

# Engineering Standards

## Fastener Dimensions

Diameter	Shank A	Round Head			Truss Head		90 Flush Head	
		Head dia B	Head height C	Head dia B	Head height C	Head dia B	Head height C	
1/2 (16)	.515 - .493	59/64	5/16	59/64	15/64	29/32	1/4	
5/8 (20)	.642 - .617	1 9/64	25/64	1 9/64	1 9/64	1 5/32	5/16	
3/4 (24)	.768 - .741	1 3/8	15/32	1 3/8	23/64	1 3/8	3/8	
7/8 (28)	.895 - .866	1 19/32	35/64	1 19/32	13/32	1 19/32	7/16	
1 (32)	.022 - .990	1 53/64	39/64	1 53/64	15/32	1 27/32	1/2	
1 1/8 (36)	1.149 - 1.098	21/16	11/16					

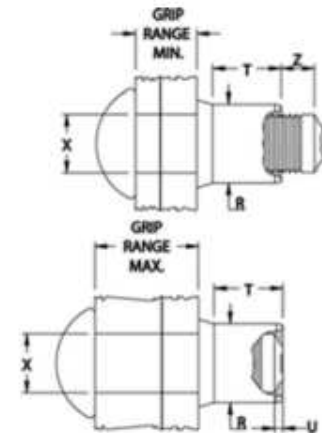
## Installed Fastener Values

Carbon Steel Pins Using Standard or Flanged Collars

Dia	Shear	Clamp	Tensile
1/2	14400	12050	17050
5/8	22500	19200	27100
3/4	32400	28400	40100
7/8	43400	39250	55450
1	56500	51500	72700
1 1/8	69500	58450	82950

## Installed Dimensions of Rivbolt

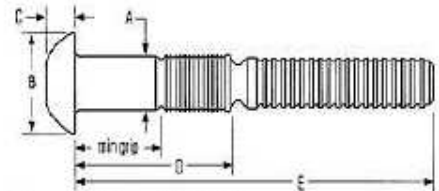
		GRIP RANGE 1/2" RIVBOLT	5/8" RIVBOLT	3/4" RIVBOLT
SIZE OF HOLE	X	14.5 Max	17.5 Max	20.6 Max
DIAMETER OF SWAGE	R	18.6 Max	23.3 Max	28.2 Max
LENGTH OF SWAGE	T	10.2 Min	15.8 Min	16.7 Min
INTRUSION OF RIVBOLT	U	1.5 Max	1.5 Max	1.5 Max
PROJECTION OF RIVBOLT	Z	9.5 Max	9.5 Max	9.5 Max



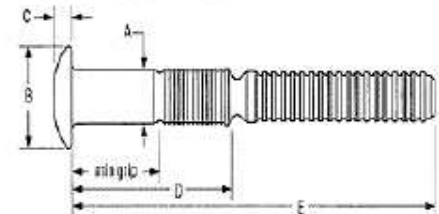
## Grip Data and Dimensions

Grip Range min-max	1/2(16) Dia.		5/8(20) Dia		3/4(24) Dia		7/8(28) Dia		1(32) Dia		1 1/8(36) Dia	
	D	E	D	E	D	E	D	E	D	E	D	E
4	1/4 - 1/2	1.213	3 11/64	1.433	3 21/32	1.518	4 5/32					
8	1/2 - 3/4	1.463	3 27/64	1.683	3 29/32	1.768	4 13/32	1.921	4 11/16	2.073	5 3/8	
12	3/4 - 1	1.713	3 43/64	1.933	4 5/32	2.018	4 21/32	2.171	4 15/16	2.323	5 5/8	
16	1 - 1 1/4	1.963	3 59/64	2.183	4 13/32	2.268	4 29/32	2.421	5 3/16	2.573	5 7/8	
20	1 1/4 - 1 1/2	2.213	4 11/64	2.433	4 21/32	2.518	5 5/32	2.671	5 7/16	2.823	6 1/8	

