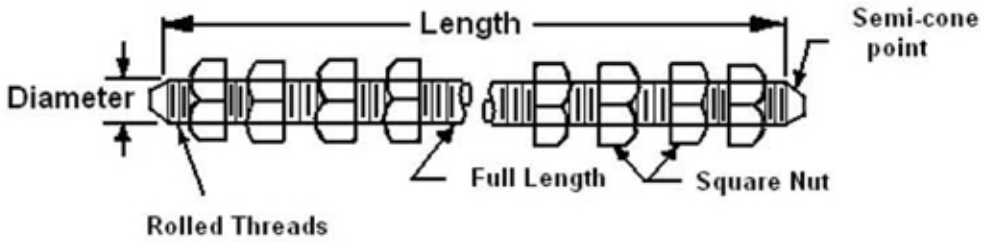


Material: Bolts-As per ANSI C135.1
Nuts-As per ANSI C135.1

Strength : Tensile strength of bolt & nut as per table A or Table 10 of ANSI C135.1 Bending strength as per section 6.2 of ANSI C135.4

Finish: Hot-Dip galvanized as per ASTM A153

Packaging: 25 pcs



Item No.	Dimensions in Cm (Inches)		Minimum Tensile Strength Kg (Lbs)	Threads per 2.54 Cm(Inches)
	Length	Diameter		
BN-261	40.64 (16)	1.5875 (5/8)	5,624 (12,400)	11
BN-271	45.72 (18)	1.5875 (5/8)	5,624 (12,400)	11
BN-281	50.80 (20)	1.5875 (5/8)	5,624 (12,400)	11
BN-291	55.88 (22)	1.5875 (5/8)	5,624 (12,400)	11
BN-301	60.96 (24)	1.5875 (5/8)	5,624 (12,400)	11
BN-1161	55.88 (22)	1.905 (3/4)	8,324 (18,350)	10
BN-1171	60.96 (24)	1.905 (3/4)	8,324 (18,350)	10

Carriage Bolts

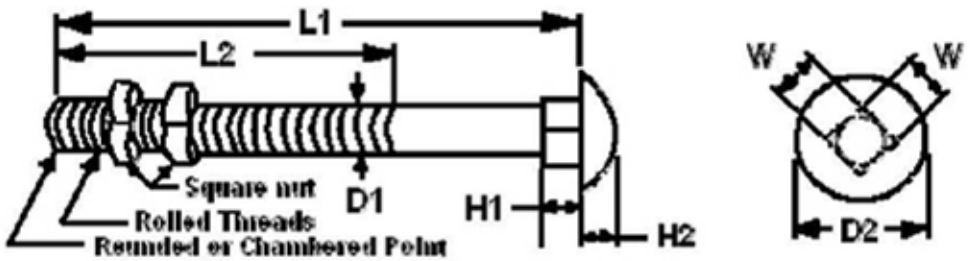


Material: Bolts-As per ANSI C135.1,ASTM A663 & ASTM A675 Nuts-As per ANSI C135.1,ASTM A663 & ASTM A675

Strength : As per ANSI C135.1 Thread : Rolled Thread as per class 2 of ANSI B1.1 & ANSI C135.1 & Nut shall be tapped according to ANSI C135.1 table 8

Finish: Hot-Dip galvanized as per ASTM A153

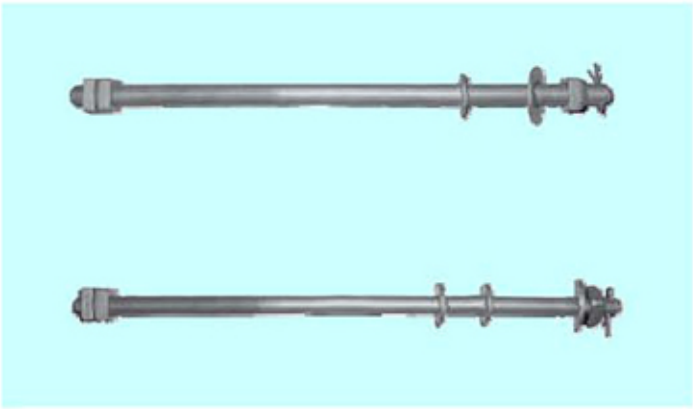
Packaging: 250 pcs



Dimension of carriage bolt

Item no.	All Dimensions before Galvanizing in Cm (Inches)			
	Symbol Dimensions	Nominal	Maximum	Minimum
BN-321	D1	0.9525 (3/8)	0.98552 (0.388)	0.9144 (0.360)
	D2	2.06375 (13/16)	2.14376 (0.844)	1.98628 (0.782)
	H1	0.51593 (13/64)	0.55626 (0.219)	0.47752 (0.188)
	H2	0.51593 (13/64)	0.52832 (0.208)	0.47752 (0.188)
	L1	11.43 (4 -1/2)	11.5824 (4.56)	11.176 (4.40)
	L2	7.62 (3)	8.255 (3.25)	7.62 (3.00)
	W	0.9525 (3/8)	0.98552 (0.388)	0.9144 (0.368)

Single & Double Upset Spool Insulator Bolts



Material: Bolts-as per section 3 of ANSI C135

Strength : As specified in the table-A

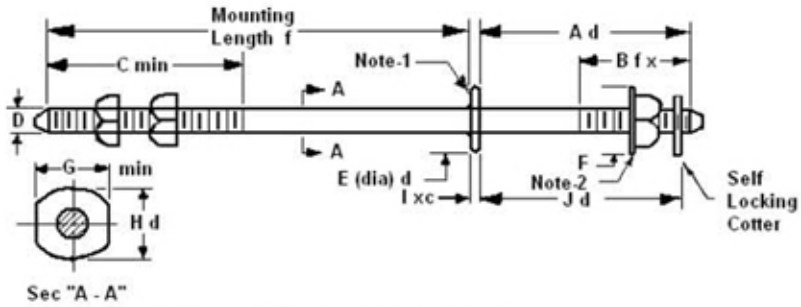
Thread : Rolled Thread as per class 2 of ANSI B1.1 & ANSI C135.1 & Nut shall be tapped according to ANSI C135.1 table 8

Finish : Hot-Dip galvanized as per ASTM A153

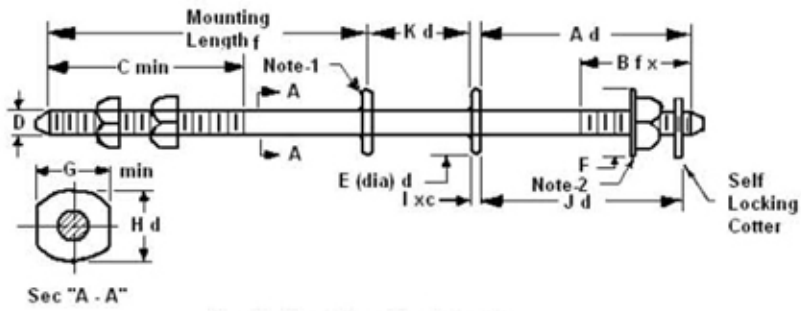
Packaging: 50 pcs

Note-1: a wrenching surface shall be provided in this area. wrenching surfaces shall not affect the integrity or utilization of the upset spool insulator bolt or damage the insulator in service.

