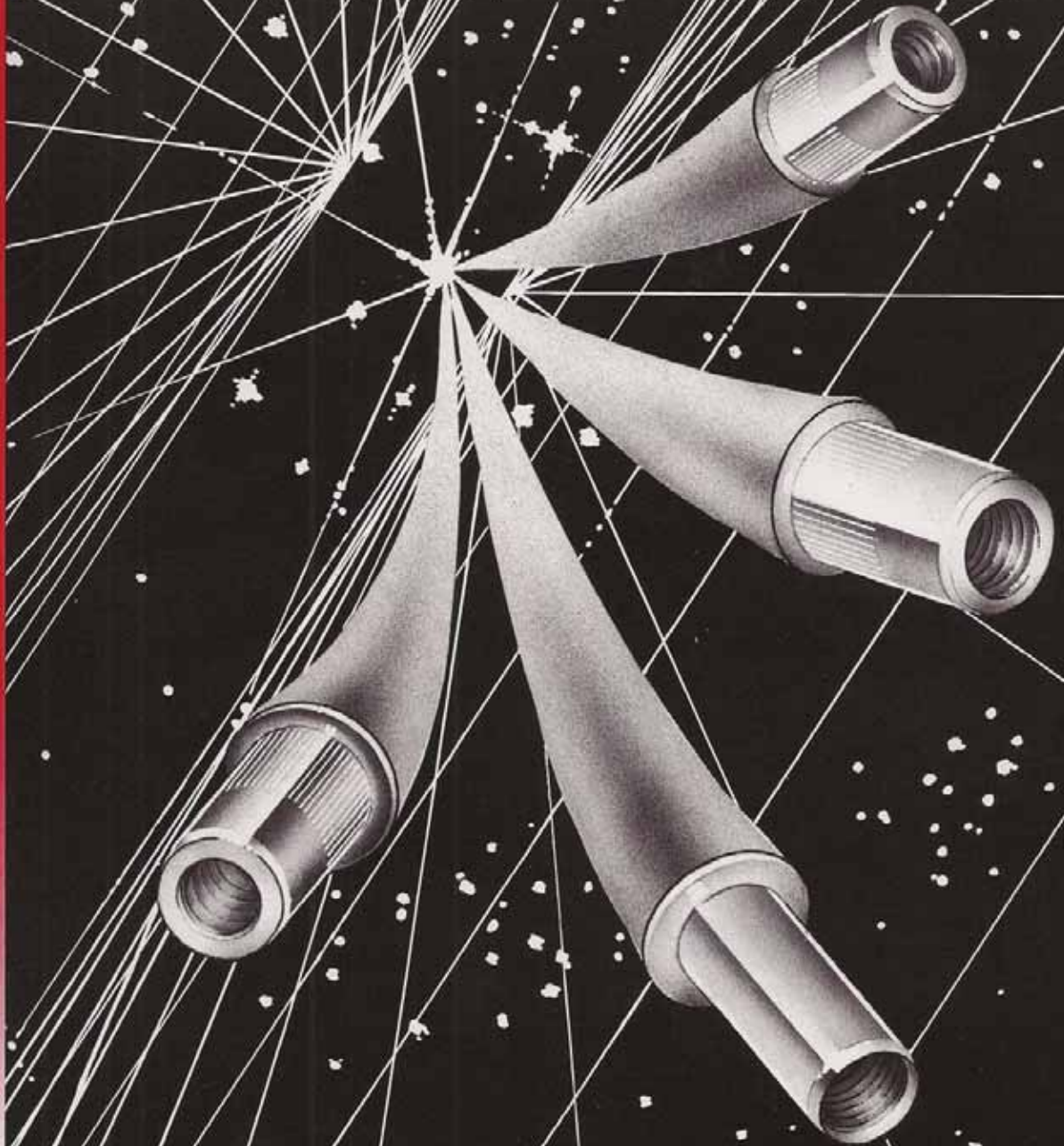


ITR[®] Fastening System
RIVNUT[®] Engineered Products, Inc.

