



ARaymond TINNERMAN

A.RAYMOND TINNERMAN INDUSTRIAL, Inc.

Preferred Product Catalog



ARaymond Tinnerman's specialty fastener products offer a reliable means of attaching panels, components and wiring, safely and securely to improve quality and reduce assembly cost. In addition to an extensive plastic and metal standard parts portfolio, our dedicated advanced engineering team is able to provide custom solutions to meet your specific assembly needs.

This catalog highlights our best practice parts. If you cannot find a product here to fit your need, other solutions are available within our online catalog,



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Introduction

ARAYMOND

ARaymond has always envisioned the future with a combination of imagination and realism. Its success can primarily be attributed to the long-term vision of its leaders and their ability to anticipate market trends by making crucial and early strategic decisions. Since 1865, ARaymond supported the glove, shoe, leather, textile, radio, construction, and automotive industries, each representing a decisive stage in the company's progression. Today, the group holds 800 industrial patents. Always a prime mover, the innovative spirit inspired by Albert-Pierre Raymond has contributed to the independence of the group companies through five generations, and counting...

In 2009, ARaymond and Tinnerman came together to form one incredibly powerful fastener company.

CLOSE TO YOU. EVERYWHERE.

An active and multicultural network

ARaymond Network is an active and multicultural network of independent companies operating on five continents: EUROPE, the AMERICAS, ASIA and NORTH AFRICA.

ARaymond is active today where its main clients operate: BRAZIL, CANADA, CHINA, CZECH REPUBLIC, FRANCE, GERMANY, HUNGARY, INDIA, ITALY, JAPAN, POLAND, ROMANIA, RUSSIA, SINGAPORE, SLOVAKIA, SPAIN, SWEDEN, TUNISIA, TURKEY, U.K., USA.

The closeness to our clients is enhanced by the ARaymond Network, which encourages the sharing of skills, ideas and expertise through a horizontal structure that is adaptable. These exchanges between countries are a source of enrichment for our employees and of added value for our clients.



BRAZIL, CANADA, CHINA, CZECH REPUBLIC, FRANCE, GERMANY, ITALY, INDIA, JAPAN, SOUTH KOREA, MOROCCO, RUSSIA, SPAIN, TURKEY, U.K., USA.

Speed Nuts

Tinnerman® History

SPEED NUT



TINNERMAN® AND SPEED NUT® HISTORY

Tinnerman was founded in Cleveland, Ohio in 1870 by George Tinnerman and was known as the Tinnerman Stove Company, makers of high-end stoves. In 1936, Albert, George's son, created a spring steel fastener known as the "Speed Nut®" in order to solve an ongoing issue with stove shipping. George Tinnerman, grandson of the founder, commercialized Speed Nuts® in markets beyond stoves - so successfully, in fact, that the stove business shut down entirely. Tinnerman® became a trusted supplier of fasteners for WWII aircraft.

According to a 1947 Fortune Magazine article, the Tinnerman® Company used aggressive techniques to change the automobile industry. The time-saving fasteners held parts in place without the need for welding or riveting. At the time, an automobile manufacturer doubted that it was strong enough to hold fenders to bodies. A.H. Tinnerman responded by hoisting a 3,325 pound vehicle off the ground supported by a Speed Nut®. A.H. also created a plan to save Ford millions of dollars by changing the way automobiles were assembled - finding 400 unique places and applications for Tinnerman® products. It became an automotive revolution.

SPEED NUTS®

ARaymond Tinnerman Flat-Type Speed Nuts® are one-piece, self-locking, heat-treated, spring-steel fasteners that replace threaded nuts, lock washers and spanner washers. On many applications they eliminate time-consuming assembly operations.

Fast and easy to apply, Speed Nut® Fasteners provide maximum holding power at minimum cost per fastener. They don't shake loose from vibration, yet can be easily loosened without worry about rust-frozen screw threads.