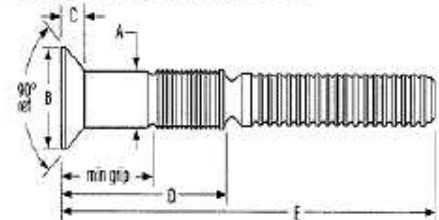
## Round Head ERSB



## Truss Head ERST



## 90 Flush Head ERSC90



24	1 1/2 - 1 3/4	2.463	4 27/64	2.683	4 29/32	2.768	5 13/32	2.921	5 11/16	3.073	6 3/8		
28	1 3/4 - 2	2.713	4 43/64	2.933	5 5/32	3.018	5 21/32	3.171	5 15/16	3.323	6 5/8		
32	2 - 2 1/4	2.963	4 59/64	3.183	5 13/32	3.268	5 29/32	3.421	6 3/16	3.573	6 7/8		
36	2 1/4 - 2 1/2	3.213	5 11/64	3.433	5 21/32	3.518	6 5/32	3.671	6 7/16	3.823	7 1/8		
40	2 1/2 - 2 3/4	3.463	5 27/64	3.683	5 29/32	3.768	6 13/32	3.921	6 11/16	4.073	7 3/8		
44	2 3/4 - 3	3.713	5 43/64	3.933	6 5/32	4.018	6 21/32	4.171	6 15/16	4.323	7 5/8		
48	3 - 3 1/4	3.963	5 59/64	4.183	6 13/32	4.268	6 29/32	4.421	7 3/16	4.573	7 7/8		
52	3 1/4 - 3 1/2	4.213	6 11/64	4.433	6 21/32	4.518	7 5/32	4.671	7 7/16	4.823	8 1/8		
56	3 1/2 - 3 3/4	4.463	6 27/64	4.683	6 29/32	4.768	7 13/32	4.921	7 11/16	5.073	8 3/8	5.250	8 9/16
60	3 3/4 - 4	4.713	6 43/64	4.933	7 5/32	5.018	7 21/32	5.171	7 15/16	5.323	8 5/8	5.500	8 13/16
64	4 - 4 1/4	4.963	6 59/64	5.183	7 13/32	5.268	7 29/32	5.421	8 3/16	5.573	8 7/8	5.750	9 1/16
68	4 1/4 - 4 1/2	5.213	7 11/64	5.433	7 21/32	5.518	8 5/32	5.671	8 7/16	5.823	9 1/8	6.000	9 5/16
72	4 1/2 - 4 3/4	5.463	7 27/64	5.683	7 29/32	5.768	8 13/32	5.921	8 11/16	6.073	9 3/8	6.250	9 9/16
76	4 3/4 - 5	5.713	7 43/64	5.933	8 5/32	6.018	8 21/32			6.323	9 5/8	6.500	9 13/16
80	5 - 5 1/4	5.963	7 59/64							6.573	9 7/8	6.750	10 1/16
84	5 1/4 - 5 1/2									6.823	10 1/8	7.000	10 5/16
88	5 1/2 - 5 3/4									7.073	10 3/8	7.250	10 9/16
92	5 3/4 - 6									7.323	10 5/8	7.500	10 13/16

### Typical Lockbolt Performance

Tests and expectations

Test results (minimum values) in bold

Expectations in *italics*

Tests were carried out using full (regular) collars and products with standard finishes (zinc plated for steel pins, alochrom for aluminium and self colour for stainless steel). Other finishes and other collars can produce different results.

The above figures cannot be used as minimum specifications as conditions of use are totally outside our control and can produce different results.

Our test program is ongoing. +

Material	Diameter reference	Shear kN	Tensile kN	Clamp kN
<b>Steel 5.8</b>	06	<i>n/a</i>	<i>n/a</i>	<i>n/a</i>
	08	15.5	12.4	8.0
	10	24.0	22.6	12.5
	12	37.2	29.9	17.5
<b>Steel 8.8</b>	06	10.7	7.3	5.0
	08	17.8	14.6	9.2
	10	26.5	22.4	18.5
<b>Aluminium</b>	12	39.6	31.8	26.5
	06	4.5	4.0	2.0
	08	8.7	7.0	4.0
<b>Stainless steel (A2)</b>	10	13.6	14.3	6.5
	12	19.6	16.1	8.7
	06	7.9	9.3	4.0
<b>Stainless steel (A2)</b>	08	13.9	14.7	7.5
	10	21.8	22.2	12.0
	12	29.2	36.9	17.5