DESIGN GUIDE



ISO 9001:2008 CERTIFIED

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Why An ITR FASTENER® ?

RIVNUT® Engineered Products has long been known for aerospace and highly technical fastening systems. Recognizing the need for a quality industrial fastener, RIVNUT designed the Internally Threaded Rivet (ITR) Fastener and provided users with a high performance industrial fastening system. ITR FASTENERS®, like other Rivnut fastening systems, are designed with these features:

- One side installation
- Ready-to-use clean threads
- Sheet metal, plastic and fiberglass applications
- No finishing work
- Hand and power tool availability

ITR FASTENERS® can be supplied in a wide variety of head styles, sizes, lengths, platings, and can include a plastisol sealant under the head. See your distributor for variations not found in this *Design Guide*.

INDEX

Engineering Data

Page 3

Upset Load (in pounds), Torque-Out (in inch pounds) and Pull-Out (in pounds) are shown by thread size in min./max. grip materials.

Page 4



ITR "D" Series

"D" series fastener has a large head and ribbed shank. Provides superior performance in both metallic and non-metallic materials. Has wide grip range.

Page 5



ITR "K" Series

"K" series fastener has a ribbed shank, providing high torque out and pull-out. Has wide grip range.

Page 6



ITR "T" Series

"T" series fastener has a low profile head and ribbed shank for high torque-out. For use in sheet metal.

Page 7

MM=Inch
Conversion

Conversion Chart

Converts metric dimensions to English.

Page 8



Power And Hand Installation Tools For All ITR FASTENERS

Power and hand installation tools for all ITR FASTENERS®.

UPSET LOAD (POUNDS)

"D" & "K" SERIES

"T" SERIES

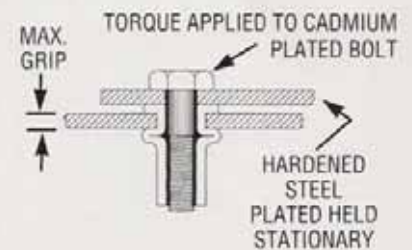
THREAD SIZE	MINIMUM GRIP MATERIAL	MAXIMUM GRIP MATERIAL	MINIMUM GRIP MATERIAL	MAXIMUM GRIP MATERIAL
#6	890	1000	690	925
#8	890	1000	690	925
#10	1275	1460	990	1130
1/4	1823	2130	1416	1615
5/16	2680	4000	1800	2650
3/8	2680	4000	1800	2650

TORQUE-OUT (INCH-POUNDS) COLD ROLLED STEEL

"D" & "K" SERIES

"T" SERIES

THREAD SIZE	MINIMUM GRIP MATERIAL	MAXIMUM GRIP MATERIAL	MINIMUM GRIP MATERIAL	MAXIMUM GRIP MATERIAL
#6	63	83	65	72
#8	63	83	65	72
#10	100	115	105	115
1/4	240	250	225	250
5/16	408	600	325	600
3/8	408	600	325	600

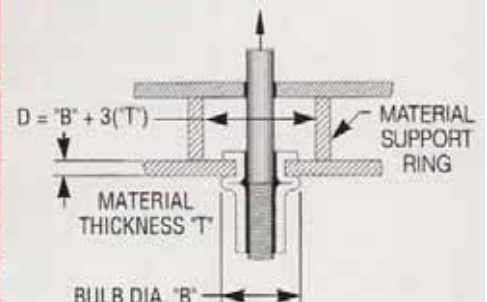


PULL-OUT (POUNDS) COLD ROLLED STEEL

"D" & "K" SERIES

"T" SERIES

THREAD SIZE	MINIMUM GRIP MATERIAL	MAXIMUM GRIP MATERIAL	MINIMUM GRIP MATERIAL	MAXIMUM GRIP MATERIAL
#6	1000*	1200	700*	1025
#8	1000*	1200	700*	1025
#10	1165*	1700	820*	1200
1/4	1230*	2700	960*	2200
5/16	1900*	6100	1150*	2460
3/8	1900*	6100	1150*	2460



* Designates that the material failed.