Industries and Applications

- Smaller components where space is premium
- Inside small electrical or mechanical components

Benefits

- Requires less torque than standard hex-nuts
- Can be installed prior to painting processes so threads won't fill

Our Legacy - Our Future

The original flat-type Speed Nut® is still used today, but it has been replaced by self-retaining versions. Products like U-nuts and expansion nuts use the same technology and features that revolutionized assembly processes in the United States and throughout the world.



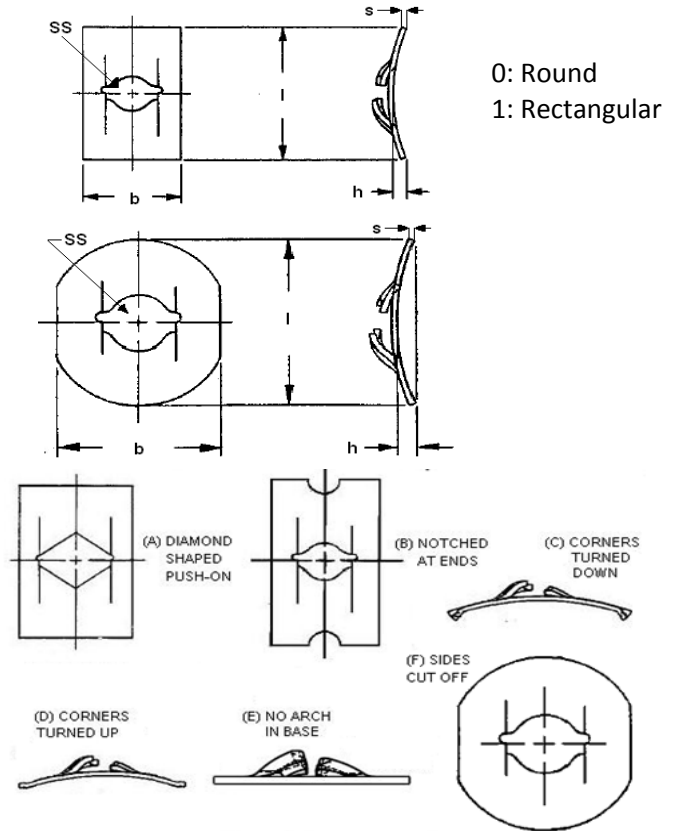
Nuts

Self-Locking Threaded Nuts

Most of the products featured on this page are manufactured with spring steel. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes. Parts may also be available in stainless steel.

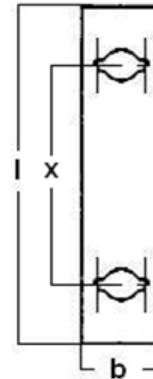
Speed Nut® - Flat Type

Part Number	Screw Size (SS)	Length (l)	Width (b)	Material Thick. (s)	Design Variation
C07795-440	4-40	0.440	0.250	0.012	1D
C08595-012	6-32	0.380	0.343	0.012	0F
C07000-8	8-15;8-18	0.630	0.410	0.028	1
C07000-832	8-32	0.500	0.310	0.017	1
C07868-832	8-32	0.820	0.640	0.017	0EFZ
C07000-10	10-12;10-16	0.750	0.500	0.031	1
C00917-10Z	10-16	0.870	0.375	0.031	1
C01151-1024	10-24	0.750	0.437	0.022	1BC
C01150-1024	10-24	0.750	0.437	0.022	1B
C00166-1420	1/4-20	0.820	0.640	0.025	0EFZ
C07000-1420	1/4-20	0.750	0.500	0.025	1
C09375-012	1/4-20	1.310	1.312	0.012	1A
C09186-014	5/16-18	0.880	0.687	0.014	0EAF
C08617-017	3/8-16	1.000	0.687	0.017	1A
C01156-014	7/16-20	0.910	0.687	0.014	0AF
D07516-017	1/2-13	1.220	0.875	0.017	1A