Note-2: round washer conforming to nema phio



Single Upset Spool Insulator Bolt (b s)



Double Upset Spool Insulator (q)

ALLOWABLE VARIATIONS

a= 0.03968, b=0.07937, c= 0.15875, d=0.3175, e=0.47625, f= 0.635, g=0.9525, h= 1.27, x=0 (1/64")
(1/32") (1/16") (1/8") (3/16") (1/4") (3/8") (1/2") (0")

SINGLE LETTER TOLERANCE = ± Variation, d ± 0.125 (1/8")

Two Letter Tolerance =+First Variation,-Second Variation, gb=+0.9525(3/8")-0.07935(1/32")=0.875125(11/32")

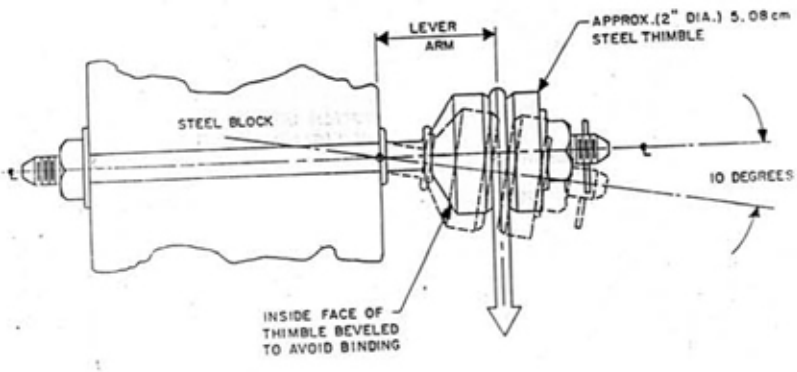
Dimensions

A	B	C	D	E	F	G	H	I	J	K
11.1125 (4-3/8)	3.8 (1-1/2)	10.16 (4)	1.5875 (5/8)	3.4925 (1-3/8)	4.445 (1-3/4)	2.42 (1)	3.4925 (1-3/8)	0.47625 (3/16)	10.16 (4)	4.11275 (1-5/8)

Table A

Item No.	Length Cm(Inch)	Type of Upset Bolt	No. of threads per 2.54 cm(Inch)	Length of mounting threads cm(Inch)	Minimum Tensile strength Kg(Lbs)
BN-331	20.32 (8)	Single	11	10.16(4)	5,624.7(12,400)
BN-341	25.44 (10)	Single	11	10.16(4)	5,624.7(12,400)
BN-351	30.48 (12)	Single	11	15.24(6)	5,624.7(12,400)
BN-361	20.32 (8)	Double	11	10.16(4)	5,624.7(12,400)
BN-371	25.40(10)	Double	11	10.16(4)	5,624.7(12,400)
BN-381	30.48(12)	Double	11	15.24(6)	5,624.7(12,400)

Test



Note-1: application of load test must conicide with centre line of testing machine.

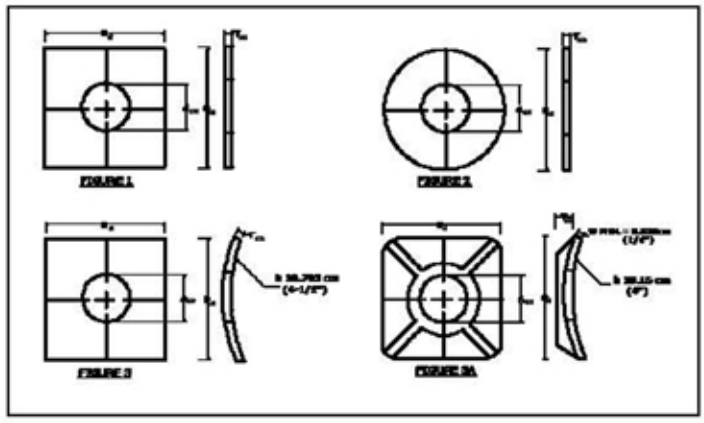
Note-2: amgle of deflection shall be determined by the intersection of centre line of axis of the bolt in its initial position, with a line drawn through centre point of the bolt at the deflected position & the upset soulder nearest mounting support.

Single & double upset spool insulator bolts & nuts shall, without defecting more than ten degrees under load, develop load, develop strengths shown in above when tested by the method shown & described in ANSI C135.31-1980. The load shall be applied at a rate of approximately 0.4 inch per minute free running cross head speed of the testing machine.

TYPE OF INSULATOR BOLT	LEVER ARM	MIN. LOAD AT TEN DEGREEES DEFLECTION
Single upset bolt	4.1275 cm(1-5/8")	862 Kg(1900 Lbs)
Double upset bolt	7.62 cm (3")	363 Kg(800 Lbs)

Ferrous Washers





Materials: Hot or Cold – Rolled Steel as per ASTM A569, ASTM A570, OR ASTM A635.or ,Malleable iron as per ASTM A197 or Ductile type as per ASTM A536

Finish : Hot-Dip galvanized as per ASTM A153

Packing:

Item	Quantity
BN-461	250
BN-481	2,000
BN-491	100
BN-1101	25
BN-1181	250

Table A

Dimension of the washer

Item No.	Fig No	Washer Type	Bolt Size Cm (Inch)	A With Tolerance Cm (Inch)	B With Tolerance Cm (Inch)	T With Tolerance Cm (Inch)
BN -461	1	Square (Flat)	1.5875 (5/8")	1.74625 (11/16") ex	5.715 (2-1/4")d	0.47625(3/16")ba
BN- 481	2	Round	1.27 (1/2")	1.42875 (9/16") bx	3.4925 (1-3/8") bx	0.27781 (7/64")cb
BN-491	3	Square (Curved)	1.5875 (5/8")	1.74625 (11/16") ex	7.62 (3") d	0.635(1/4")cb
BN-1101	3A	Square(Curved)	1.905 (3/4")	2.06375 (13/16")ex	10.16 (4")d	1.27 (1/2")cb
BN-1181	1	Square (Flat)	1.5875 (5/8")	2.06375 (13/16 ")ex	5.715 (2-1/4")d	0.47625 (3/16")ba

ALLOWABLE VARIATIONS:

a =0.03968, b =0.07937, c =0.15875, d =0.3175, e =0.47625, f =0.635, g =0.9525, h =1.27, x=0 (1/64") (1/32") (1/16") (1/8") (3/16") (1/4") (3/8") (1/2") (0")

Single Letter Tolerance = ± variation, d ± 0.125(1/8")
Two Letter Tolerance=+First variation, -Second variation, gb=+0.9525(3/8") -0.079375(1/32") =0.875125(11/32")

Oval-Eye Nut



Materials: Drop- forged as per ASTM A663, ASTM A675 and ANSI C135.5.