The above data is based on test averages of product installed under laboratory conditions and is intended to be used as a guide only. Product should be tested in your material and application.

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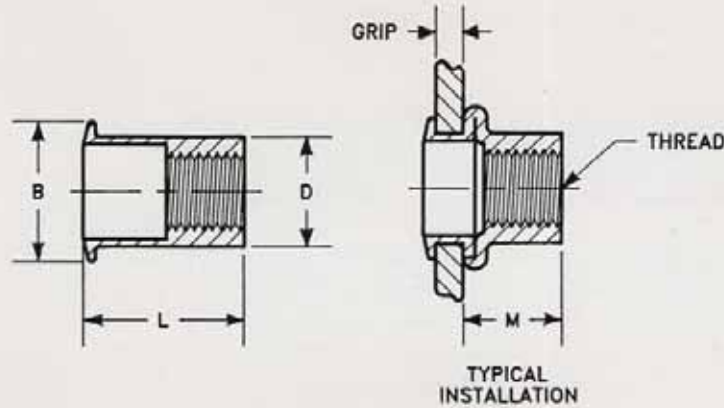
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ITR FASTENER® TECHNICAL SPECIFICATIONS

"D" Series (Large Head)



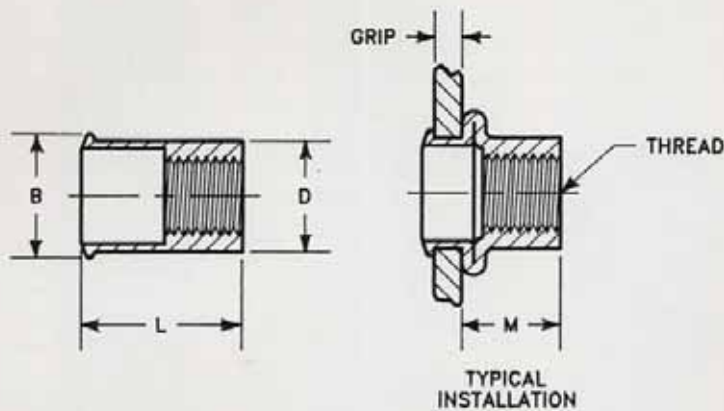
PART NUMBER	THREAD SIZE	MATERIAL THICKNESS (Grip Range)	DIMENSIONS			INSTALL HOLE SIZE	INSTALL DRILL SIZE	M REF.
			L (Max)	B (Nom)	D (Max)			
ITR6-80SD	#6-32UNC-2B	.020-.080	.460	.375	.265	.266-.272	H	.275
ITR6-130SD	#6-32UNC-2B	.080-.130	.510	.375	.265	.266-.272	H	.275
ITR8-80SD	#8-32UNC-2B	.020-.080	.460	.375	.265	.266-.272	H	.275
ITR8-130SD	#8-32UNC-2B	.080-.130	.510	.375	.265	.266-.272	H	.275
ITR10-130SD	#10-32UNC-2B	.020-.130	.515	.400	.296	.297-.303	19/64	.300
ITR10-225SD	#10-32UNC-2B	.130-.225	.625	.400	.296	.297-.303	19/64	.300
ITR25-165SD	1/4-20UNC-2B	.027-.165	.620	.500	.390	.391-.397	25/64	.340
ITR25-260SD	1/4-20UNC-2B	.165-.260	.720	.500	.390	.391-.397	25/64	.340
ITR31-165SD	5/16-18UNC-2B	.027-.165	.735	.670	.530	.531-.538	17/32	.420
ITR31-312SD	5/16-18UNC-2B	.165-.312	.850	.670	.530	.531-.538	17/32	.420
ITR37-165SD	3/8-16UNC-2B	.027-.165	.735	.670	.530	.531-.538	17/32	.420
ITR37-312SD	3/8-16UNC-2B	.165-.312	.850	.670	.530	.531-.538	17/32	.420
ITRM4-2.0SD	M4x0.7-6H	0.50-2.00	11.70	9.50	6.75	6.80-6.95	6.80	6.5
ITRM4-3.3SD	M4x0.7-6H	2.00-3.30	13.00	9.50	6.75	6.80-6.95	6.80	7.0
ITRM5-3.3SD	M5x0.8-6H	0.50-3.30	13.10	10.10	7.55	7.55-7.70	7.60	7.6
ITRM5-5.7SD	M5x0.8-6H	3.30-5.70	15.90	10.10	7.55	7.55-7.70	7.60	7.6
ITRM6-4.2SD	M6x1.0-6H	0.70-4.20	15.75	12.70	9.90	9.95-10.10	10.00	8.6
ITRM6-6.6SD	M6x1.0-6H	4.20-6.60	18.30	12.70	9.90	9.95-10.10	10.00	8.6
ITRM8-4.2SD	M8x1.25-6H	0.70-4.20	18.65	17.00	13.50	13.50-13.65	13.50	10.7
ITRM8-7.9SD	M8x1.25-6H	4.20-7.90	21.60	17.00	13.50	13.50-13.65	13.50	10.7
ITRM10-4.2SD	M10x1.50-6H	0.70-4.20	18.65	17.00	13.50	13.50-13.65	13.50	10.7
ITRM10-7.9SD	M10x1.50-6H	4.20-7.90	21.60	17.00	13.50	13.50-13.65	13.50	10.7

