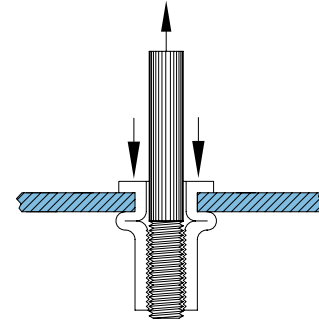


RIVNUT® Fastener Engineering Data - Unified Thread

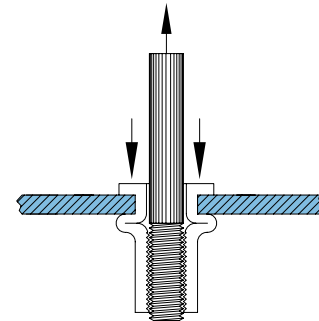
Upset Load (lbs.)						
RIVNUT® Size	Aluminum		Steel		Stainless Steel	
	Min. Grip	Max. Grip	Min. Grip	Max. Grip	Min. Grip	Max. Grip
#4-40	400	450	700	800	800	900
#6-32	500	600	850	1000	1000	1300
#8-32	600	700	1000	1250	1400	1650
#10-32	750	800	1300	1500	1900	2000
1/4-20	1300	1450	2300	2610	3300	3400
5/16-18	1900	2150	3300	3650	4800	5600
3/8-16	2570	2700	4965	5325	6100	6660
1/2-13	3000	3400	5800	6300	7200	7600

Fig. 1



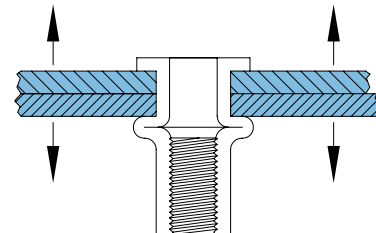
Ultimate thread strength (lbs.)						
RIVNUT® Size	Aluminum		Steel		Stainless Steel	
	Min. Grip	Max. Grip	Min. Grip	Max. Grip	Min. Grip	Max. Grip
#4-40	675	575	1180	1000	1600	1300
#6-32	964	820	1705	1450	2400	2000
#8-32	1095	935	1920	1630	3000	2200
#10-32	1600	1450	3000	2500	4000	3500
1/4-20	2500	2400	5240	4520	6000	5100
5/16-18	4000	3700	7625	6300	8700	7500
3/8-16	4700	4450	11500	10450	11700	9650
1/2-13	7900	6400	17250	14500	NA	NA

Fig.2



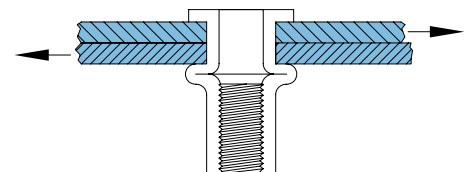
Ultimate tensile strength (lbs.)			
RIVNUT® Size	Aluminum	Steel	Stainless Steel
#4-40	261	458	621
#6-32	373	656	889
#8-32	485	853	1153
#10-32	617	1085	1470
1/4-20	1150	1850	2510
5/16-18	1600	2750	3730
3/8-16	2075	3900	5280
1/2-13	3100	4900	NA

Fig. 3



Ultimate shear strength (lbs.)			
RIVNUT® Size	Aluminum	Steel	Stainless Steel
#4-40	158	316	515
#6-32	230	460	749
#8-32	294	588	958
#10-32	374	748	1220
1/4-20	710	1100	1790
5/16-18	930	1750	2850
3/8-16	1260	2420	3940
1/2-13	1270	2440	3970

Fig. 4



Request your quote with Rivet Nut USA (a division of Cardinal Components, Inc.)

Aluminum RIVNUT® fasteners were tested in 2024-T4 aluminum plates. Steel RIVNUT® fasteners were tested in steel plates.

Stainless steel RIVNUT® fasteners were tested in stainless steel plates.

These values are averages only - certain variations must be expected in practice.

NA - Test data not available

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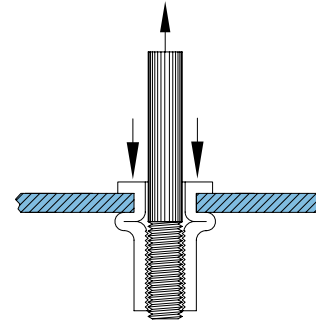
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RIVNUT® Fastener Engineering Data - Metric Thread

Upset Load (N) See Fig. 1

RIVNUT® Size	Aluminum		Steel		Stainless Steel	
	Min. Grip	Max. Grip	Min. Grip	Max. Grip	Min. Grip	Max. Grip
M3 x 0.5	925	1059	1859	1957	3149	3447
M4 x 0.7	2678	3221	4915	5089	7620	8020
M5 x 0.8	4106	4555	7549	8332	9684	11717
M6 x 1.0	6210	6806	10903	12273	16116	16974
M8 x 1.25	8314	9074	13434	16214	18927	21627
M10 x 1.50	9194	9995	15071	16556	20146	21863
M12 x 1.75	19572	20795	32490	35399	42227	51288

