RIVETKING® PICTORIAL TABLE OF CONTENTS

SEMI TUBULAR RIVETS

SOLID RIVETS: STEEL, BRASS, STAINLESS, COPPER AND MONEL

ALUMINUM RIVETS

VARIOUS SPECIALS

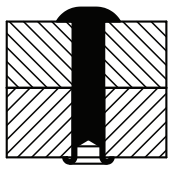
RETAINER LOCK PINS

SETTING EQUIPMENT

RIVETKING® RIVET TYPES

SEMI TUBULAR OVAL/ TRUSS HEAD

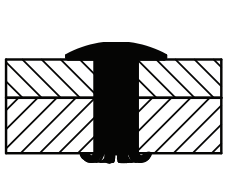
- STEEL
- ALUMINUM
- COPPER
- BRASS
- STAINLESS STEEL



To permanently fasten assemblies of metal, wood, plastic, ceramic, leather or composition materials with pre-punched or pre-drilled holes. Provides high strength and low unit cost. Fast easy clinching on high speed, automatic feed riveting machines provide high productivity using unskilled labor for a low installed cost.

PAGES 03,04,06

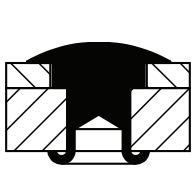
SEMI TUBULAR DEEP-HOLE



To permanently fasten two or more pieces to relatively soft materials such as leather, cardboard, canvas, rubber, plastics or other similar materials with the rivet normally punching its own hole. Eliminates the cost of pre-punching or pre-drilling holes, which together with low unit cost and fast easy clinching on high speed automatic feed riveting machines, means high productivity and lowest total cost.

PAGE 02

SEMI TUBULAR SHOULDER RIVET



To permanently fasten assemblies of metal, wood, plastic, ceramic, leather or composition materials with pre-punched or pre-drilled holes. Provides high strength and low unit cost. Fast easy clinching on high speed, automatic feed riveting machines provide high productivity using unskilled labor for a low installed cost.

PAGES 02,03,04

METAL PIERCING

To join two or more sections of a sheet metal assembly permanently and without pre-punching or pre-drilling holes. Eliminates the cost of pre-punching or pre-drilling holes and reduces material handling. Low unit cost and applied by high speed automatic feed riveting machines to further reduce assembly time and cost. Setting can provide a leakproof seal.

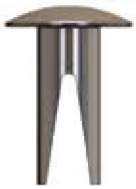
PAGE 11

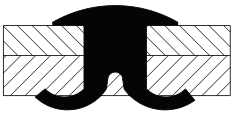
SEMI TUBULAR ELECTRICAL CONTACT

To act as an electrical contact. Electrical contact rivets can be made with precious metals such as gold, silver, platinum, copper as well as silver-cadmium oxide materials. The manufacturing method is extremely economical because the contact face can be produced of high performance precious metals while the shank can be made of lower cost metals. Also known as Bi-Metal or Tri-Metal rivets.

PAGE 11

SPLIT RIVETS (BIFURCATED)





Split rivets are typically used in the luggage, case and leather goods industries to fasten soft materials such as plastics, animal hide and wood. With automatic setting equipment it can pierce through soft materials without a pre-punched hole. Typically offered in Steel or Brass material with a host of metal finishes such as zinc, nickel, or brass plating.

PAGES 02,03,11

SOLID RIVETS

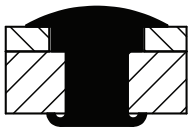
SOLID SMALL DIAMETER:
- STEEL
- ALUMINUM
- COPPER
- BRASS
- STAINLESS STEEL

SOLID LARGE DIAMETER:
- STEEL ONLY

To permanently fasten two or more pieces of metal with pre-punched or pre-drilled holes. Worked end of rivet may be spun to produce a finished appearance matching the head of the rivet.

PAGES 03,14,15

SOLID SHOULDER RIVET



To act as a pivot, hinge pin or slide pin. Lower unit cost than similar screw machine parts and with the added benefit of being set on automatic feed riveting machines for minimal overall cost. Tenon may be completely solid or Semi Tubular as shown.

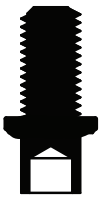
PAGES 02,03

COPPER BELT/ TRUNK RIVETS

Belt Rivets are used to repair antique machine belts. Trunk Rivets were once used as a way to rivet luggage, trunks or large cases. Both are also used in various decorative applications. They can be peened with a hammer or used together with a special washer called a riveting burr.

PAGE 20

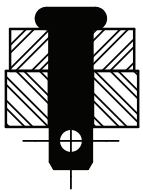
COLLAR RIVETS



To act as a guide peg or anchor stud for a pivoting assembly. May be supplied completely solid or Semi Tubular as shown. Can be applied/fed with auto feed machines.

PAGES 01,02

CLEVIS PIN (CROSS DRILLED)



To act as a hinge pin or a semi-permanent fastener where the strength of a permanent fastener is required. Generally secured with a cotter pin.

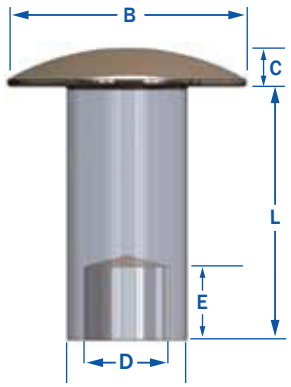
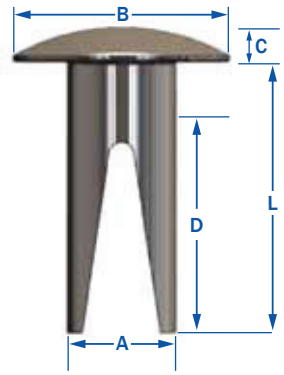
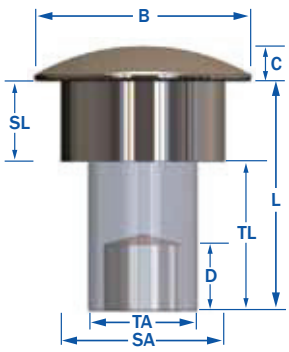
PAGES 01,02

LOCK PINS

Used to secure the latch on a hitch assembly for tractors, trucks or trailers. Offered with or without a vinyl coated steel lanyard. Available in Steel with Zinc or high salt spray Zinc Nickel Plating.