Fastener Specifications:
 Material: Steel C-1008, C-1010
 Finish: Zinc Plate per ASTM B633
 FE / ZN 8 Type II
 (Cad Plate Available)

Part Number Explanation:
 Example: ITR6-80SD
 I T R 6 80 S D
 ITR FASTENER® Thread Size Grip Range Steel "D" Series

ITR FASTENER® TECHNICAL SPECIFICATIONS

"K" Series (Small Head)



PART NUMBER	THREAD SIZE	MATERIAL THICKNESS (Grip Range)	DIMENSIONS			INSTALL HOLE SIZE	INSTALL DRILL SIZE	M REF.
			L (Max)	B (Min)	D (Max)			
ITR6-80SK	#6-32UNC-2B	.020-.080	.450	.295	.265	.266-.272	H	.265
ITR6-130SK	#6-32UNC-2B	.080-.130	.500	.295	.265	.266-.272	H	.265
ITR8-80SK	#8-32UNC-2B	.020-.080	.450	.295	.265	.266-.272	H	.265
ITR8-130SK	#8-32UNC-2B	.080-.130	.500	.295	.265	.266-.272	H	.265
ITR10-130SK	#10-32UNC-2B	.020-.130	.505	.326	.296	.297-.303	19/64	.300
ITR10-225SK	#10-32UNC-2B	.130-.225	.615	.326	.296	.297-.303	19/64	.300
ITR25-165SK	1/4-20UNC-2B	.027-.165	.610	.420	.390	.391-.397	25/64	.340
ITR25-260SK	1/4-20UNC-2B	.165-.260	.710	.420	.390	.391-.397	25/64	.340
ITR31-165SK	5/16-18UNC-2B	.027-.165	.720	.560	.530	.531-.538	17/32	.420
ITR31-312SK	5/16-18UNC-2B	.165-.312	.835	.560	.530	.531-.538	17/32	.420
ITR37-165SK	3/8-16UNC-2B	.027-.165	.720	.560	.530	.531-.538	17/32	.420
ITR37-312SK	3/8-16UNC-2B	.165-.312	.835	.560	.530	.531-.538	17/32	.420
ITRM4-2.0SK	M4x0.7-6H	0.50-2.00	11.45	7.50	6.75	6.80-6.95	6.80	6.7
ITRM4-3.3SK	M4x0.7-6H	2.00-3.30	12.70	7.50	6.75	6.80-6.95	6.80	6.7
ITRM5-3.3SK	M5x0.8-6H	0.50-3.30	12.85	8.25	7.55	7.55-7.70	7.60	7.6
ITRM5-5.7SK	M5x0.8-6H	3.30-5.70	15.65	8.25	7.55	7.55-7.70	7.60	7.6
ITRM6-4.2SK	M6x1.0-6H	0.70-4.20	15.50	10.65	9.90	9.95-10.10	10.00	8.6
ITRM6-6.6SK	M6x1.0-6H	4.20-6.60	18.05	10.65	9.90	9.95-10.10	10.00	8.6
ITRM8-4.2SK	M8x1.25-6H	.070-4.20	18.30	14.20	13.50	13.50-13.65	13.50	10.7
ITRM8-7.9SK	M8x1.25-6H	4.20-7.90	21.20	14.20	13.50	13.50-13.65	13.50	10.7
ITRM10-4.2SK	M10x1.50-6H	.070-4.20	18.30	14.20	13.50	13.50-13.65	13.50	10.7
ITRM10-7.9SK	M10x1.50-6H	4.20-7.90	21.20	14.20	13.50	13.50-13.65	13.50	10.7