Strength: Ultimate strength 5,624 Kg. Tolerance : As specified with the table A.

Finish : Hot-Dip galvanized as per ASTM A153 or ASTM A675

Packing: 100 pcs

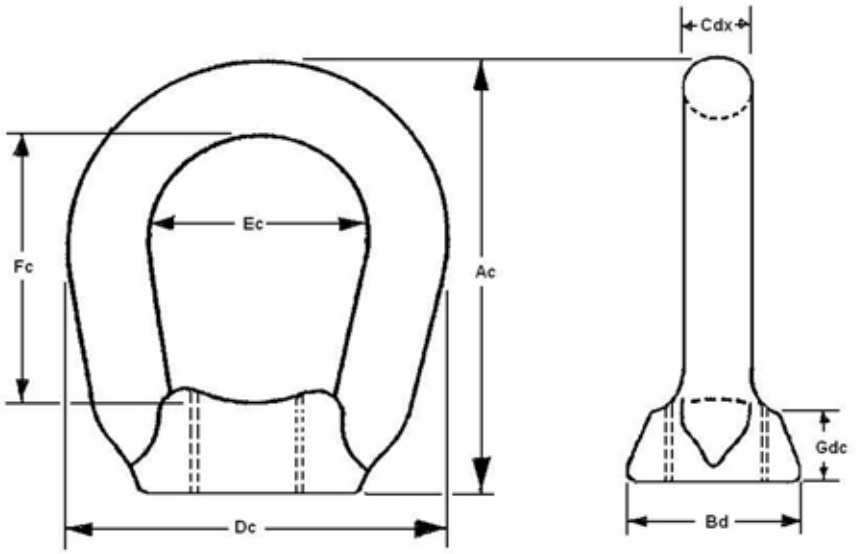


Table A

Dimensions of the Oval Eye Nuts

Item No	Bolt Size	Dimensions in Cm (Inches)							Ultimate Strength
		A	B	C	D	E	F	G	
BN-531	1.5875Cm (5/8")	7.62 (3")	3.4925 (1-3/8")	1.27 (1/2")	6.35 (2-1/2")	3.81 (1-1/2")	4.445 (1-3/4")	1.905 (3/4")	5,624 KG (12,400 Lbs)

ALLOWABLE VARIATIONS:

a =0.03968, b =0.07937, c =0.15875, d =0.3175, e =0.47625, f =0.635, g =0.9525, h =1.27, x=0 (1/64")
(1/32") (1/16") (1/8") (3/16") (1/4") (3/8") (1/2") (0")

Single Letter Tolerance = ± variation, d±0.125(1/8")
Two Letter Tolerance=+First variation, -Second variation, gb=+0.9525(3/8") -0.07935(1/32")
=0.875125(11/32")

Anchor Shackle

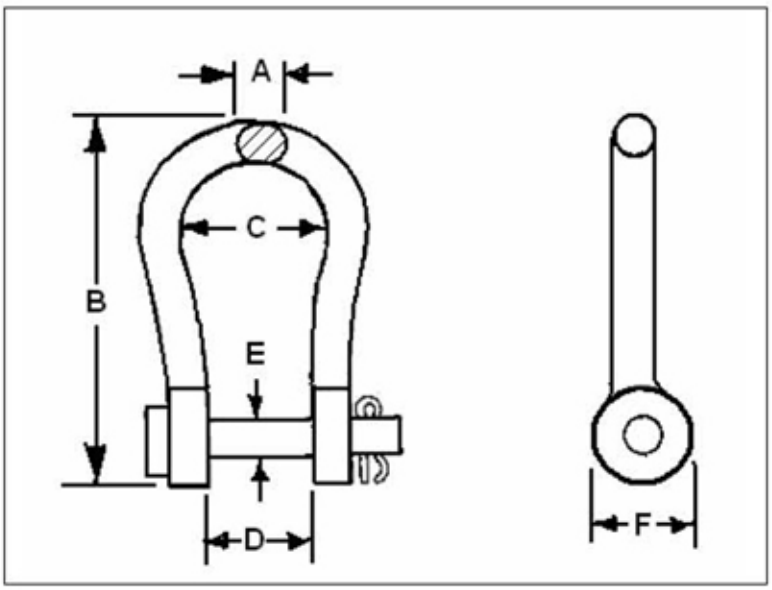


Material: Anchor:-Drop- forged as per ASTM A 668 . Cotter-Bolt as per ANSI C135.1, Cotter-Key of goods commercial grade brass, stainless Steel, Bronze, hard drawn copper or hard drawn aluminum .

Strength : Minimum tensile strength of eye bolt 6,123 Kg. As per ANSI C135.4 paragraph 5.1.

Finish : Hot-Dip galvanized as per ASTM A153

Packaging: 100pcs.



Item No.	Dimensions Cm (Inches)						Minimum Tensile Strength Kg (Lbs)
	A	B	C	D	E	F	
BN-551	1.27 (1/2)	8.89 (3-1/2)	3.81 (1-1/2)	1.905 (3/4)	1.5875 (5/8)	4.1275 (1-5/8)	6123 (13,500)

Twin-Eye Anchor Rod



Material: Rod and heavy duty Nuts are of Hot- Rolled Steel as per ASTM A663 or ASTM A 675 .

Strength : Tensile strength- Anchor Rod minimum load 7,258 Kg. for TRB-62 and 10,433 Kg. for TRB-63 as per ANSI C135.2 Bending strength- unthread portion of the bent through a 90 degree angle on a radius equal to the rod diameter without breaking.

Finish : Hot-Dip galvanized as per ASTM A 153

Packing: 10 pcs.