Speed Nut® - Twin Type

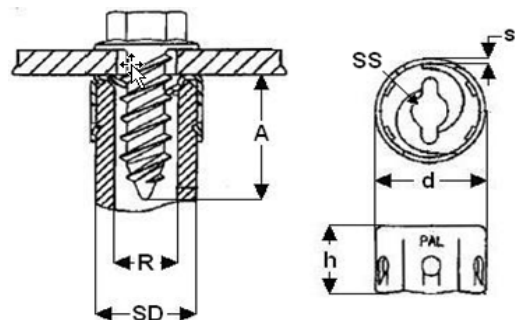
Part Number	Screw Size (SS)	Length (l)	Width (b)	Screw Gap (x)	Material Thick. (s)
C70926-440	4-40	1.254	0.250	0.964	0.011
C06069-632	6-32	1.625	0.375	1.000	0.017
C06069-832	8-32	1.625	0.375	1.000	0.017
C14187-8	8-15;8-18	2.150	0.375	1.500	0.028
C00385-1420	1/4-20	2.380	0.500	1.500	0.025



On-Sert®

Part Number	Screw Size (SS)	Diameter (SD)	Hole Diameter (R)	Hole Height Min (A)	Height (h)	Diameter (d)	Material Thick. (s)
NR 440004	4-40	0.250	0.141	0.250	0.220	0.284	0.015
NR 620005	6-18	0.157	0.185	0.213	0.230	0.354	0.017
NR 818005	8-18	0.312	0.629	0.628	0.230	0.354	0.017
NR 101606	10-16	0.375	0.162	0.164	0.230	0.422	0.018
NR 050095	M5x.8	9.520	5.525	6.350	5.840	10.720	0.430

Italicized: Metric



The dimensions of the above parts are for reference only. For complete design information please contact your ARaymond Tinnerman Sales Professional.

Nuts

Self-Retaining Threaded Nuts

The product displayed in this catalog is a preferred sampling of the larger product offering. For additional product refer to our website or contact a sales professional.

EXPANSION NUTS

ARaymond Tinnerman Expansion Nuts provide fast, vibration-resistant attachments in blind or center-panel locations where only one side is accessible. They snap easily into rectangular holes and are self-retained by spring legs. Special locking tabs are provided where permanent fastener retention is required.

As the screw is driven, the spring legs expand, locking them over the panel, while also providing a double-locking action on the screw (ultimately supplying the joint strength). These easy to apply fasteners require no special skills or equipment to install, and can be used in place of weld-, clinch-, or stake-type fasteners. Applied before or after painting, they will not clog and do not require masking.

Metal Expansion Nuts

ARaymond Tinnerman Metal Expansion Nuts are available in either box or robotics style design options.

Box style expansion nuts are primarily used in sheet metal applications. Once installed, these parts expand, reinforcing the attachment and providing a low failure risk. The strength of the part is greater than that of the panel, maximizing joint strength.

Tapered robotics expansion nuts can be used in plastic and metal panels and are suited for automation. These parts are available in key-hole, speed-nut and tapped barrel thread impressions. The tapped barrel option provides the strongest attachment and assists with assembly, making it beneficial in high volume applications.

Plastic Expansion Nuts

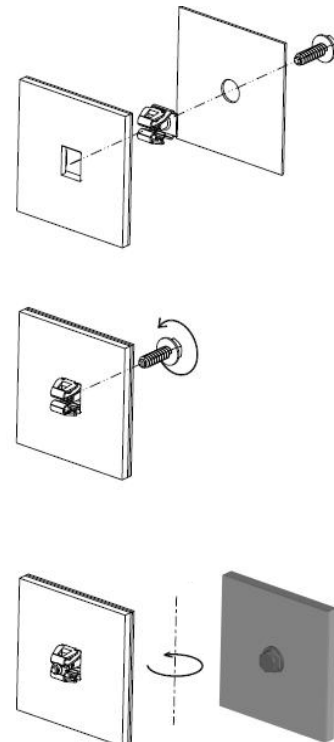
ARaymond Tinnerman Plastic Expansion Nuts work well in applications where metal to metal contact is not desired. The insertion vs. retention ratio is not as high as their metal counterparts. Completely enclosed in plastic, the screw threads are protected from corrosion or galvanic action and all designs can be incorporated with a seal.