Fastener Specifications:
 Material: Steel C-1008, C-1010
 Finish: Zinc Plate per ASTM B633
 FE / ZN 8 TYPE II
 (Cad Plate Available)

Part Number Explanation:
 Example: ITR6-80SK
 I T R 6 80 S K
 ITR FASTENER® Thread Size Grip Range Steel "K" Series

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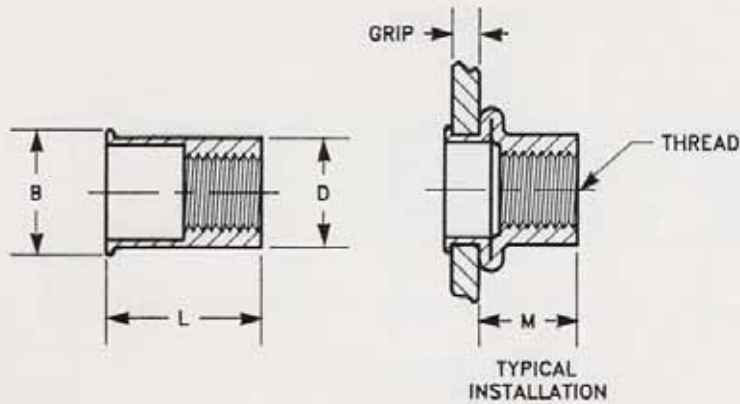
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ITR FASTENER® TECHNICAL SPECIFICATIONS

"T" Series (Thinsheet)



PART NUMBER	THREAD SIZE	MATERIAL THICKNESS (Grip Range)	DIMENSIONS			INSTALL HOLE SIZE	INSTALL DRILL SIZE	M REF.
			L (max)	B (min)	D (max)			
ITR6-80ST	#6-32UNC-2B	.020-.080	.410	.265	.249	.250-.255	1/4	.255
ITR8-80ST	#8-32UNC-2B	.020-.080	.410	.265	.249	.250-.255	1/4	.255
ITR10-130ST	#10-32UNC-2B	.020-.130	.465	.302	.280	.281-.286	9/32	.275
ITR25-165ST	1/4-20UNC-2B	.030-.165	.610	.396	.374	.375-.380	3/8	.375
ITR31-200ST	5/16-18UNC-2B	.040-.200	.720	.524	.499	.500-.505	1/2	.440
ITR37-200ST	3/8-16UNC-2B	.040-.200	.720	.524	.499	.500-.505	1/2	.440
ITRM4-2.0ST	M4x0.7-6H	0.50-2.00	10.40	6.70	6.35	6.35-6.50	6.40	6.5
ITRM5-3.3ST	M5x0.8-6H	0.50-3.30	11.80	7.65	7.10	7.15-7.30	7.20	7.0
ITRM6-4.2ST	M6x1.0-6H	0.75-4.20	15.50	10.05	9.50	9.55-9.70	9.60	9.5
ITRM8-5.1ST	M8x1.25-6H	1.00-5.10	18.30	13.30	12.70	12.70-12.85	12.70	11.2
ITRM10-5.1ST	M10x1.50-6H	1.00-5.10	18.30	13.30	12.70	12.70-12.85	12.70	11.2