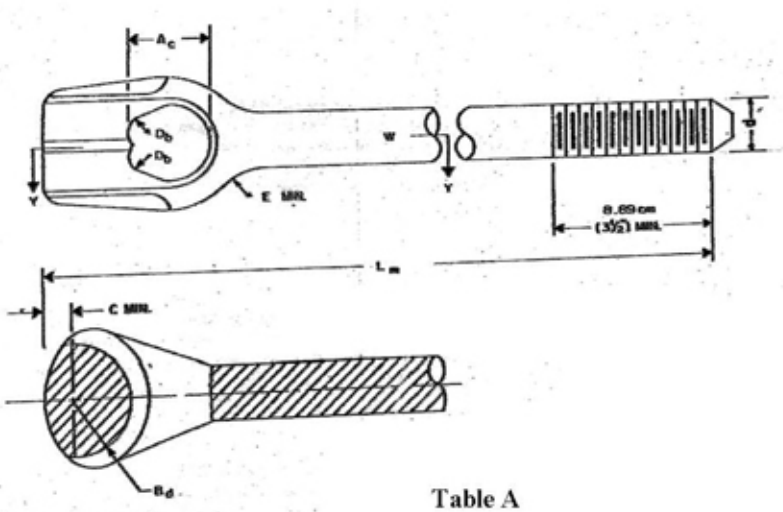


Table A

Dimension of the anchor rod

Item No.	Rod size 'd'	Dimensions Cm (Inches)					
		A	B	C	D	E	L
BN-621	1.5875 (5/8)	2.2225 (7/8)	1.5875 (5/8)	0.3175 (1/8)	0.555625 (7/32)	0.9525 (3/8)	243.84 (96)
BN-631	1.905 (3/4)	2.54 (1)	1.74625 (11/16)	0.396875 (5/32)	0.635 (1/4)	1.27 (1/2)	304.8 (120)

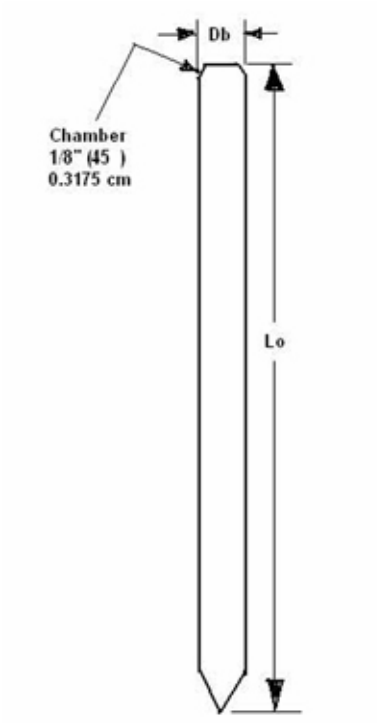
ALLOWABLE VARIATIONS:

a =0.03968, b =0.07937, c =0.15875, d =0.3175, e =0.47625, f =0.635, g =0.9525, h =1.27, x=0 (1/64")
(1/32") (1/16") (1/8") (3/16") (1/4") (3/8") (1/2") (0")

Single Letter Tolerance = ± variation, d±0.125(1/8")
Two Letter Tolerance=+First variation, -Second variation, gb=+0.9525(3/8") -0.07935(1/32"), =0.875125(11/32")

Solid Ferrous Ground Rod





Material : Hot-Rolled High Carbon Steel as per ASTM A663 or ASTM A675. or Malleable Cast Iron as per ASTM A 47

Strength : Sufficiently strong and rigid to resist bending

Finish : Hot-Dip galvanized as per ASTM A153

Dimension and Packing for the Ground Rod

Item No.	Dimensions		Quantity per Package
	Rod size Cm (Inches)	Rod Length Mt (Feet)	
BN-651	1.5875 Cm (5/8")	2.4384 M (8')	05
BN-1291	1.5875 Cm (5/8")	1.8288 M (6')	10
BN-1301	1.5875 Cm (5/8")	3.0480 M (10')	05

ALLOWABLE VARIATIONS

a = ± 7.62 Cm (1")
b = ± 0.079375 Cm (1/32")

Ground Rod Clamp



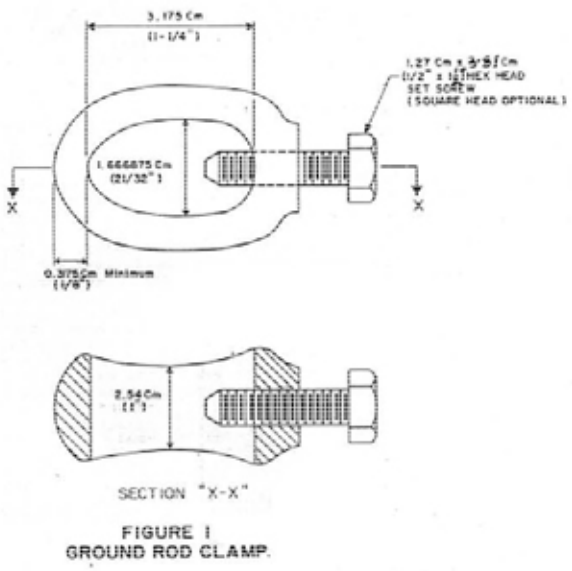


FIGURE 1
GROUND ROD CLAMP.

Material: Drop forged Clamp bodies will be made of malleable steel as per ASTM A663 or ASTM A675. The retaining screws will be of steel as per ANSI C135.1 with squire or hexagonal head.

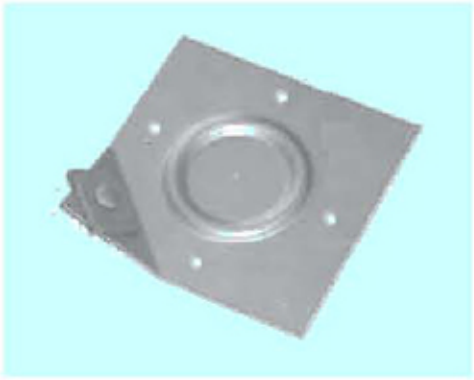
Strength: As per strength ASTM A663 or ASTM A675.

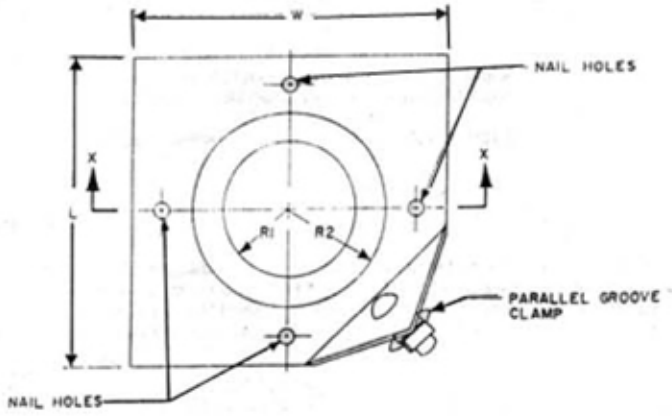
Finish: Hot-Dip galvanized as per ASTM A153

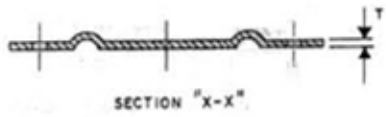
Packing: 100 pcs

Item No.	Dimensions in Cm (Inches)				
	A	B	C	D	E
BN-801	3.175 (1-1/4)	1.6668 (21/32)	0.3175 (1/8)	2.54 (1)	1.27X3.81 (1/2 X 1-1/2)

Steel Ground Plates







Material: Shall be made of hot rolled steel as per ASTM A 570 with grade & carbon content suitable for the requirement of this standard.