Industries and Applications

- Universal
- Sheet metal to sheet metal attachments on appliances, HVAC, industrial and automotive applications
- Great for attaching components and accessory equipment

Benefits

- Parts self-retain
- Easy to assemble - requires no special tools
- Provides a tight joint that is able to withstand vibrations
- Increases torque capability, improves quality and reduces re-work
- Great for high volume applications and easy to automate



Nuts

Self-Retaining Threaded Nuts

Metal expansion nuts featured on this page are manufactured with spring steel. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes.

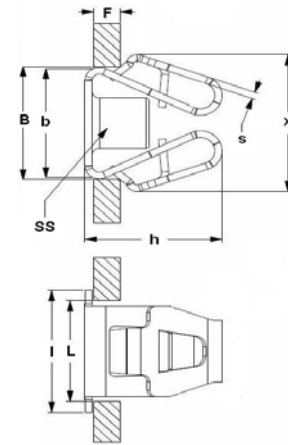
Plastic Expansion Nuts are manufactured in nylon.

Expansion Nuts - Metal

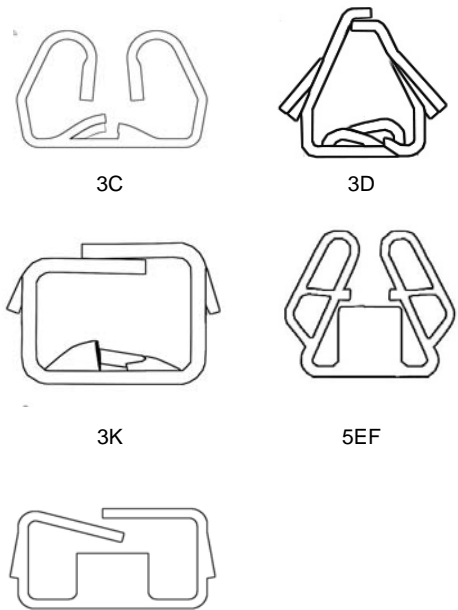
Part Number	Screw Size (SS)	Panel Thickness (F)	Hole Width (B)	Hole Length (L)	Height (h)	Design Variation
D98621-8Z	8-18	0.700-1.000	8.550-8.750	8.650	7.350	3K
<i>D98928-M42141</i>	<i>M4.2x1.41</i>	<i>0.700-1.000</i>	<i>8.550-8.750</i>	<i>8.650</i>	<i>6.900</i>	3K
D98683-8Z	8-18	1.000-1.500	8.550-8.750	8.650	7.350	3K
D98833-8Z	8-18	1.400-2.100	8.550-8.750	8.650	7.350	3K
<i>D99032-M42141</i>	<i>M4.2x1.41</i>	<i>0.700-2.150</i>	<i>8.550-8.750</i>	<i>8.650</i>	<i>6.900</i>	3K
<i>D99049-M42141</i>	<i>M4.2x1.41</i>	<i>0.700-2.150</i>	<i>8.550-8.750</i>	<i>8.650</i>	<i>6.900</i>	3KX
<i>IPTS426401</i>	<i>M4.2x1.41</i>	<i>0.700-1.000</i>	<i>8.650-8.650</i>	<i>8.650</i>	<i>10.800</i>	3D
<i>IPTS428119</i>	<i>M4.2x1.41</i>	<i>1.600-1.900</i>	<i>8.650-8.950</i>	<i>8.800</i>	<i>10.800</i>	3D
C08653-10A	10-12	0.036-0.056	0.503-0.508	0.505	0.345	3C
<i>D99406-M4816</i>	<i>M4.8x1.59</i>	<i>0.700-2.300</i>	<i>12.900-13.100</i>	<i>13.000</i>	<i>7.800</i>	3K
<i>D99229-M48159</i>	<i>M4.8x1.59</i>	<i>0.660-2.100</i>	<i>11.750-12.250</i>	<i>12.000</i>	<i>7.900</i>	3K
<i>D99280-M42141</i>	<i>M4.2x1.41</i>	<i>0.700-2.150</i>	<i>8.550-8.750</i>	<i>10.750</i>	<i>6.900</i>	3K