Fastener Specifications:

Material: Steel C-1008, C-1010
 Finish: Zinc Plate per ASTM B633
 FE / ZN 8 TYPE II
 (Cad Plate Available)

Part Number Explanation:

Example: ITR6-80ST

I **T** **R** **6** **80** **S** **T**
 ITR FASTENER® Thread Size Grip Range Steel "T" Series

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Conversion Chart

MM	Inch	MM	Inch	MM	Inch	MM	Inch	MM	Inch
0.08	.003	3.61	.142	8.99	.354	13.51	.532	22.02	.867
0.10	.004	3.66	.144	9.02	.355	13.61	.536	22.20	.874
0.13	.005	3.81	.150	9.09	.358	13.77	.542	22.23	.875
0.25	.010	3.94	.155	9.12	.359	13.84	.545	22.53	.887
0.38	.015	4.01	.158	9.37	.369	14.02	.552	22.81	.898
0.51	.020	4.11	.162	9.40	.370	14.10	.555	23.01	.906
0.58	.023	4.36	.172	9.50	.374	14.12	.556	23.52	.926
0.63	.025	4.42	.174	9.53	.375	14.25	.561	23.80	.937
0.74	.029	4.45	.175	9.58	.377	14.48	.570	24.03	.946
0.75	.030	4.57	.180	9.60	.378	14.50	.571	24.21	.953
0.81	.032	4.75	.187	9.63	.379	14.61	.575	24.38	.960
0.89	.035	4.95	.195	9.75	.384	14.94	.588	24.46	.963
0.97	.038	5.00	.197	9.91	.390	14.99	.590	24.51	.965
0.99	.039	5.03	.198	10.08	.397	15.06	.593	25.02	.985
1.02	.040	5.11	.201	10.11	.398	15.11	.595	25.40	1.000
1.17	.046	5.21	.205	10.24	.403	15.16	.597	25.53	1.005
1.19	.047	5.49	.216	10.26	.404	15.27	.601	25.78	1.015
1.22	.048	5.61	.221	10.31	.406	15.47	.609	26.01	1.024
1.30	.051	5.74	.226	10.34	.407	15.52	.611	26.42	1.040
1.37	.054	5.87	.231	10.36	.408	15.75	.620	26.52	1.044
1.42	.056	5.99	.236	10.49	.413	15.77	.621	27.03	1.064
1.47	.058	6.10	.240	10.52	.414	15.85	.624	27.53	1.084
1.52	.060	6.12	.241	10.59	.417	15.88	.625	28.02	1.103
1.57	.062	6.20	.244	10.77	.424	16.00	.630	28.52	1.123
1.60	.063	6.22	.245	10.97	.432	16.10	.634	29.03	1.143
1.65	.065	6.25	.246	11.00	.433	16.26	.640	29.36	1.156
1.70	.067	6.35	.250	11.10	.437	16.36	.644	29.51	1.162
1.75	.069	6.50	.256	11.18	.440	16.46	.648	30.02	1.182
1.80	.071	6.60	.260	11.25	.443	16.51	.650	30.53	1.202
1.83	.072	6.68	.263	11.28	.444	16.66	.656	30.94	1.218
1.85	.073	6.73	.265	11.35	.447	16.76	.660	31.01	1.221
2.01	.079	6.85	.270	11.51	.453	17.02	.670	31.52	1.241
2.06	.081	6.88	.271	11.61	.457	17.04	.671	32.03	1.261
2.11	.083	6.99	.275	11.76	.463	17.32	.682	32.13	1.265
2.13	.084	7.01	.276	11.81	.465	17.48	.688	32.54	1.281
2.16	.085	7.08	.279	11.84	.466	17.53	.690	33.02	1.300
2.24	.088	7.11	.280	11.89	.468	17.81	.701	34.04	1.340
2.26	.089	7.14	.281	11.91	.469	17.83	.702	34.52	1.359
2.39	.094	7.21	.284	12.01	.473	18.01	.709	34.90	1.374
2.44	.096	7.29	.287	12.09	.476	18.08	.712	34.93	1.375
2.46	.097	7.32	.288	12.12	.477	18.11	.713	35.03	1.379
2.51	.099	7.47	.294	12.24	.482	18.21	.717	36.02	1.418
2.54	.100	7.47	.295	12.45	.490	18.24	.718	36.50	1.437
2.59	.102	7.52	.296	12.52	.493	18.52	.729	36.53	1.438
2.62	.103	7.62	.300	12.60	.496	19.02	.749	37.03	1.458
2.64	.104	7.67	.302	12.70	.500	19.05	.750	37.29	1.468
2.69	.106	7.98	.314	12.73	.501	19.51	.768	38.53	1.517
2.79	.110	8.00	.315	12.76	.502	19.81	.780	39.04	1.537
2.92	.115	8.10	.319	12.80	.504	19.84	.781	39.52	1.556
3.00	.118	8.15	.321	12.83	.505	20.02	.788	40.03	1.576
3.05	.120	8.43	.332	13.00	.512	20.25	.797	41.53	1.635
3.10	.122	8.51	.335	13.08	.515	20.52	.808	42.04	1.655
3.15	.124	8.61	.339	13.11	.516	20.62	.812	42.55	1.675
3.18	.125	8.74	.344	13.21	.520	21.01	.827	45.03	1.773
3.25	.128	8.76	.345	13.26	.522	21.03	.828		
3.51	.138	8.79	.346	13.44	.529	21.49	.846		
3.56	.140	8.94	.352	13.49	.531	21.51	.847		