PAGE 02

RIVETKING® RIVET TYPES - GENERAL SPECIFICATIONS

SEMI TUBULAR	SOLID	BIFURCATED	SHOULDER
			
A — BODY DIAMETER **B** — HEAD DIAMETER **C** — HEAD THICKNESS **D** — HOLE DEPTH TO APEX **L** — RIVET LENGTH	**A** — BODY DIAMETER **B** — HEAD DIAMETER **C** — HEAD THICKNESS **L** — RIVET LENGTH	**A** — BODY DIAMETER **B** — HEAD DIAMETER **C** — HEAD THICKNESS **D** — HOLE DEPTH **L** — RIVET LENGTH	**B** — HEAD DIAMETER **C** — HEAD THICKNESS **SL** — SHOULDER LENGTH **TL** — TENON LENGTH **SA** — SHOULDER DIAMETER **TA** — TENON DIAMETER **D** — HOLE DEPTH TO APEX **L** — RIVET LENGTH
HOW TO USE			
Semi Tubular rivets can be used to join two or more pre-drilled or pre-punched components. It is most economically set with an autofeed riveting machine	Used to join two or more pre-drilled or pre-punched components. Offered in a full range of diameters and lengths. Also can be used as a pin.	Used to permanently join soft material such as leather to fiber, rubber, wood, canvas and some plastics.	Used when a rivet or post is desired that is permanent by fastening and function as pivots. Ideal for applications on jalousies, baby carriages, pulleys, shelving and automotive parts.
HOW TO CLINCH			
Use a roll or scored clinch. A roll clinch is stronger. For a uniform appearance, a cap may be used on the clinched end.	Can be impact set on a press or auto feed riveting machine. Can also be set on radial forming machines.	With anvils that spread the prongs flush with material or turned into the material. Can be used with caps or against washers to prevent clinch from tearing loose.	Clinching is similar to Semi Tubular rivet. Roll clinch or scored clinch. The roll clinch is stronger.
ADVANTAGES			
High shear strength of solid rivet combined with ease of clinching on automatic, pneumatic and manually operated rivet setting machines.	Offered in diameters from 1/32" to 1". Length possibilities are unlimited. Offers the highest shear strength of any fastener and has excellent clamp up force. Used in applications from small electronics to bridge building.	Eliminate the cost of pre-punching or pre-drilling of holes in material without weakening the assembly by removing of material.	Shoulder rivets combine low cost with ease of assembly for permanent fastening with automatic rivet setting machines.

GENERAL— These Semi Tubular rivet standards cover the complete general and dimensional data for oval head, truss head, flat head, 90° and 120° countersunk head rivets.

The inclusion of dimensional data in this standard is not intended to imply that all of the products described are stock production sizes.

HEADS— The bearing surface of flat, oval, and truss head rivets shall be at right angles to the axis of the body within 2°. Heads of all Semi Tubular rivets shall not be eccentric with the shank beyond a tolerance of 3% of the maximum head diameter. Because the heads are not machined or trimmed, the circumference may be slightly irregular and the edges rounded or flat.

UNDERHEAD FILLETS— Rivets, other than countersunk type, shall be furnished with a definite fillet under the head but radius of fillet shall not exceed 10% of maximum shank diameter.

MATERIAL— Semi Tubular rivets shall be low carbon steel, or brass, standard with manufacturer; or stainless steel, aluminum, copper or other metals as agreed upon between the purchaser and supplier.

LENGTH— Length of rivets shall be measured as indicated in the illustrations for each head style. Semi Tubular rivets are available in length increments specified.

WORKMANSHIP— Semi Tubular rivet end irregularities shall not be such that usability of rivet is impaired. Rivets shall be free from surface seams, splits, and all other defects that might affect their serviceability.

WHEN IT DOESN'T HAVE TO COME APART
A RIVET IS YOUR MOST LOGICAL FASTENER, HERE'S WHY...

ONE OF THE LOWEST COST FASTENERS
Rivets are used in many major consumer and industrial products made today. Designers and assemblers have long recognized that riveting is one of the least expensive and most versatile assembly methods available.

CAN BE USED WITH MOST ANY MATERIAL
Rivets have been successfully set in wood, metals, plastics, fiberboard, cloth and ceramics. It is a strong fastener. All other things being equal, no other fastener - for its size and simplicity - can equal the shear strength of a rivet.

CAN BE USED FOR MANY PURPOSES
Rivets are not only used to fasten two or more parts but often provide a dual function. They have been used as pivots, hinges, levers, terminals, electrical contacts, cam followers, decorative items and in hundreds of other ways. The only limiting factor to the use of rivets is the designer's imagination.

AVAILABLE IN A GREAT VARIETY OF FINISHES
They can be made from copper, brass, steel, aluminum, stainless steel and any material that can be cold-heated. If color is desired, they are plated, Japanned or painted.

IS A LOW COST PRODUCTION METHOD
Compared to other assembly machines, rivet setting equipment is lowest in cost. Since the riveting operation is automatic, non-skilled operators can quickly perform the work and lengthy training is not necessary.

IT'S GEARED TO MOST PRODUCTION REQUIREMENTS
Depending on the assembly, rivets can be set at extremely high speeds or to meet the optimum production capabilities of the operator. Machines have been built to feed several parts of the assembly simultaneously and to achieve most any degree of mechanization necessary.

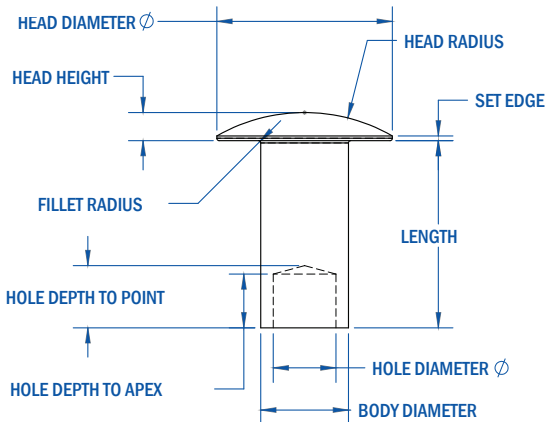
SOME LIMITATIONS
Tensile and fatigue strengths are lower than bolts. High tensile loads and extreme vibrations can pull out the set.

Once set with rivets, an assembly cannot be disassembled for maintenance purposes.

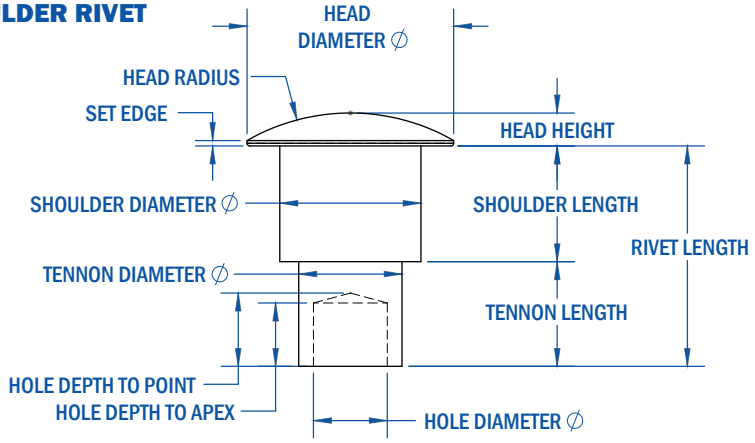
While rivets can be made to close tolerances, they are not usually as highly a precision fastener as a screw machine part may be. Where rivets are required for close tolerance assemblies, please consult our sales department.