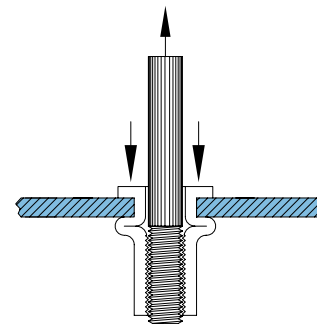
Fig. 1



Ultimate thread strength (N) See Fig. 2

RIVNUT® Size	Aluminum		Steel		Stainless Steel	
	Min. Grip	Max. Grip	Min. Grip	Max. Grip	Min. Grip	Max. Grip
M3 x 0.5	2300	1984	5075	4266	7878	7495
M4 x 0.7	5342	5053	9924	9617	13936	12330
M5 x 0.8	8251	7308	13727	14457	23100	19034
M6 x 1.0	10987	11121	23095	21218	30737	30350
M8 x 1.25	20150	18393	28736	25764	44393	39131
M10 x 1.50	25253	18651	33793	27623	50042	49446
M12 x 1.75	42779	35644	70135	62796	99694	88964

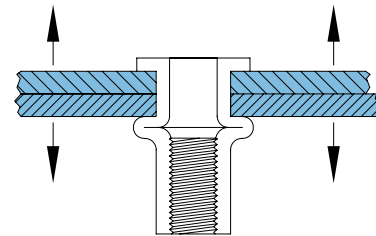
Fig.2



Ultimate tensile strength (N) See Fig. 3

RIVNUT® Size	Aluminum	Steel	Stainless Steel
M3 x 0.5	792	1503	2037
M4 x 0.7	1846	3447	5107
M5 x 0.8	2576	4889	7082
M6 x 1.0	4066	7709	10440
M8 x 1.25	5743	10765	14795
M10 x 1.50	6859	13011	17842
M12 x 1.75	12927	22370	33526

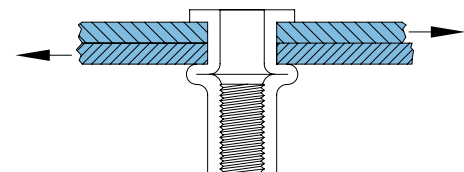
Fig. 3



Ultimate shear strength (N) See Fig. 4

RIVNUT® Size	Aluminum	Steel	Stainless Steel
M3 x 0.5	414	1223	1899
M4 x 0.7	1223	2451	3541
M5 x 0.8	2353	3416	4733
M6 x 1.0	2629	4430	6761
M8 x 1.25	3661	8558	12922
M10 x 1.50	5013	9123	12001
M12 x 1.75	9163	13100	21218

Fig. 4



Aluminum RIVNUT® fasteners were tested in 2024-T4 aluminum plates. Steel RIVNUT® fasteners were tested in steel plates. Stainless steel RIVNUT® fasteners were tested in stainless steel plates. These values are averages only - certain variations must be expected in practice. NA - Test data not available

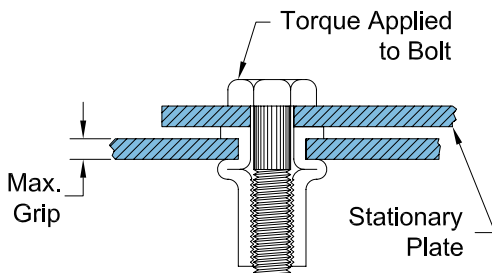
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RIVNUT® Fastener Engineering Data - Unified Thread

Fig. 5



Torque strength data

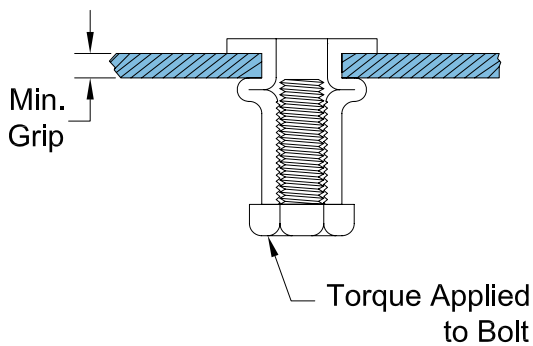
Torque - axial load relationship

Used as nut plates, RIVNUT® fasteners may be safely loaded to torque equivalent of their maximum upset loads. Surpassing these loads will cause the screw to break, or the RIVNUT® will continue to upset until ultimate strip load is attained.

Because of the many variables such as type of lubrication, plating, type and property class of screw or bolt, it is recommended that a pilot test be conducted to determine the optimum assembly torque.