<i>D98797-064M</i>	<i>M4.2x1.41</i>	<i>1.250-1.750</i>	<i>11.000-11.200</i>	<i>9.100</i>	<i>12.600</i>	3E
<i>D98912-064M</i>	<i>M4.2x1.41</i>	<i>2.300-2.800</i>	<i>11.000-11.200</i>	<i>9.100</i>	<i>12.300</i>	3E
<i>D99294-071M</i>	<i>M5x1.6</i>	<i>2.300-2.800</i>	<i>11.000-11.200</i>	<i>9.100</i>	<i>12.300</i>	3E
<i>D99152-064M</i>	<i>M4.2x1.41</i>	<i>2.100-2.500</i>	<i>8.000-10.200</i>	<i>8.100</i>	<i>12.400</i>	3E
D98914-064M	10-16	0.660-0.840	11.900-12.100	12.000	13.600	3E
<i>D99404-M42141</i>	<i>M4.2x1.41</i>	<i>2.300-2.800</i>	<i>11.000-11.200</i>	<i>9.100</i>	<i>12.700</i>	5EF
<i>D99353-M42141</i>	<i>M4.2x1.41</i>	<i>2.300-2.800</i>	<i>10.000-10.200</i>	<i>10.000</i>	<i>11.900</i>	5EF
<i>D99042-M61</i>	<i>M6x1.0</i>	<i>2.000-2.500</i>	<i>14.800-15.000</i>	<i>14.900</i>	<i>14.000</i>	5EP
<i>D99249-M61</i>	<i>M6x1.0</i>	<i>0.700-2.000</i>	<i>13.750-14.030</i>	<i>9.390</i>	<i>10.700</i>	5K
<i>D99296-M61</i>	<i>M6x1.0</i>	<i>2.000-3.800</i>	<i>13.750-14.030</i>	<i>9.390</i>	<i>10.700</i>	3E
<i>D99038-M61</i>	<i>M6x1.0</i>	<i>0.700-1.500</i>	<i>19.800-20.000</i>	<i>12.650</i>	<i>10.500</i>	5K
<i>D98952-M61</i>	<i>M6x1.0</i>	<i>0.650-1.800</i>	<i>15.750-15.250</i>	<i>15.000</i>	<i>9.700</i>	5KL

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D99406-M4816 availability may be limited.

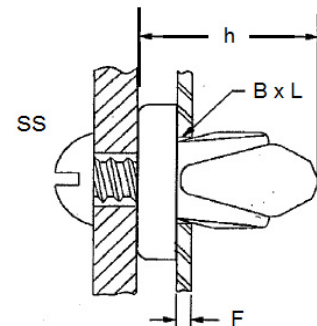


DESIGN VARIATIONS



Expansion Nuts - Plastic

Part Number	Screw Size (SS)	Panel Thickness (F)	Hole Width (B)	Hole Length (L)	Height (h)
C60053AA-031	#8; #10	0.020-0.076	0.250-0.281	0.266	0.471
C61374AA-250	#8; #10	0.020-0.076	0.250-0.281	0.266	0.690
C61408AA-125	#8; #10	0.020-0.076	0.250-0.281	0.266	0.565



Nuts

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Self-Retaining Threaded Nuts

U-NUTS

ARaymond Tinnerman U-nuts self-retain in screw-receiving position to provide simple, rapid attachment of mating panels. They correct misalignment in panel mounting holes, do not turn as the screw is driven and will not freeze on screw threads.