ANATOMY OF THE SEMI TUBULAR RIVET

SEMI TUBULAR RIVET



SEMI TUBULAR SHOULDER RIVET



RIVET DESCRIPTIONS AND DIMENSIONS

The standard Semi Tubular Rivet is made of 3 major components with 6 dimensional values, all of which are required in order to produce the rivet.

1) Body or Shank (Diameter & Length)

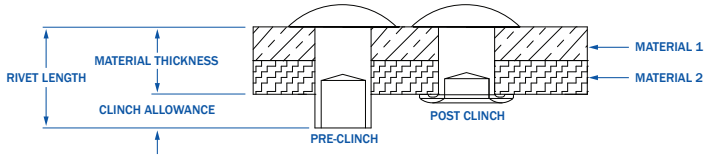
2) Head (Diameter & Height)

3) Hole (Diameter & Depth)

Custom rivets are sometimes produced with an additional component called a "shoulder". In this case, additional diameter and shoulder length dimensions are required for each shoulder. Rivets can be made with multiple shoulders, however, it is suggested that Semi Tubular rivets be designed with only one shoulder. When a shoulder rivet is required, the hole depth should not extend into or past the shoulder, as this causes problems in the manufacturing process and may adversely affect the functionality of the rivet.

RIVET LENGTH AND CLINCH ALLOWANCE LENGTH

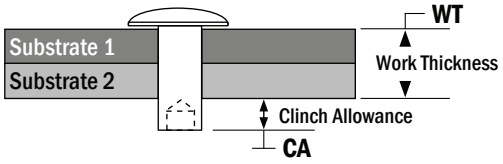
A portion of the rivet length is required for clinching the Semi Tubular rivet. As a general rule of thumb this is usually figured at about 55% of the rivet diameter. Because rivets have been standardized, we have calculated the required clinch allowances for standard rivets in the table below.



RIVET DIAMETER	1/16	3/32	1/8	9/64	5/32	3/16	7/32	1/4	9/32	5/16	3/8
MAX. CLINCH ALLOWANCE	.032	.045	.062	.093	.093	.110	.156	.156	.172	.187	.218

LENGTH CALCULATION

CA + WT = Rivet Length (RL)(Max.)



RIVET LENGTH CALCULATION

WT= T1 +T2 +T3....
RL (max)= CA + WT

To calculate rivet length:

a) Add up thicknesses, T1+T2+(T3...) = Work Thickness (WT)
b) Select desired rivet diameter and locate the associated Clinch Allowance (CA)
c) Add Work Thickness (WT) + Clinch Allowance (CA) = Maximum Rivet Length (RL)
d) Select rivet below the Maximum Rivet Length to the nearest 1/32".

Example: Fasten 2 pieces of .125" thick steel with steel 3/16" (.375 head) rivets.
a) .125 (T1) +.125 (T2) = .250 (WT)
b) .110 (CA)
c) .250 (WT) + .110 (CA) = .360 (RL) Max.
d) .360 (RL) Max,... Closest standard size .360" (RL)
Rivet Size: 3/16" x 11/32" Rivet King Part# XTT3750113Z

Adding the clinch allowance value to the total thickness of the assembly to be riveted, gives you the rivet shank length. If the rivet has a countersunk type head, the head thickness should be included in this length.

PRESSURES TO UPSET A SEMI TUBULAR RIVET

To calculate the required pressure to set a Semi Tubular rivet, you will need to know the diameter and the material of the rivet.

A= Rivet Diameter
D= Rivet Hole I.D.
MTS= Material Tensile Strength (referenced in the same table as the formula)

$$\left(\left(\left(\frac{"A"}{2}\right)^2\right)\pi - \left(\left(\frac{"D"}{2}\right)^2\right)\pi\right) \times MTS \times 1.5$$

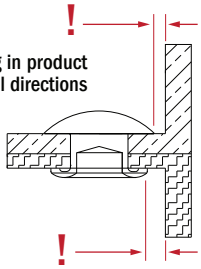
Typical Wire Tensile Strengths for Rivets: (Use as "MTS" for above calculation)

Steel: 80,000 psi Stainless Steel: 100,000 psi Aluminum: 50,000 psi
Copper: 40,000 psi Brass: 70,000 psi

TOLERANCES

Tolerances should be considered as actually representing degree of error. Designs should start with zero tolerance (allowable error) being made only to fit the product designs into the manufacturing process. Many mechanical failures of product designs can be avoided. For example, the holes in two pieces to be assembled are deliberately made oversized so there will be no question of the rivet going through. However, these two pieces rotate separately around the rivet. Because of the sloppiness in the hole, an eventual elongation of the hole occurs resulting in the malfunction of the assembly.

RIVET SETTING CLEARANCES



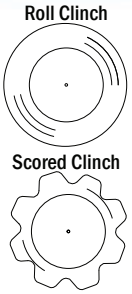
This is one of the most common oversights occurring in product designs. Sufficient clearances must be provided in all directions so that riveting equipment is able to get the rivet into the work piece for proper clinching. Axial access for clinching must be available both above and below the hole through which the rivet must pass. Clearances vary depending on the configuration of assembly, the thickness of assembly and the length of the rivet.

HOLE CLEARANCES

Usually the smaller the rivet the less the clearances are required. As a general rule, the minimum hole clearance is .003" and the maximum is .008". When one rivet is set in an assembly, the minimum should be observed to assure the strongest clinch possible. If the two or more holes on an assembly are being set with rivets, clearances on the maximum side should be used. The amount of clearance depends largely on the ability of your production equipment to maintain close center to center hole location tolerances on the mating part to be riveted.

CLINCH TYPE

There are two types of settings that are normally used in the clinching of Semi Tubular rivets; the Roll Clinch and the Scored Clinch. A Rolled Clinch gives the maximum strength when the rivets are set properly. When this clinch is used with soft materials, washers, (burrs) or caps will provide more bearing surface and a stronger clinch. A Scored Clinch holds best on soft materials since it can be turned into the material and spreads the clinch to provide a greater contact bearing surface.



CORROSION PROTECTION

The corrosion factor of a particular rivet is dependent on the corrosion of the base metal, the protection layer (plating) and the conversion layer (chromate). Being that the most cost effective material to produce is steel, most prefer to protect the steel with a plating such as Zinc and a chromate. Rivets require a specialized plating and wax therefore it is highly suggested the manufacturer perform this task. For standard performance a SST rating (salt spray test) is about 48 hours until red rust. Other platings such as Zinc alloys (i.e. ZiNi, ZnFe and ZnTi) can extend the SST rating to 840 hours until red rust. Our in-house test facilities can test the rivet before and after setting according to the ASTM B117 standard.