Finish : Hot-Dip galvanized as per ASTM A153

Packing: 35 pcs

Item No.	Dimensions (Inches) Cm					Packaging	
	L	W	T	R1	R2	Pieces	Wt(Lbs)
BN-661	(7-1/2) 19.05	(7-1/2) 19.05	16 ga	(1-1/2) 3.81	(2) 5.08	35	145

Clamp Loop Dead End

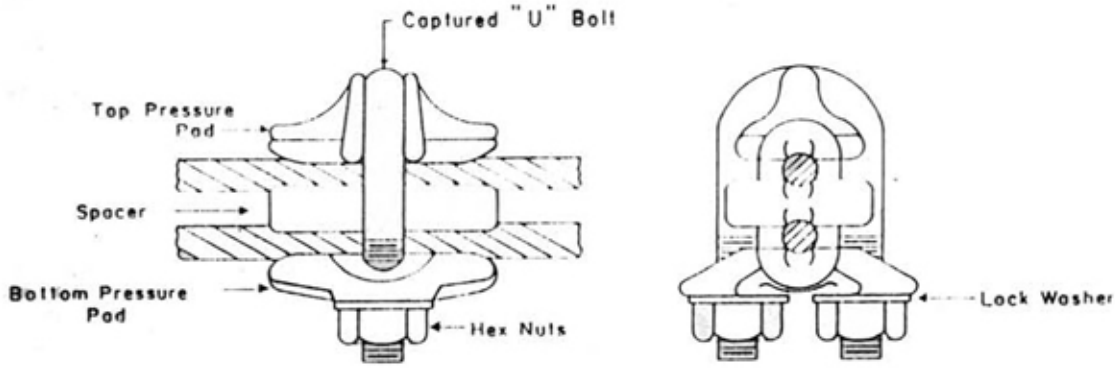


Material: Top & Bottom Pressure Pad will be castings of high strength aluminium alloy 356 as per ASTM B686 and heat treated to T6 temper as per ASTM B 597. The Spacer will be made of highly conductive aluminum. U-bolts will be from steel as per ASTM A663 or A675. Hex Nuts of Steel as per ANSI B18.2.2. Lock Washers will be hot-dip galvanized as per ANSI B18.21.1

Finish : Hot-Dip galvanized as per ASTM A153

Strength : For two loop dead end clamps- holding strength should be 95% or more of the conductors rated strength, For one loop dead end clamp holding strength 80% of ACSR and 90% of all aluminium conductors.

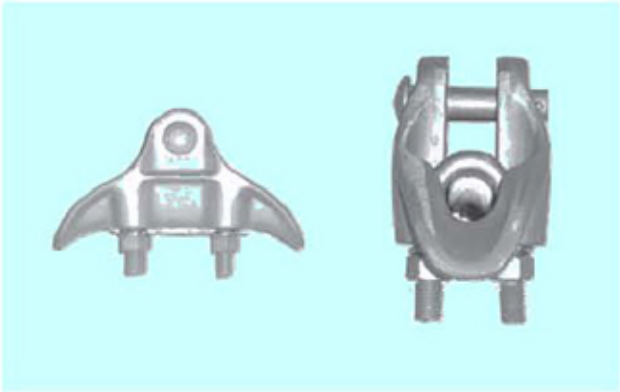
Packing: 100 pcs.



Clamp Dimension

Item No.	American Wire Gauze Conductor Range	Conductor Diameter Range - Centimeter	Conductor Diameter Range - Inches
BN-851	# 3 Through 1/0 ACSR	0.71374-1.01092	0.281-0.398
BN-861	1/0 Through 4/0- ACSR	1.01092-1.43002	0.398-0.563

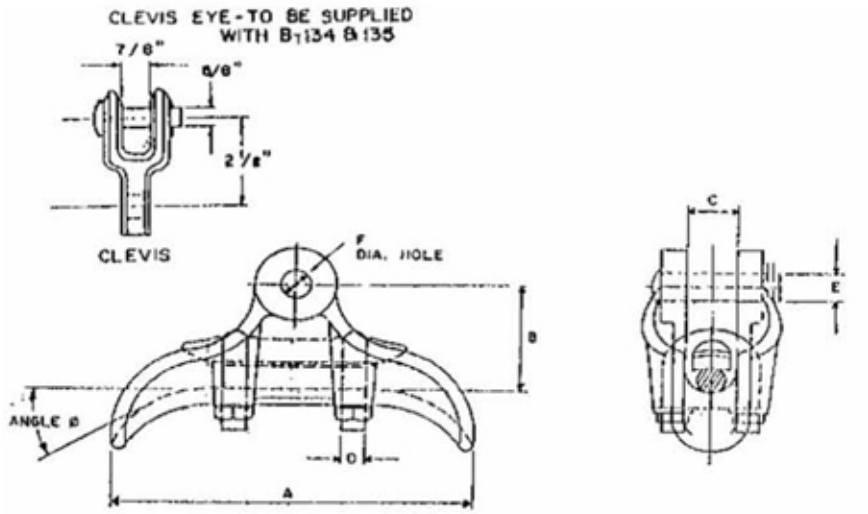
Clamp Suspension Clevis



Material: Clamp body: High strength Aluminium alloy as per ASTM B686. U-Bolts & compatible hex nuts shall be made from hot rolled steel and as per ANSI C135.1 & ANSI B18.2.2 Standard. Washer and Lock washer shall be hot dip galvanized & comply the requirement of ANSI B18.21.1. All clamp components are hot dip galvanized & shall comply with the requirements of ASTM A153.

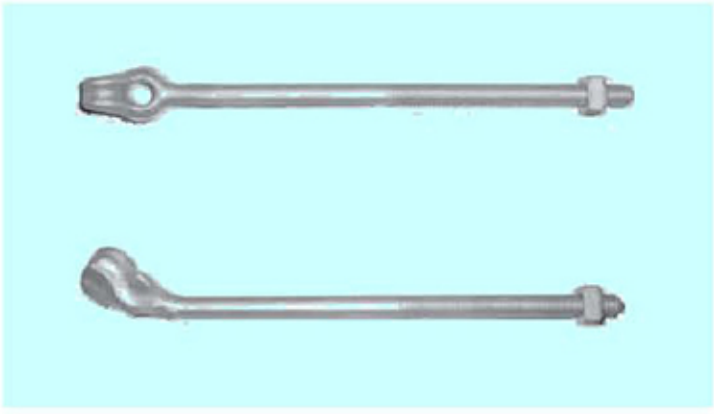
Finish: Smooth surfaces, free from blemishes and sharp projection