Torque Equiv. of Max. Upset Load (Lb.-In.)			
RIVNUT® Size	Aluminum	Steel	Stainless Steel
#4-40	8	15	15
#6-32	12	24	30
#8-32	16	38	45
#10-32	25	45	60
1/4-20	60	130	160
5/16-18	100	156	260
3/8-16	190	344	400
1/2-13	350	660	NA

Fig.6



RIVNUT® torque-out strength

Although RIVNUT® fasteners are not normally used as shown in this view, it is used to illustrate the effect of accidental imposition of torque by: over-length screw bottoming in a blind end RIVNUT®; unthreaded shank area of an insufficiently threaded screw bottoming in the first thread of a RIVNUT®; cross threading in inserting screw.

Torque Required to Turn RIVNUT® (Lb.-In.)						
RIVNUT® Size	Aluminum		Steel		Stainless Steel	
	Key	Keyless	Key	Keyless	Key	Keyless
#4-40	9	4	20	8	45	8
#6-32	12	4	29	13	46	15
#8-32	20	9	34	21	66	38
#10-32	22	12	43	23	77	38
1/4-20	55	30	93	51	134	78
5/16-18	101	46	176	70	360	115
3/8-16	116	83	361	131	400	201
1/2-13	216	130	NA	300	NA	NA

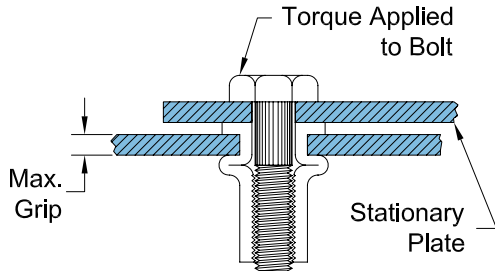
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Aluminum RIVNUT® fasteners were tested in 2024-T4 aluminum plates. Steel RIVNUT® fasteners were tested in steel plates. Stainless steel RIVNUT® fasteners were tested in stainless steel plates. These values are averages only - certain variations must be expected in practice. NA - Test data not available

RIVNUT® Fastener Engineering Data - Metric Thread

Fig. 5



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Torque strength data

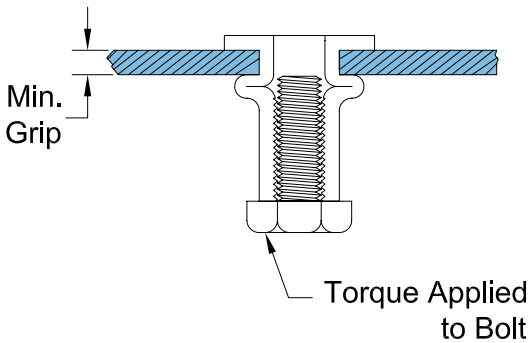
Torque - axial load relationship

Used as nut plates, RIVNUT® fasteners may be safely loaded to torque equivalent of their maximum upset loads. Surpassing these loads will cause the screw to break, or the RIVNUT® will continue to upset until ultimate strip load is attained.

Because of the many variables such as type of lubrication, plating, type and property class of screw or bolt, it is recommended that a pilot test be conducted to determine the optimum assembly torque.

Torque Equiv. of Max. Upset Load (N)			
RIVNUT® Size	Aluminum	Steel	Stainless Steel
M3 x 0.	0.9	1.5	2.1
M4 x 0.7	2.6	2.9	5.4
M5 x 0.8	3.5	10.4	12.4
M6 x 1.0	10.6	13.7	15.1
M8 x 1.25	23.5	32.1	46.5
M10 x 1.50	25.8	35.3	52.9
M12 x 1.75	56.3	71.2	107.7

Fig.6



RIVNUT® torque-out strength

Although RIVNUT® fasteners are not normally used as shown in this view, it is used to illustrate the effect of accidental imposition of torque by: over-length screw bottoming in a blind end RIVNUT®; unthreaded shank area of an insufficiently threaded screw bottoming in the first thread of a RIVNUT®; cross threading in inserting screw.

Torque Required to Turn RIVNUT® (N)						
RIVNUT® Size	Aluminum		Steel		Stainless Steel	
	Key	Keyless	Key	Keyless	Key	Keyless
M3 x 0.5	1.4	0.3	2.4	0.7	4.4	1.1
M4 x 0.7	2.0	1.1	3.6	1.4	6.0	2.4
M5 x 0.8	3.3	2.0	11.3	2.8	13.4	4.5
M6 x 1.0	10.6	4.5	16.0	5.5	19.0	8.2
M8 x 1.25	12.7	6.0	30.3	7.2	37.7	18.2
M10 x 1.50	13.6	7.9	40.2	14.0	60.1	22.1
M12 x 1.75	48.8	26.7	53.3	38.0	79.3	59.7