GALVANIC ACTION CORROSION

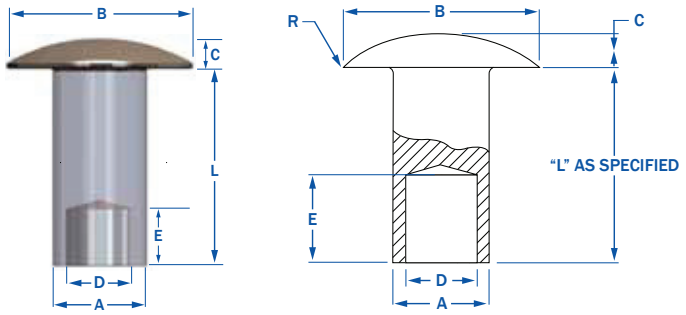
Galvanic Action is seldom considered in design but it can often be one of the hidden causes of failures. Galvanic corrosion is accelerated electromechanical corrosion created when a noble metal is in contact with another less noble metal, both being in a corroding medium (such as damp air). The less noble metal corrodes at a faster rate than normal while the noble metal acquires greater protection of corrosion. For example, an Aluminum (less noble metal) rivet in a copper (more noble metal) would cause aluminum to corrode at an accelerated rate while the copper would be virtually un-affected. Should you be in a position of having to join two dissimilar metals, be sure to refer to the Galvanic Series table.

RIVETING WITHOUT PREPARED HOLES

For some applications Semi Tubular rivets can be used without the need for preformed or pre drilled holes. Semi Tubular self-piercing rivets can be used with materials such as leather, some plastics, and light sheet metals. When piercing sheet metal, adjustments may be suggested to the rivet raw material, hole diameter and heat treatment. Self-piercing rivets can be used especially in difficult spot welding applications, piercing and fastening in just one step. They have excellent mechanical strength and fatigue performance. Since Semi Tubular self-piercing rivets can be automated, you can expect highly repeatable results.

RIVETKING® OVAL/ TRUSS HEAD SEMI TUBULAR RIVET DIMENSIONS

COMMONLY MANUFACTURED & STOCKED IN MATERIALS:
STEEL, ALUMINUM, COPPER, BRASS
PLATINGS: ZINC, NICKEL, ZNFE, ZNNI, COPPER FLASH, BRASS



RIVETKING® Semi Tubular Rivets are manufactured in accordance with internal standards and coated with a proprietary wax to insure a smooth rollover and clinch of the assembly.

To calculate the rivet length, add the material thicknesses to be riveted to the maximum clinch allowance "CA". The resulting value is the maximum allowed rivet length. Round off to the nearest 1/32" not exceeding the maximum allowed rivet length.

JOINT STRENGTH TESTING CAN BE PERFORMED IN OUR LAB.
Contact our applications engineering department for details.

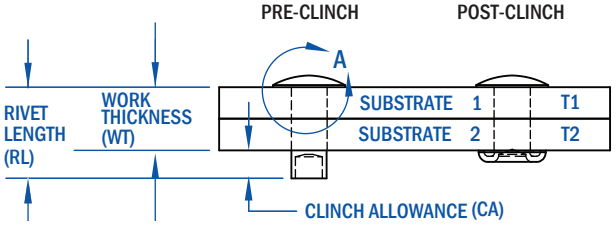
			A		B		C		D		E	L	R	CA	
PART CODE	RIVET SIZE	HEAD STYLE	BODY DIA		HEAD DIA		HEAD HEIGHT		HOLE DIA		DEPTH TO APEX	LENGTH	HEAD RADIUS	CLINCH ALLWNCE	MIN. REF. HOLE SIZE
			MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	MAX.	MIN.	NOM.		REF.	REF.	
B-109	1/16"	OVAL	.061	.058	.114	.104	.019	.015	.044	.039	.046	As Specified by User	.16	.032	.067
B-125		TRUSS	.061	.058	.130	.120	.019	.015	.044	.039	.046		.13	.032	.067
F-147	3/32"	OVAL	.089	.085	.152	.142	.026	.020	.068	.062	.064		.22	.045	.093
F-156		TRUSS	.089	.085	.161	.151	.026	.022	.068	.062	.064		.22	.045	.093
G-187		OVAL	.099	.095	.192	.182	.032	.026	.076	.070	.077		.27	.055	.104
J-218	1/8"	OVAL	.123	.118	.223	.213	.038	.030	.090	.084	.094		.31	.062	.128
J-281		TRUSS	.123	.118	.286	.276	.038	.030	.090	.084	.094		.38	.062	.128
M-234	9/64"	OVAL	.146	.141	.239	.229	.045	.035	.107	.100	.126		.27	.093	.152
M-281			.146	.141	.286	.276	.045	.039	.107	.100	.126		.49	.093	.152
M-312		TRUSS	.146	.141	.318	.306	.045	.035	.107	.100	.126		.45	.093	.152
M-375			.146	.141	.381	.369	.065	.060	.107	.100	.126		.53	.093	.152
N-312	5/32"		.157	.152	.318	.306	.068	.058	.110	.103	.126		.31	.093	.165
T-312	3/16"	OVAL	.188	.182	.318	.306	.065	.055	.141	.134	.155		.25	.110	.196
T-375		TRUSS	.188	.182	.381	.369	.065	.055	.141	.134	.155		.53	.110	.196
U-437	7/32"	OVAL	.217	.210	.444	.430	.090	.085	.162	.154	.189		45	.140	.234
Y-437	1/4"		.252	.244	.444	.430	.075	.061	.184	.176	.219		.65	.156	.265
Y-500		OVAL	.252	.244	.507	.493	.085	.071	.184	.176	.219		.72	.156	.265
V-437		TRUSS	.290	.280	.444	.430	.100	.090	.200	.190	.225		41	.175	.302
Z-500	5/16"		.310	.302	.507	.493	.090	.085	.213	.206	.243		.59	.187	.328
Z-562		OVAL	.310	.302	.570	.554	.100	.095	.219	.211	.243		.69	.187	.328
W-562	3/8"		.377	.368	.570	.554	.100	.095	.286	.276	.312		.69	.218	.390
W-625			.377	.368	.632	.618	.125	.115	.286	.276	.312		.63	.218	.390

SEMI TUBULAR LENGTH CALCULATION

To calculate rivet length:

a) Add up thicknesses, T1+T2+(T3...) = Work Thickness (WT)
b) Select desired rivet diameter and locate the associated Clinch Allowance (CA)
c) Add Work Thickness (WT) + Clinch Allowance (CA) = Maximum Rivet Length
d) Select rivet below the Maximum Rivet Length to the nearest 1/32".