Most U-nuts are single piece stampings available in single impression, 5-prong and threaded barrel styles. Nut retainers are two-piece assemblies that combine the strength of a cold-headed nut with the versatility of a sheet metal cage.

Multiple impression and floating cage align-nuts can be used in cases where there is excessive build variation.

Industries and Applications

- Universal - Can be used wherever a screw or bolt is used
- Used in place of clinch-nuts and weld-nuts
- Panel assembly applications in HVAC and white goods

Benefits

- Self-retain during assembly, improving assembly time and reducing costly welding and clinching costs
- Easy to assemble, requiring no special tools
- Serviceable - Parts disassemble easily and reliably
- Single-component design eliminates small parts handling and excessive part inventories

Performance Specifications

The strength of the joint greatly depends on the type of impression and screw size.

For course thread screws, single impression and 5-prong styles are a viable alternative. The strength of these parts correspond to the strength of the screw. They are easier to install, have lower profiles and make a cleaner joint.

For machine screws, threaded barrel parts are preferred. The tapped barrel strength equals that of the screw.

For larger sizes, nut retainers are recommended. These parts combine the strength of the nut with the flexibility of the spring steel cage.

Selection Criteria

First, select the thread specification required for the desired joint strength. Next, select a fastener designed for the required panel thickness. Finally, select a nut that will accommodate the distance from the edge of the panel to the center line of the mounting hole.

U-SHAPED BOLT RETAINERS

In some applications it may be advantageous to pre-assemble the bolt to the panel and drive a nut to secure the component. The component can "hang" from the bolt, allowing both hands to be free during the assembly operation.



Speed Nut® - U-Shaped



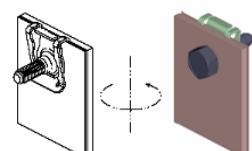
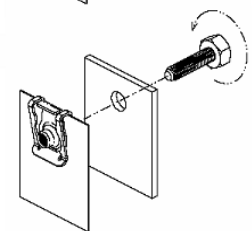
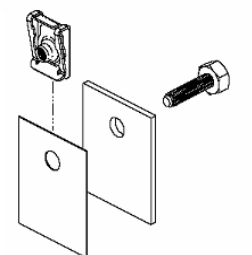
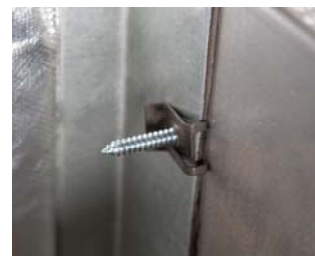
Tapped Barrel



Nut Retainer



Align - Nut



Nuts

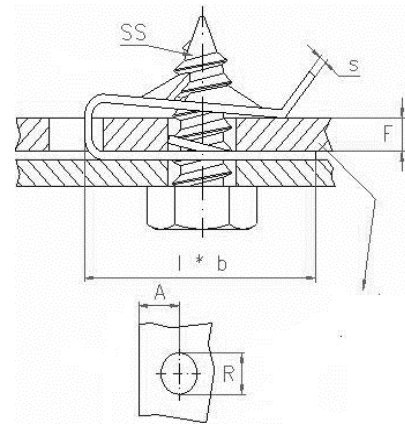
Self-Retaining Threaded Nuts

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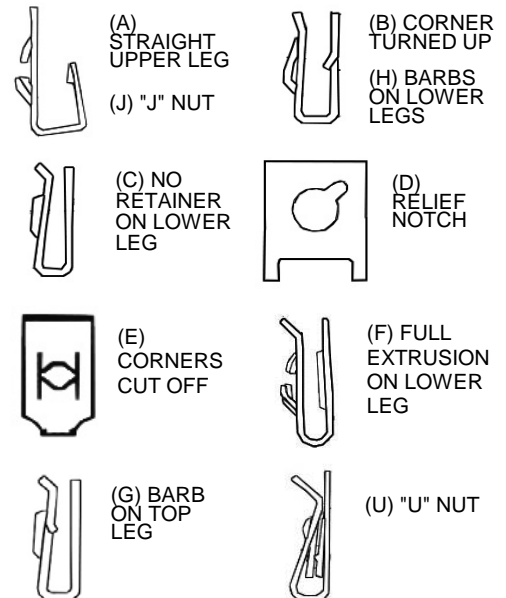
Speed Nut® - U-Shaped