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Decimal Equivalents

Decimal Equivalents - Lettered Drills					
No. Drill	In. Diam.	No. Drill	In. Diam.	No. Drill	In. Diam.
A	0.234	J	0.277	S	0.348
B	0.238	K	0.281	T	0.358
C	0.242	L	0.29	U	0.368
D	0.246	M	0.295	V	0.377
E	0.25	N	0.302	W	0.386
F	0.257	O	0.316	X	0.397
G	0.261	P	0.323	Y	0.404
H	0.266	Q	0.332	Z	0.413
I	0.272	R	0.339		

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Decimal Equivalents - Numbered Drills							
No. Drill	Size In.	No. Drill	Size In.	No. Drill	Size In.	No. Drill	Size In.
1	0.2280	21	0.1590	41	0.0960	61	0.0390
2	0.2210	22	0.1570	42	0.0935	62	0.0380
3	0.2130	23	0.1540	43	0.0890	63	0.0370
4	0.2090	24	0.1520	44	0.0860	64	0.0360
5	0.2055	25	0.1495	45	0.0820	65	0.0350
6	0.2040	26	0.1470	46	0.0810	66	0.0330
7	0.2010	27	0.1440	47	0.0785	67	0.0320
8	0.1990	28	0.1405	48	0.0760	68	0.0310
9	0.1960	29	0.1360	49	0.0730	69	0.0292
10	0.1935	30	0.1285	50	0.0700	70	0.0280
11	0.1910	31	0.1200	51	0.0670	71	0.0260
12	0.1890	32	0.1160	52	0.0635	72	0.0250
13	0.1850	33	0.1130	53	0.0595	73	0.0240
14	0.1820	34	0.1110	54	0.0550	74	0.0225
15	0.1800	35	0.1100	55	0.0520	75	0.0210
16	0.1770	36	0.1065	56	0.0465	76	0.0200
17	0.1730	37	0.1040	57	0.0430	77	0.0180
18	0.1695	38	0.1015	58	0.0420	78	0.0160
19	0.1660	39	0.0995	59	0.0410	79	0.0145
20	0.1610	40	0.0980	60	0.0400	80	0.0135

Decimal Equivalent Chart					
Inch Fraction	Decimal Equivalent	Inch Fraction	Decimal Equivalent	Inch Fraction	Decimal Equivalent
1/64	0.1560	23/64	0.3594	45/64	0.7031
1/32	0.3120	3/8	0.3750	23/32	0.7188
3/64	0.0469	25/64	0.3906	47/64	0.7344
1/16	0.0625	13/32	0.4063	3/4	0.7500
5/64	0.0781	37/64	0.5781	49/64	0.7656
3/32	0.0937	7/16	0.4375	25/32	0.7813
7/64	0.1094	29/54	0.5370	51/64	0.7969
1/8	0.1250	15/32	0.4688	13/16	0.8125
9/64	0.1406	31/64	0.4844	53/64	0.8281
5/32	0.1562	1/2	0.5000	27/32	0.8438
11/64	0.1719	11/18	0.6111	55/64	0.8594
3/16	0.1875	17/32	0.5313	7/8	0.8750
13/64	0.2031	35/64	0.5469	57/64	0.8906
7/32	0.2187	3/8	0.3750	29/32	0.9063
15/64	0.2344	37/64	0.5781	59/64	0.9219
1/4	0.2500	19/32	0.5938	15/16	0.9375
17/64	0.2656	39/64	0.6094	61/64	0.9531
9/32	0.2812	5/8	0.6250	31/32	0.9688
19/64	0.2969	41/64	0.6406	63/64	0.9844
5/16	0.3125	21/32	0.6563	1	1.0000
21/64	0.3281	43/64	0.6719		
11/32	0.3438	11/16	0.6875		

Decimal Equivalents of standard gauge sheet aluminum and sheet steel								
No. of Gauge	Gauge		No. of Gauge	Gauge		No. of Gauge	Gauge	
	Aluminum (B & S)	Steel (U.S. Std.)		Aluminum (B & S)	Steel (U.S. Std.)		Aluminum (B & S)	Steel (U.S. Std.)
10	0.1019	0.1345	17	0.0453	0.0538	24	0.0201	0.0239
11	0.0907	0.1196	18	0.0403	0.0478	25	0.0179	0.0209
12	0.0808	0.1046	19	0.0359	0.0418	26	0.0159	0.0179
13	0.0720	0.0897	20	0.0320	0.0359	27	0.0142	0.0164
14	0.0641	0.0747	21	0.0285	0.0329	28	0.0126	0.0149
15	0.0571	0.0673	22	0.0253	0.0299	29	0.0113	0.0135
16	0.0508	0.0598	23	0.0226	0.0269	30	0.0100	0.0120