Example: Fasten 2 pieces of .125" thick steel with steel 3/16" (.375 head) rivets.
a) .125 (T1) +.125 (T2) = .250 (WT)
b) .110 (CA)
c) .250 (WT) + .110 (CA) = .260 (RL) Max.
d) .260 (RL) Max,... Closest standard size .250" (RL)
Rivet Size: 3/16" x 1/4" Rivet King Part# XTT375008SZ



Pounds Per 1,000 Pieces

LENGTH	DIAMETER X HEAD DIAMETER							
	J-218	J-281	M-234	M-312	T-312	T-375	Y-437	Y-500
	1/8"	1/8"	9/64"	9/64"	3/16"	3/16"	1/4"	1/4"
0.125	0.43	0.65	-	-	-	-	-	-
0.140	0.48	0.69	-	-	-	-	-	-
0.156	0.53	0.75	0.71	0.93	-	-	-	-
0.187	0.63	0.85	0.86	1.07	1.54	1.86	-	-
0.219	0.73	0.95	1.00	1.21	1.80	2.11	-	-
0.250	0.83	1.04	1.14	1.35	2.03	2.35	4.00	4.61
0.281	0.93	1.14	1.29	1.50	2.27	2.59	4.44	5.05
0.312	1.03	1.24	1.43	1.64	2.51	2.83	4.89	5.49
0.344	1.13	1.34	1.57	-	2.76	3.07	5.35	5.94
0.375	1.22	1.44	1.71	1.92	3.00	3.32	5.79	6.38
0.406	1.32	1.54	1.86	2.07	3.24	3.55	6.22	6.83
0.437	1.42	1.64	2.00	2.21	3.48	3.80	6.66	7.27
0.469	1.52	1.74	2.14	2.36	3.73	4.04	7.12	7.73
0.500	1.62	1.84	2.29	2.50	3.97	4.29	7.56	8.17
0.531	1.72	1.94	2.43	2.64	4.21	4.52	8.01	8.60
0.562	1.82	2.03	2.57	2.78	4.45	4.77	8.45	9.04
0.594	1.92	2.14	2.71	2.93	4.70	5.01	8.90	9.50
0.625	2.02	2.23	2.86	3.07	4.94	5.25	9.34	9.95
0.656	2.12	2.32	3.00	-	5.18	5.49	9.78	10.39
0.687	2.21	2.43	3.14	3.36	5.42	5.73	10.22	10.83
0.719	2.32	2.54	-	3.51	5.67	5.98	10.68	11.28
0.750	2.42	2.64	3.43	3.64	5.90	6.22	11.12	11.72
0.781	2.51	2.74	-	-	6.15	6.46	11.56	12.16
0.812	2.61	2.83	3.72	3.93	6.39	6.70	12.00	12.60
0.844	2.72	2.93	3.86	4.08	6.64	6.95	12.45	13.06
0.875	2.82	3.03	4.00	4.21	6.88	7.19	12.89	13.51
0.906	2.92	3.13	4.14	4.35	7.12	7.43	13.33	13.94
0.937	3.02	3.23	4.29	4.50	7.36	7.67	13.78	14.38
0.969	3.11	3.33	4.43	4.65	7.60	7.91	14.23	14.83
1.000	3.21	3.43	4.57	4.78	7.85	8.16	14.67	15.27
1.031	3.31	3.53	-	4.93	8.08	8.40	15.11	15.72
1.062	3.41	3.63	4.86	5.07	8.33	8.64	15.55	16.16
1.094	3.51	3.73	5.00	5.22	8.57	8.88	16.01	16.61
1.125	3.61	3.83	5.14	5.35	8.82	9.13	16.45	17.05
1.156	3.71	3.92	5.29	5.50	9.05	9.37	16.89	17.49
1.187	3.81	4.02	5.43	5.64	9.30	9.61	17.33	17.93
1.219	3.91	4.12	5.58	5.79	9.54	9.86	17.79	18.39
1.250	4.01	4.22	5.71	5.93	9.79	10.10	18.23	18.84
1.281	4.10	4.32	5.86	6.07	10.02	10.34	18.67	19.27
1.312	4.20	4.42	6.00	6.21	10.26	10.58	19.11	19.71
1.344	4.30	4.52	6.15	6.36	10.51	10.83	19.56	20.17
1.375	4.40	4.62	6.38	6.50	10.75	11.06	20.01	20.61
1.406	4.50	4.72	6.43	6.64	10.99	11.31	20.45	21.05
1.437	4.60	4.82	6.57	6.79	11.23	11.54	20.89	21.49
1.469	4.70	4.91	6.72	6.93	11.48	11.80	21.34	21.95
1.500	4.80	5.01	6.86	7.07	11.72	12.03	21.78	22.39
1.531	4.90	5.11	7.00	7.21	11.96	12.28	22.22	22.83
1.562	5.00	5.21	7.15	7.36	12.20	12.51	22.67	23.27
1.594	5.09	5.31	7.29	7.51	12.45	12.77	23.12	23.72
1.625	5.19	5.41	7.43	7.65	12.69	13.00	23.56	24.16
1.656	5.29	5.51	7.57	7.78	12.93	13.24	24.00	24.60
1.687	5.39	5.61	7.72	7.93	13.17	13.48	24.44	25.05
1.718	5.49	5.71	7.86	8.07	13.41	13.72	24.88	25.49
1.750	5.59	5.81	8.00	8.22	13.66	13.97	25.33	25.94
1.812	5.79	6.00	8.29	8.50	14.14	14.45	26.22	26.82
1.875	5.99	6.21	8.57	8.79	14.63	14.94	27.11	27.72
1.937	6.18	6.40	8.86	9.07	15.11	15.42	27.99	28.60
2.000	6.39	6.61	9.14	9.36	15.59	15.90	28.90	29.50
2.125	-	-	-	-	16.56	16.87	30.67	31.28
2.187	-	-	-	-	-	17.36	-	32.16
2.250	-	-	-	-	17.53	17.85	32.45	33.05
2.375	-	-	-	-	18.50	18.82	34.22	34.83
2.437	-	-	-	-		19.30	35.11	35.71
2.500	-	-	-	-	19.47	19.79	36.00	36.60
2.625	-	-	-	-	-	20.76	37.78	38.38
2.750	-	-	-	-	21.40	21.72	39.56	40.17
3.000	-	-	-	-	23.34	23.66	43.11	43.72