Part Number	Screw Size (SS)	Panel Thickness (F)	Throat Distance (A)	Hole Diameter (R)	Width (b)	Length (l)	Design Variation
C06227-632	6-32	0.041-0.051	0.156	0.187	0.310	0.360	2AJ
C46551-011	6-32	0.018-0.023	0.187	0.187	0.312	0.370	3
D11351-632	6-32	0.110-0.125	0.171	0.156	0.500	0.350	2C
D08109-8	8-15;8-18	0.045-0.062	0.187	0.218	0.500	0.520	2D
C06077-8Z	8-18	0.060-0.070	0.234	0.250	0.500	0.520	2AD
D98448-8Z	8-15;8-18	0.091-0.110	0.220	0.220	0.423	0.417	3BCH
C71784-M42141	M4.2x1.41	2.000-3.000	6.000	7.000	12.000	13.500	2DG
D19640-8AB	8-18	0.025-0.150	0.250	0.280	0.535	0.770	3AU
D99228-M42141	M4.2x1.41	0.600-2.000	7.000	7.900	13.000	15.000	3DKU
D00885-8	8-15;8-18	0.037-0.064	0.296	0.250	0.437	0.630	2D
US 420014	M4.2x1.41	2.250-3.000	7.200	5.800	9.300	12.900	3SZ
US 420519	M4.2x1.41	0.650-3.800	8.640	6.980	13.600	19.300	3SZ
C15127-8	8-15;8-18	0.168-0.198	0.281	0.218	0.406	0.610	2J
D98712-064M	M4.2x1.41	2.200-3.100	10.000	8.000	14.500	17.600	3D
D06377-8AB	8-15;8-18	0.070-0.150	0.312	0.328	0.430	0.750	2DU
D98665-071M	M4.2x1.41	1.000-1.270	12.700	7.920	14.980	20.950	4J
D09031-8	8-15;8-18	0.102-0.125	0.406	0.281	0.625	0.700	2D
D01793-8	8-15;8-18	0.064-0.093	0.437	0.281	0.625	0.700	2D
D97295-028	8-18	0.025-0.150	0.480	0.280	0.340	0.970	3ACU
D19640-10AB	10-16	0.025-0.150	0.250	0.280	0.531	0.770	3AU
C71743-M47159	M4.8x1.59	2.460-2.660	6.800	7.000	12.700	14.100	3JZ
D09031-10	10-16	0.102-0.125	0.406	0.281	0.625	0.700	2D
C01880-10Z	10-16	0.156-0.187	0.750	0.281	0.437	1.140	2
C01197-1024	10-24	0.109-0.120	0.281	0.312	0.437	0.630	2F
C08048-1024	10-24	0.045-0.062	0.515	0.250	0.375	0.970	2J
C01880-1024	10-24	0.156-0.187	0.750	0.281	0.437	1.140	2
D13398-1032	10-32	0.045-0.062	0.250	0.250	0.625	0.570	2D
D00521-1420	1/4-20	0.051-0.109	0.312	0.359	0.500	0.780	2
C14969-1420	1/4-20	0.051-0.109	0.312	0.343	0.500	0.790	2F
C14860-1420	1/4-20	0.064-0.125	0.500	0.343	0.500	0.970	2G
D09569-1420	1/4-20	0.060-0.156	0.937	0.343	0.625	1.240	2E
D17453-1420	1/4-20	0.156-0.190	0.906	0.343	0.625	1.225	2E