Packing: 20 pcs



Item No.	Conductor Range cm(Inch)		Clamp Dimension cm(Inch)						Maximum angle	Ultimate body strength Kg (Lbs)
	Minimum	Maximum	A	B	C	D	E	F		
BN-831	1.016 (.40)	2.156 (0.85)	19.05 (7-1/2)	6.05875 (2-9/16)	2.38125 (15/16)	1.27 (1/2)	1.587 5(5/8)	1.74625 (11/16)	30°	7,711 (17,000)
BN-841	1.27 (0.50)	2.6416 (1.04)	21.59 (8-1/2)	6.985 (2-3/4)	2.936875 (1-5/32)	1.27 (1/2)	1.5875 (5/8)	1.74625 (11/16)	30°	11,340 (25,000)
BN-1341	2.54 (1.00)	3.7338 (1.47)	23.33 625 (9-3/16)	7.9375 (3-1/8)	3.696875 (1-9/16)	1.27 (1/2)	1.5875 (5/8)	1.74625 (11/16)	22.5°	11,340 (25,000)
BN-1351	3.175 (1.25)	4.6228 (1.82)	25.4 (10)	9.3662 5 (3-11/16)	4.92125 (1-15/16)	1.27 (1/2)	1.5875 (5/8)	1.74625 (11/16)	25°	11,340 (25,000)

Thimble Eye Bolts



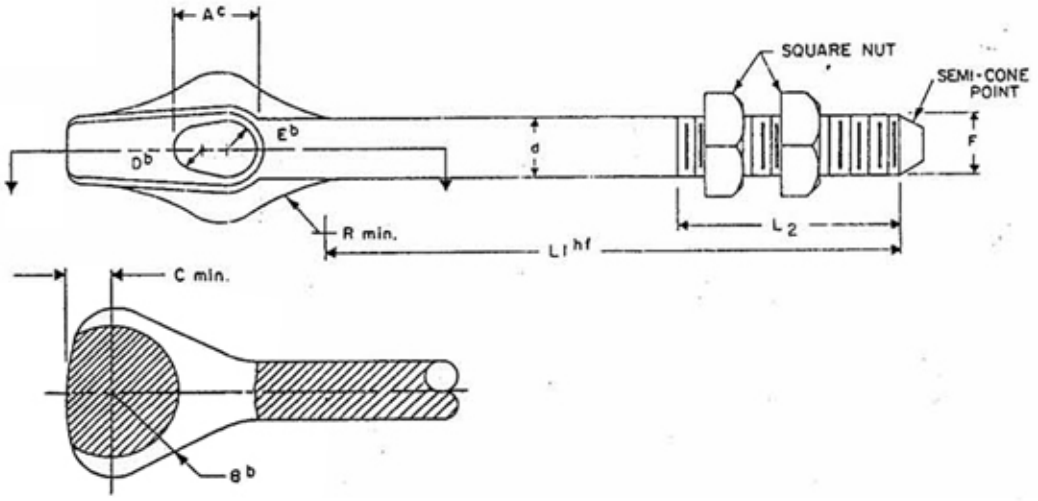
Material: Bolts & Nuts – As per ANSI C135.4

Strength: Tensile strength-As per section 6 of ANSI C135.4. Bending strength- As per section 6.2 of ANSI C135.4.

Thread : Bolts- Rolled Thread as per class 2 of section ANSI B1.1 Square Nut- As per ANSI C135.1 Table-8 Thread per square inch-11

Finish: Hot dip galvanized as per ASTM A153 & Smooth surfaces, free from blemishes and sharp projection .

Packaging: 50 pcs



Item No	Dimensions (Inches)										Minimum Tensile Strength Kg (Lbs)	Threads Per 2.54 cm (Inch)
	A	B	C	D	E	d	F	R	L1	L2		
BN-231	1.74625 (11/16)	1.74625 (11/16)	0.79375 (5/16)	0.635 (1/4)	0.71437 (9/32)	1.42875 (9/16)	1.5875 (5/8)	0.9525 (3/8)	20.32 (8)	10.16 (4)	5,624 (12,400)	11
BN-241	1.74625 (11/16)	1.74625 (11/16)	0.79375 (5/16)	0.635 (1/4)	0.71437 (9/32)	1.42875 (9/16)	1.5875 (5/8)	0.9525 (3/8)	25.4 (10)	10.16 (4)	5,624 (12,400)	11
BN-251	1.74625 (11/16)	1.74625 (11/16)	0.79375 (5/16)	0.635 (1/4)	0.71437 (9/32)	1.42875 (9/16)	1.5875 (5/8)	0.9525 (3/8)	30.48 (12)	15.24 (6)	5,624 (12,400)	11

ALLOWABLE VARIATIONS: b=0.07937 cm(1/32"), c=0.15875 cm(1/16"), f= 0.635 cm(1/4"), h=1.27cm(1/2")

Single-letter superscript indicates that plus and minus value are same and double superscript indicates that the plus value is that of the first letter and the minus value is that of the second letter

Thimble Eye Nut



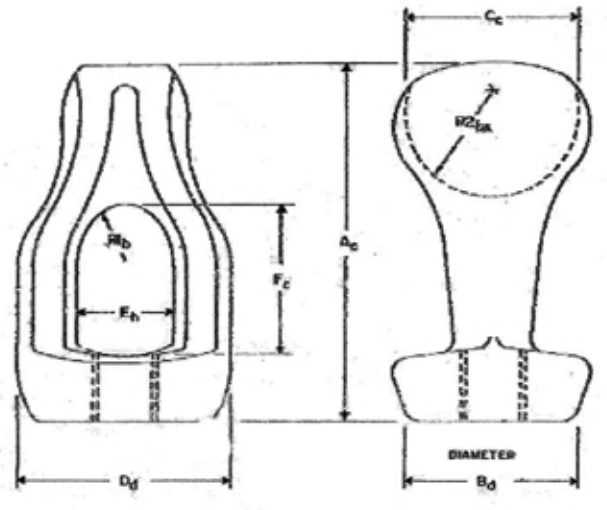
Material: Drop- forged as per ASTM A663, ASTM A675 and ANSI C135.5

Strength: As per strength of ASTM A663,A675 and ANSI C135.5

Thread: Thimble nut with unified coarse thread class 2 of ANSI B1.1

Finish: Hot dip galvanized as per ASTM A153, Smooth surfaces, free from blemishes and sharp projection .

Packing: 50 pcs.