RIVETKING® ALUMINUM SEMI TUBULAR RIVET WEIGHT CHARTS

Pounds Per 1,000 Pieces

LENGTH	DIAMETER X HEAD DIAMETER							
	J-218	J-281	M-234	M-312	T-312	T-375	Y-437	Y-500
	1/8"	1/8"	9/64"	9/64"	3/16"	3/16"	1/4"	1/4"
0.125	0.15	0.23	-	-	-	-	-	-
0.140	0.17	0.24	-	-	-	-	-	-
0.156	0.19	0.26	0.25	0.33	-	-	-	-
0.187	0.23	0.30	0.30	0.38	0.55	0.66	-	-
0.219	0.26	0.33	0.35	0.43	0.63	0.74	-	-
0.250	0.30	0.37	0.40	0.48	0.71	0.83	1.42	1.63
0.281	0.32	0.41	0.45	0.53	0.80	0.91	1.57	1.79
0.312	0.36	0.44	0.51	0.58	0.89	1.00	1.73	1.94
0.344	0.40	0.48	0.55	-	0.98	1.09	1.89	2.10
0.375	0.43	0.51	0.61	0.68	1.06	1.18	2.04	2.26
0.406	0.47	0.55	0.65	0.74	1.15	1.26	2.20	2.41
0.437	0.50	0.58	0.71	0.78	1.23	1.34	2.35	2.57
0.469	0.54	0.61	0.75	0.84	1.32	1.43	2.52	2.73
0.500	0.58	0.65	0.81	0.88	1.40	1.51	2.67	2.89
0.531	0.61	0.68	0.86	0.93	1.49	1.60	2.83	3.04
0.562	0.64	0.72	0.91	0.98	1.57	1.68	2.99	3.20
0.594	0.68	0.76	0.96	1.04	1.66	1.78	3.15	3.36
0.625	0.71	0.79	1.01	1.09	1.75	1.86	3.30	3.51
0.656	0.75	0.83	1.06	-	1.83	1.95	3.46	3.67
0.687	0.78	0.86	1.11	1.19	1.92	2.03	3.61	3.83
0.719	0.82	0.90	-	1.24	2.00	2.12	3.77	3.98
0.750	0.86	0.93	1.21	1.29	2.09	2.20	3.93	4.15
0.781	0.89	0.96	-	-	2.17	2.28	4.09	4.30
0.812	0.93	1.00	1.32	1.39	2.26	2.37	4.24	4.45
0.844	0.96	1.04	1.36	1.44	2.35	2.45	4.41	4.62
0.875	1.00	1.07	1.42	1.49	2.43	2.54	4.56	4.77
0.906	1.03	1.11	1.46	1.54	2.52	2.62	4.71	4.92
0.937	1.06	1.14	1.52	1.59	2.60	2.71	4.87	5.09
0.969	1.10	1.18	1.56	1.64	2.69	2.80	5.03	5.24
1.000	1.13	1.22	1.62	1.69	2.77	2.89	5.18	5.40
1.031	1.17	1.24	-	1.74	2.86	2.97	5.35	5.56
1.062	1.21	1.28	1.72	1.79	2.94	3.06	5.50	5.71
1.094	1.24	1.31	1.77	1.84	3.03	3.14	5.66	5.88
1.125	1.28	1.35	1.82	1.90	3.11	3.22	5.82	6.03
1.156	1.31	1.39	1.87	1.94	3.21	3.31	5.97	6.18
1.187	1.34	1.42	1.92	2.00	3.29	3.39	6.12	6.34
1.219	1.38	1.46	1.97	2.04	3.37	3.49	6.29	6.50
1.250	1.41	1.49	2.02	2.10	3.46	3.57	6.44	6.65
1.281	1.45	1.53	2.07	2.14	3.54	3.66	6.60	6.82
1.312	1.49	1.57	2.13	2.20	3.63	3.74	6.76	6.97
1.344	1.52	1.60	2.17	2.24	3.71	3.83	6.91	7.13
1.375	1.56	1.63	2.23	2.30	3.80	3.91	7.08	7.29
1.406	1.59	1.67	2.27	2.35	3.88	4.00	7.23	7.44
1.437	1.63	1.70	2.33	2.40	3.97	4.08	7.38	7.59
1.469	1.67	1.74	2.37	2.45	4.06	4.17	7.55	7.76
1.500	1.70	1.77	2.43	2.50	4.15	4.26	7.70	7.91
1.531	1.73	1.81	2.47	2.55	4.23	4.34	7.85	8.07
1.562	1.76	1.85	2.53	2.60	4.31	4.43	8.02	8.23
1.594	1.80	1.88	2.58	2.65	4.40	4.51	8.17	8.39
1.625	1.84	1.92	2.63	2.70	4.48	4.60	8.33	8.54
1.656	1.87	1.94	2.68	2.75	4.57	4.68	8.49	8.70
1.687	1.91	1.98	2.73	2.81	4.65	4.77	8.64	8.85
1.718	1.94	2.02	2.78	2.85	4.74	4.85	8.79	9.01
1.750	1.98	2.05	2.83	2.91	4.83	4.94	8.96	9.17
1.812	2.04	2.12	2.93	3.01	5.00	5.11	9.27	9.48
1.875	2.12	2.20	3.04	3.11	5.17	5.28	9.59	9.80
1.937	2.19	2.27	3.13	3.21	5.34	5.45	9.90	10.11
2.000	2.26	2.33	3.24	3.31	5.52	5.62	10.21	10.43
2.125	-	-	-	-	5.86	5.97	10.84	11.06
2.187	-	-	-	-	-	6.14	-	11.37
2.250	-	-	-	-	6.19	6.31	11.47	11.68
2.375	-	-	-	-	6.54	6.66	12.10	12.32
2.437	-	-	-	-		6.82	12.41	12.62
2.500	-	-	-	-	6.88	6.99	12.73	12.94
2.625	-	-	-	-	-	7.34	13.35	13.57
2.750	-	-	-	-	7.57	7.68	13.99	14.20
3.000	-	-	-	-	8.25	8.37	15.24	15.46