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Reliable Tools For RIVNUT® And ITR FASTENERS®

HAND OPERATED TOOLS

C-6000 Speed Header*

(light production)
Operating a push-pull knob on the handle threads the fastener on and off the pull-up stud. Knurled barrel is held in palm of hand and lever is squeezed, retracting pull-up stud and producing upset bulge.

Operating Range
All ITR FASTENER® product series - 1/4" max. (M6)



C-722 Wrench Type Header*

C-845 Wrench Type Header*
(field repair and experimental use)
Sold only as a unit. Repair parts are not available.

Operating range
C-722 All ITR product series - 5/16" (M8) to 1/2" (M12)
C-845 All ITR FASTENER® product series - #6 (M4) to 1/4" (M6)



POWER OPERATED TOOLS

C-302 Model "P" Pneumatic Header*

(heavy production)
Air power pistol-grip tool
Weight 6.1 lbs.
Air requirements: 75 psi.

Operating Range
All ITR FASTENER® product series - 1/2" (M12) max.



C-410 Electric Header*

(medium production)
Electric pistol grip tool.
Weight: 7.0 lbs.
Power Requirements:
120V - 3.7 Amps.

Operating Range
ITR FASTENER® product series - 3/8" (M10) max.



C-350 Pneumatic (spin/spin)*

(medium to heavy production)
Air power pistol grip tool.
Air pressure must be set and controlled for proper upsets.

Weight:
#10 Thread (M5) max. - 2lbs. 7 oz.
1/4" (M6) to 3/8" (M10) max. - 3lbs. 0 oz.

Operating Range
All ITR FASTENER® product series



* When ordering tool or part, please specify thread size and ITR FASTENER® product series. Extra studs should be ordered with tool.

RIVNUT ITR FASTENERS® are available through RIVNUT authorized distributors who are backed by expert design engineering, application problem solving and ongoing research and development programs.

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