Item No	Bolt Size (Inch)	Dimensions (Inches)								Maximum Strand (Inch)	Ultimate Strength Kg (Lbs)
		A	B	C	D	E	F	R1	R2		
BN-541	1.5875 (5/8")	8.255 (3-1/4)	3.81 (1-1/2)	3.81 (1-1/2)	4.7625 (1-7/8)	2.225 (7/8)	3.4925 (1-3/8)	0.635 (1/4)	1.5875 (5/8)	1.27 (1/2)	5,624.64 (12,400)

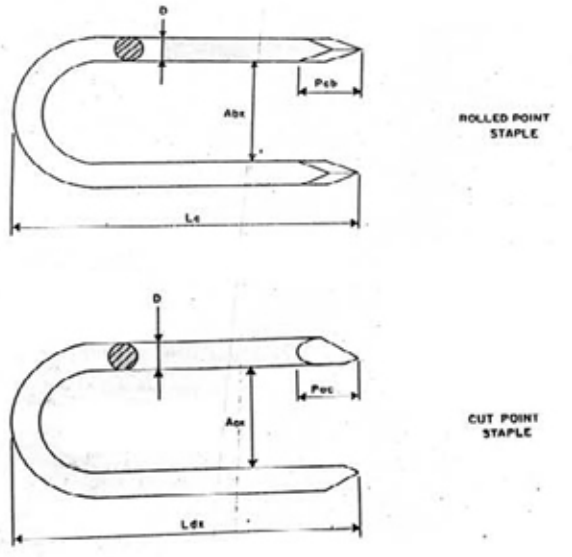
ALLOWABLE VARIATIONS:

a= 0.03968,	b=0.07937	c= 0.15875,	d=0.3175,	e=0.47625	f=0.635	g=0.9525	h=1.27	x=0
(1/64")	(1/32")	(1/16")	(1/8")	(3/16")	(1/4")	(3/8")	(1/2")	(0")

Single Letter Tolerance=±Variation, d±0.125(1/8")
Two Letter Tolerance =+First Variation,-Second Variation, gb=+0.9525(3/8")-0.07935(1/32"),=0.875125(11/32").

Staple Ground Wire





Material: Hot–Rolled open hearth or electric furnace Steel as per ASTM A570

Strength: As per strength of ASTM A570

Finish: Hot dip galvanized as per ASTM A153

Item no.	Dimensions in Cm (Inches)				Point type	Quantity per package
	L	A	D	P		
BN – 671	3.81 (1-1/2)	0.635 (1/4)	0.3048 (0.120)	0.635 (1/4)	Cut	3,650
BN - 681	7.62 (3)	2.69875 (1-1/16)	0.635 (1/4)	2.225 (7/8)	ROLLED	1,000

ALLOWABLE VARIATIONS:

a= 0.03968,	b=0.07937	c= 0.15875,	d=0.3175,	e=0.47625	f=0.635	g=0.9525	h=1.27	x=0
(1/64")	(1/32")	(1/16")	(1/8")	(3/16")	(1/4")	(3/8")	(1/2")	(0")

Single Letter Tolerance=±Variation, d±0.125(1/8")
Two Letter Tolerance =+First Variation,-Second Variation, cx=+0.15875cm(3/8")-0 cm (0")=0.15875 cm(1/16").

Lag Screws

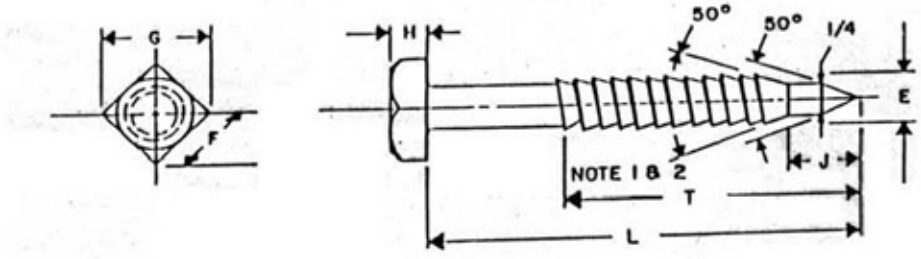


Material: Drop forged lag screw in accordance with ASTM A 663 or ASTM A675Drop

Strength: As per strength of ASTM A663 or A675
Minimum body strength 2,949 Kg. for nominal diameter of 1.27cm.

Finish: Hot dip galvanized as per ASTM A153
Smooth surfaces, free from blemishes and sharp projection

Packaging: 250 pcs



Dimensions

Reference Letter	Description of Dimensions	Dimensions cm(Inches)
E	Diameter of Screw	1.27 (1/2)
F	Width Across Flats	1.905(3/4)
G	Width Across Points	2.54(1)
H	Height of Head	0.83343(21/64)
J	Pilot Drive Point Length	1.27(1/2)
L	Lag Screw Length	10.16(4)
T	Minimum Thread Length	6.35(2-1/2)

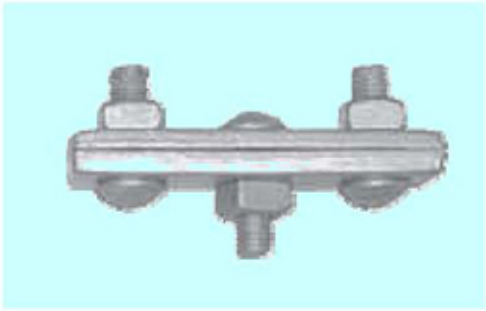
Nominal Diameter Of screw cm(Inch)	Width Across Flats			Width Across Corners		Height		
	Basic Cm (Inch)	Max. Cm (Inch)	Min Cm (Inch)	Max Cm (Inch)	Min. Cm (Inch)	Basic Cm (Inch)	Max Cm (Inch)	Min. Cm (Inch)
1.27 (1/2)	1.905 (3/4)	1.905 (0.725)	1.8415 (0.725)	2.58064 (1.016)	2.5273 (0.995)	0.83343 (21/64)	0.88392 (00.348)	0.78232 (0.308)

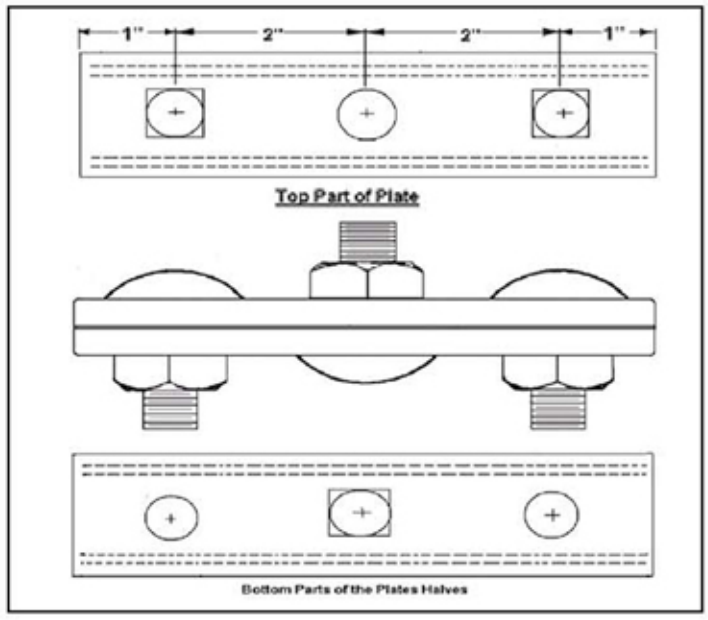
ALLOWABLE VARIATIONS:

a= 0.03968 cm (1/64"), b=0.07937 cm (1/32") , d=0.3175 Cm (1/8").