STAINLESS STEEL SEMI TUBULAR RIVET WEIGHT CHARTS

Pounds Per 1,000 Pieces

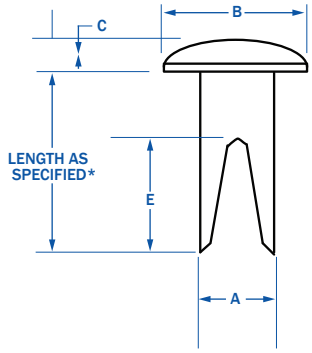
LENGTH	DIAMETER X HEAD DIAMETER							
	J-218	J-281	M-234	M-312	T-312	T-375	Y-437	Y-500
	1/8"	1/8"	9/64"	9/64"	3/16"	3/16"	1/4"	1/4"
0.125	0.43	0.66	-	-	-	-	-	-
0.140	0.49	0.70	-	-	-	-	-	-
0.156	0.54	0.76	0.72	0.94	-	-	-	-
0.187	0.64	0.86	0.86	1.08	1.56	1.88	-	-
0.219	0.74	0.95	1.01	1.22	1.81	2.12	-	-
0.250	0.84	1.05	1.15	1.37	2.05	2.37	4.05	4.66
0.281	0.94	1.15	1.30	1.51	2.29	2.61	4.49	5.10
0.312	1.04	1.25	1.44	1.66	2.54	2.86	4.93	5.55
0.344	1.14	1.36	1.59	-	2.79	3.10	5.40	6.01
0.375	1.24	1.46	1.73	1.95	3.04	3.35	5.85	6.45
0.406	1.34	1.56	1.88	2.09	3.27	3.59	6.29	6.90
0.437	1.44	1.66	2.01	2.24	3.52	3.84	6.73	7.34
0.469	1.54	1.76	2.16	2.38	3.77	4.09	7.19	7.80
0.500	1.64	1.85	2.31	2.52	4.01	4.32	7.64	8.25
0.531	1.74	1.95	2.46	2.67	4.25	4.57	8.08	8.70
0.562	1.84	2.06	2.59	2.81	4.49	4.81	8.52	9.14
0.594	1.94	2.16	2.74	2.96	4.75	5.07	8.99	9.60
0.625	2.04	2.26	2.89	3.10	4.99	5.30	9.44	10.04
0.656	2.14	2.36	3.03	-	5.24	5.55	9.88	10.49
0.687	2.24	2.46	3.17	3.39	5.47	5.79	10.32	10.93
0.719	2.34	2.56	-	3.53	5.72	6.04	10.78	11.40
0.750	2.44	2.66	3.47	3.68	5.97	6.29	11.23	11.84
0.781	2.54	2.76	-	-	6.21	6.52	11.67	12.29
0.812	2.64	2.86	3.75	3.97	6.45	6.77	12.12	12.73
0.844	2.75	2.96	3.90	4.11	6.70	7.02	12.58	13.19
0.875	2.84	3.06	4.04	4.26	6.95	7.27	13.03	13.64
0.906	2.94	3.16	4.19	4.40	7.19	7.50	13.47	14.08
0.937	3.04	3.26	4.33	4.54	7.44	7.75	13.92	14.52
0.969	3.14	3.37	4.48	4.69	7.68	8.00	14.37	14.99
1.000	3.24	3.47	4.62	4.83	7.92	8.24	14.82	15.43
1.031	3.34	3.56	-	4.98	8.17	8.49	15.26	15.88
1.062	3.44	3.66	4.90	5.12	8.41	8.72	15.72	16.32
1.094	3.55	3.76	5.05	5.27	8.66	8.98	16.17	16.78
1.125	3.65	3.86	5.20	5.41	8.90	9.22	16.62	17.22
1.156	3.74	3.96	5.35	5.56	9.15	9.47	17.06	17.67
1.187	3.84	4.06	5.48	5.69	9.39	9.70	17.51	18.12
1.219	3.94	4.17	5.63	5.84	9.64	9.95	17.96	18.58
1.250	4.04	4.27	5.78	5.99	9.88	10.20	18.41	19.02
1.281	4.15	4.37	5.92	6.14	10.12	10.44	18.85	19.47
1.312	4.25	4.46	6.06	6.27	10.37	10.69	19.31	19.91
1.344	4.35	4.56	6.21	6.42	10.62	10.93	19.76	20.37
1.375	4.45	4.66	6.35	6.57	10.86	11.18	20.21	20.81
1.406	4.55	4.76	6.50	6.71	11.10	11.42	20.65	21.26
1.437	4.64	4.86	6.64	6.85	11.35	11.67	21.10	21.71
1.469	4.75	4.97	6.79	7.00	11.60	11.91	21.56	22.17
1.500	4.85	5.07	6.93	7.15	11.83	12.15	22.00	22.61
1.531	4.95	5.17	7.07	7.29	12.08	12.40	22.44	23.06
1.562	5.05	5.27	7.30	7.43	12.32	12.64	22.90	23.50
1.594	5.15	5.36	7.36	7.58	12.58	12.89	23.36	23.96
1.625	5.25	5.46	7.51	7.72	12.82	13.13	23.80	24.40
1.656	5.35	5.56	7.65	7.87	13.06	13.38	24.24	24.85
1.687	5.45	5.67	7.79	8.01	13.30	13.62	24.69	25.30
1.718	5.54	5.77	7.94	8.15	13.55	13.87	25.13	25.75
1.750	5.65	5.87	8.09	8.30	13.80	14.11	25.59	26.21
1.812	5.85	6.07	8.37	8.58	14.28	14.60	26.49	27.09
1.875	6.05	6.27	8.67	8.88	14.78	15.09	27.39	28.00
1.937	6.25	6.47	8.95	9.16	15.26	15.58	28.28	28.89
2.000	6.45	6.67	9.24	9.46	15.75	16.07	29.18	29.80
2.125	-	-	-	-	16.73	17.05	30.98	31.59
2.187	-	-	-	-	-	17.53	-	32.48
2.250	-	-	-	-	17.71	18.03	32.77	33.39
2.375	-	-	-	-	18.69	19.01	34.57	35.18
2.437	-	-	-	-		19.49	35.46	36.07
2.500	-	-	-	-	19.66	19.98	36.36	36.98
2.625	-	-	-	-	-	20.96	38.16	38.77
2.750	-	-	-	-	21.62	21.94	39.96	40.57
3.000	-	-	-	-	23.58	23.89	43.55	44.16

RIVETKING® BRASS SEMI TUBULAR RIVET WEIGHT CHARTS

Pounds Per 1,000 Pieces

LENGTH	DIAMETER X HEAD DIAMETER							
	J-218	J-281	M-234	M-312	T-312	T-375	Y-437	Y-500
	1/8"	1/8"	9/64"	9/64"	3/16"	3/16"	1/4"	1/4"
0.125	0.47	0.70	-	-	-	-	-	-
0.140	0.52	0.76	-	-	-	-	-	-
0.156	0.58	0.81	0.86	1.00	-	-	-	-
0.187	0.68	0.91	0.92	1.15	1.67	2.01	-	-
0.219	0.79	1.03	1.09	1.32	1.94	2.27	-	-
0.250	0.90	1.13	1.23	1.46	2.20	2.54	4.33	4.98
0.281	1.00	1.23	1.39	1.62	2.45	2.79	4.81	5.46
0.312	1.11	1.34	1.55	1.78	2.72	3.06	5.28	5.93
0.344	1.22	1.45	1.70	-	2.98	3.33	5.78	6.43
0.375	1.32	1.56	1.85	2.08	3.24	3.58	6.25	6.90
0.406	1.43	1.67	2.01	2.24	3.51	3.84	6.73	7.38
0.437	1.54	1.77	2.16	2.39	3.76	4.10	7.20	7.85
0.469	1.65	1.88	2.32	2.55	4.03	4.37	7.70	8.35
0.500	1.76	1.99	2.47	2.70	4.30	4.63	8.17	8.82
0.531	1.86	2.10	2.62	2.85	4.55	4.89	8.65	9.30
0.562	1.97	2.21	2.78	3.01	4.81	5.15	9.13	9.78
0.594	2.08	2.31	2.93	3.16	5.08	5.41	9.62	10.27
0.625	2.19	2.42	3.09	3.32	5.34	5.68	10.09	10.74
0.656	2.29	2.52	3.24	-	5.60	5.94	10.57	11.22
0.687	2.39	2.63	3.39	3.62	5.86	6.19	11.05	11.70
0.719	2.50	2.74	-	3.78	6.13	6.47	11.54	12.19
0.750	2.61	2.84	3.71	3.94	6.38	6.72	12.02	12.67
0.781	2.72	2.95	-	-	6.65	6.98	12.49	13.14
0.812	2.83	3.06	4.01	4.24	6.91	7.25	12.97	13.62
0.844	2.93	3.17	4.17	4.40	7.17	7.51	13.46	14.11
0.875	3.04	3.28	4.32	4.55	7.44	7.77	13.94	14.59
0.906	3.15	3.38	4.48	4.71	7.69	8.03	14.41	15.06
0.937	3.26	3.49	4.63	4.86	7.95	8.29	14.89	15.54
0.969	3.37	3.60	4.79	5.02	8.22	8.55	15.38	16.03
1.000	3.47	3.71	4.94	5.17	8.48	8.82	15.86	16.51
1.031	3.57	3.81	-	5.33	8.74	9.08	16.33	16.98
1.062	3.68	3.92	5.25	5.48	9.00	9.33	16.81	17.46
1.094	3.79	4.02	5.41	5.64	9.27	9.61	17.30	17.95
1.125	3.90	4.13	5.56	5.79	9.52	9.87	17.78	18.43
1.156	4.01	4.24	5.71	5.94	9.79	10.12	18.26	18.91
1.187	4.11	4.35	5.87	6.10	10.05	10.39	18.73	19.38
1.219	4.22	4.46	6.03	6.26	10.31	10.65	19.22	19.87
1.250	4.33	4.56	6.18	6.41	10.58	10.91	19.70	20.35
1.281	4.44	4.67	6.33	6.56	10.83	11.18	20.18	20.83
1.312	4.55	4.78	6.49	6.72	11.09	11.43	20.65	21.30
1.344	4.65	4.89	6.64	6.87	11.36	11.70	21.15	21.80
1.375	4.76	5.00	6.80	7.03	11.62	11.96	21.62	22.27
1.406	4.86	5.09	6.95	7.18	11.88	12.22	22.10	22.75
1.437	4.97	5.20	7.10	7.33	12.14	12.48	22.57	23.22
1.469	5.08	5.31	7.26	7.49	12.41	12.75	23.07	23.72
1.500	5.18	5.42	7.42	7.65	12.67	13.01	23.54	24.19
1.531	5.29	5.53	7.57	7.80	12.93	13.26	24.02	24.67
1.562	5.40	5.63	7.72	7.95	13.19	13.53	24.50	25.15
1.594	5.51	5.74	7.88	8.11	13.45	13.79	24.99	25.64
1.625	5.62	5.85	8.03	8.26	13.71	14.05	25.46	26.11
1.656	5.72	5.96	8.19	8.42	13.98	14.32	25.94	26.59
1.687	5.83	6.07	8.34	8.57	14.23	14.57	26.42	27.07
1.718	5.93	6.17	8.49	8.72	14.49	14.83	26.89	27.54
1.750	6.05	6.28	8.65	8.88	14.76	15.10	27.39	28.04
1.812	6.26	6.49	8.96	9.19	15.28	15.62	28.34	28.99
1.875	6.47	6.71	9.27	9.49	15.81	16.15	29.31	29.96
1.937	6.69	6.92	9.58	9.81	16.33	16.67	30.26	30.91
2.000	6.90	7.14	9.89	10.12	16.85	17.19	31.23	31.88
2.125	-	-	-	-	17.90	18.25	33.15	33.80
2.187	-	-	-	-	-	18.76	-	34.75
2.250	-	-	-	-	18.95	19.29	35.07	35.72
2.375	-	-	-	-	19.99	20.33	36.99	37.64
2.437	-	-	-	-		20.86	37.95	38.59
2.500	-	-	-	-	21.05	21.39	38.91	39.56
2.625	-	-	-	-	-	22.43	40.84	41.48
2.750	-	-	-	-	23.13	23.47	42.76	43.41
3.000	-	-	-	-	25.23	25.57	46.60	47.25

SPLIT RIVETS OR BIFURCATED RIVETS



Split rivets are typically used in the luggage, case and leather goods industries to fasten soft materials such as plastics, animal hide and wood. With automatic setting equipment it can pierce through soft materials without a pre-punched hole. Typically offered in Steel or Brass material with a host of metal finishes such as zinc, nickel, or brass plating.

Note: 3/16", Bag Studs and custom sizes can be made upon request.

SIZE	A SHANK		B HEAD DIA.		C HEAD THICKNESS		CLINCH ALLOWANCE
	Max.	Min.	Max.	Min.	Max.	Min.	
0.092	0.092	0.085	0.152	0.142	0.026	0.020	.119
0.125	0.125	0.113	0.223	0.213	0.035	0.027	.119
0.152	0.152	0.144	0.318	0.306	0.045	0.035	.146
0.190	0.190	0.180	0.349	0.337	0.055	0.045	.146

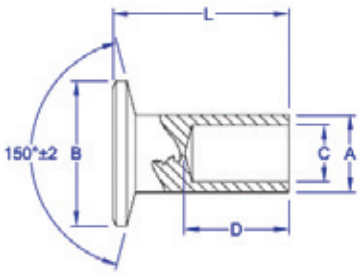
METAL PIERCING

To join two or more sections of a sheet metal assembly permanently and without pre-punching or pre-drilling holes. Eliminates the cost of pre-punching or pre-drilling holes and reduces material handling. Low unit cost and applied by high speed automatic feed riveting machines to further reduce assembly time and cost. Setting can provide a leak proof seal.

ELECTRICAL CONTACT

To act as an electrical contact. Electrical contact rivets can be made with precious metals such as gold, silver, platinum, copper as well as silver-cadmium oxide materials. The manufacturing method is extremely economical because the contact face can be produced of high performance precious metals while the shank can be made of lower cost metals. Also known as Bi-Metal or Tri-Metal rivets.

BRAKE LINING RIVETS



PART CODE	RIVET SIZE	L LENGTH		B HEAD DIA		A BODY DIA		C HOLE DIA		D HOLE DEPTH	
		Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
XB- 3MM	3mm	.245	260	.225	.245	.121	.125	.086	.090	.125	.135
XB- 6MM	6mm	.365	.385	.458	.478	.235	.240	.170	.174	.240	.260
XB- 4-4	9/64"	.245	.260	.285	.305	.141	.146	.099	.104	.136	.150
XB- 4-4.5		.274	.288								
XB- 4-5		.312	.328								
XB- 5-4		.245	.260	.349	.369						
XB- 5-4.5		.274	.288								
XB- 5-5		.312	.328								
XB- 6-4	13/64"	.245	.260	.349	.369	.207	.213	.162	.172	.187	.200
XB- 6-4.5		.274	.288								
XB- 6-5		.312	.328								
XB- 6-5.5		.335	.350								
XB- 6-6		.375	.390								
XB- 7-4	3/16"	.245	.260	.349	.369	.182	.188	.133	.139	.187	.200
XB- 7-4.5		.274	.288								
XB- 7-5		.312	.328								
XB- 7-5.5		.336	.350								
XB- 7-6		.375	.390								
XB- 7-6.5		.406	.421								
XB- 7-7		.437	.452								
XB- 8-4		.245	.260	.458	.478						
XB- 8-5		.312	.328								
XB- 8-6		.375	.390								
XB- 8-7		.435	.450								
XB- 8-8		.500	.515								
XB- 8-9		.560	.575								
XB- 10-6	1/4"	.375	.390	.458	.478	.244	.252	.173	.183	.245	.255
XB- 10-7		.435	.450								
XB- 10-8		.500	.515								
XB- 10-10		.620	.635								
XB- 10-12		.745	.760								