Single Letter superscript indicates that plus & minus values are the same, a double letter superscript indicates that the plus value is that of the first letter and the minus value is that of the second letter

Guy Clamp





Material: Bolt material as per ASTM A570 and nut as per ANSI C135.1

Thread: Machine rolled thread as per class 2 of ANSI C135.1

Finish: Hot dip galvanized as per ASTM A153

Packaging: 30 pcs

Item No.	No. of Bolt	Bolt Dia Cm Inches	Clamp Length Cm Inches	Clamp width Cm Inches	Min. thickness of plate halves Cm (Inches)	Range of guy strand Cm Inches	Holding strength Kg. (Lbs)	Qnty per package
BN-691	3	1.27 (1/2)	15.24 (6)	3.97 (1-9/16)	1.00 (13/32)	0.635 to0.9525 (1/4 to 3/8)	2,155 (4,750) for ¼" guy wire & 4,899 (10,800) for 3/8" guy wire	30
BN-701	3	1.5875 (5/8)	15.24 (6)	4.207 (1-21/32)	1.11 (7/16)	1.11125 (7/16)	6,577 (14,500) for 7/16" guy wire	30

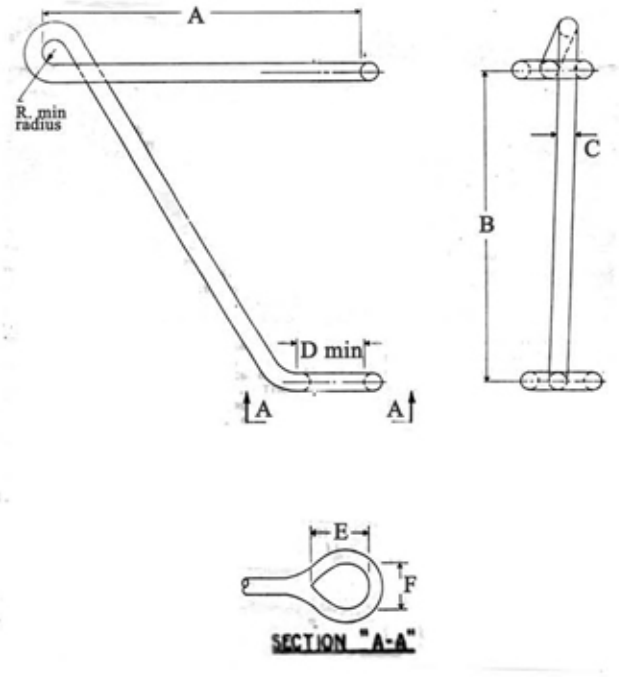
Angle Suspension Bracket



Material: The bracket is made from steel conforming to the requirements of ASTM A575 or ASTM A576

Finish: hot-dip galvanized in accordance with ASTM A153. The surfaces shall be smooth and free sharp projection blemishes.

Packaging: 6pcs



Dimension of angle suspension bracket

A	B	C	D	E	F	R
30.48 (12)	30.48 (12)	1.5875 (5/8)	6.985 (2-3/4)	2.08 (2)	3.81 (1-1/2)	1.27 (1/2)

Clevis Bolts

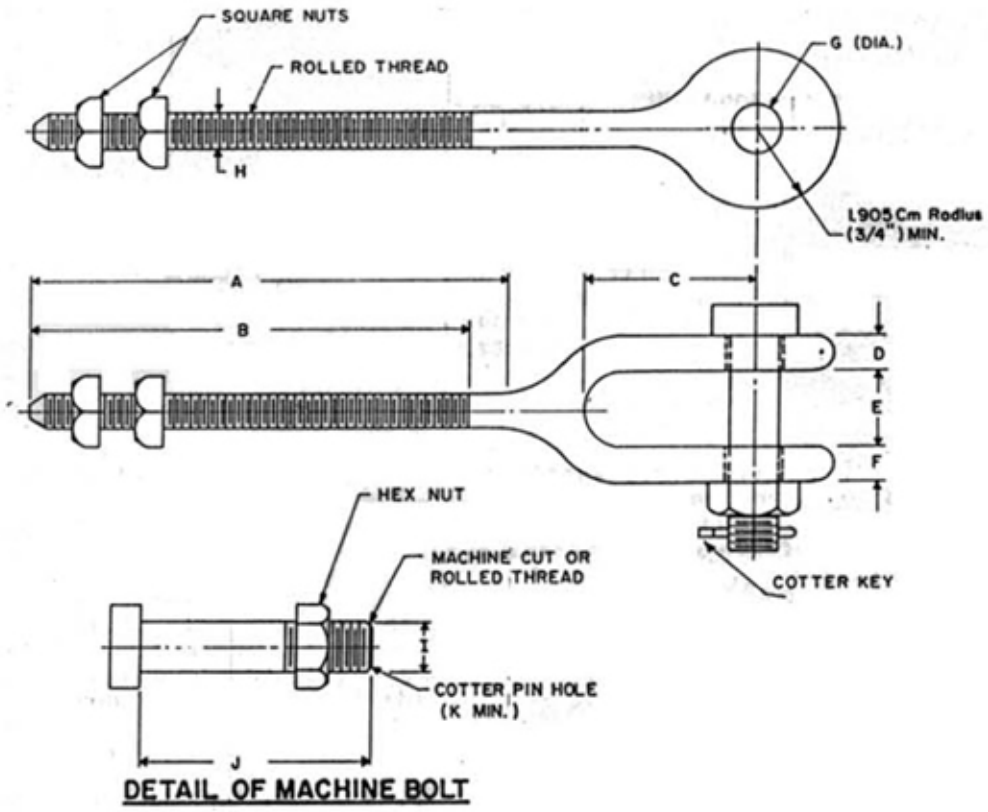


Material: made from steel that conforms to either ASTM A575 or ASTM A576.

Finish : hot-dip galvanized in accordance with ASTM A 153. All surfaces shall be smooth and free from blemishes or imperfections .

Strength: Tensile strength : Clevis bolts shall meet the tensile strength requirements listed in Table 10 of ANSI C135.1. Bending strength: A cold bend test shall be conducted in accordance with section 6.2 of ANSI C135.1.

Packaging: 25 pcs



Dimension of the Clevis Bolt

Bolt Dimensions in Cm (Inches)									
B	C	D	E	F	G	H	I	J	K
15.24 (6)	6.985 (2-3/4)	0.9525 (3/8)	1.905 (3/4)	0.9525 (3/8)	1.42875 (9/16)	1.5875 (5/8)	1.27 (1/2)	6.35 (2-1/2)	0.47625 (3/16)

Dimension (A=) B-99, 20.32 Cm (8"), B-100, 25.4 Cm (10"), B-101, 30.48 Cm (12"), B-102, 35.56 Cm (14")

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