Bold Italics: Metric



DESIGN VARIATIONS



Nuts

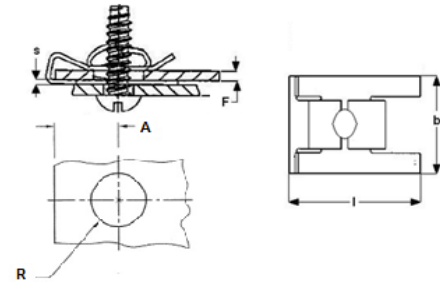
Self-Retaining Threaded Nuts

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U-Nut - 5-Prong (Prevailing Torque)

Part Number	Screw Size (SS)	Panel Thickness (F)	Throat Distance (A)	Hole Diameter (R)	Width (b)	Length (l)
<i>D98316-071M</i>	<i>M4.2x1.41</i>	<i>0.500-1.800</i>	<i>7.920</i>	<i>8.330</i>	<i>13.780</i>	<i>19.500</i>
<i>D98317-071M</i>	<i>M4.2x1.41</i>	<i>1.800-3.800</i>	<i>7.900</i>	<i>8.300</i>	<i>13.780</i>	<i>19.500</i>
<i>D98860-071M</i>	<i>M4.2x1.41</i>	<i>2.400-2.900</i>	<i>8.000</i>	<i>6.750</i>	<i>14.000</i>	<i>18.500</i>
<i>D98585-071M</i>	<i>M4.2x1.41</i>	<i>2.400-2.900</i>	<i>8.000</i>	<i>6.750</i>	<i>14.000</i>	<i>18.500</i>
<i>C71667-M42141</i>	<i>M4.2x1.41</i>	<i>1.800-4.000</i>	<i>8.700</i>	<i>8.000</i>	<i>13.600</i>	<i>18.400</i>
<i>D99174-071M</i>	<i>M4.2x1.41</i>	<i>0.800-1.200</i>	<i>14.000</i>	<i>8.330</i>	<i>13.770</i>	<i>25.200</i>
<i>D98434-071M</i>	<i>M4.2x1.41</i>	<i>1.800-3.800</i>	<i>14.000</i>	<i>8.330</i>	<i>13.770</i>	<i>25.200</i>

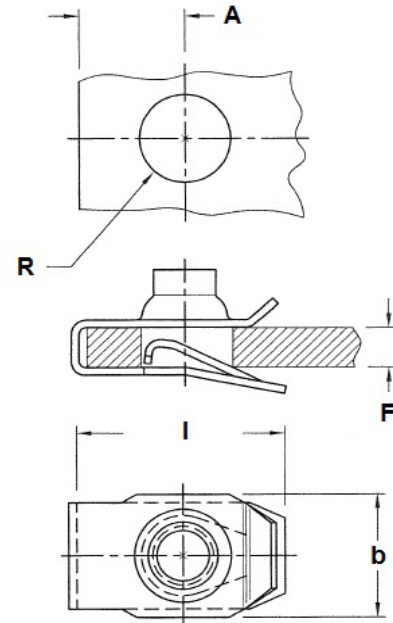
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U-Nut - Tapped Barrel

Part Number	Screw Size (SS)	Panel Thickness (F)	Throat Distance (A)	Hole Diameter (R)	Width (b)	Length (l)	Torque
<i>D99390-M42141</i>	<i>M4.2x1.41</i>	<i>2.000-3.000</i>	<i>8.600</i>	<i>7.930</i>	<i>12.500</i>	<i>16.900</i>	6
<i>D99389-M42141</i>	<i>M4.2x1.41</i>	<i>0.500-2.000</i>	<i>9.100</i>	<i>7.930</i>	<i>12.500</i>	<i>17.300</i>	6
<i>LPGS420018</i>	<i>M4.2x1.41</i>	<i>0.650-3.800</i>	<i>14.000</i>	<i>7.550</i>	<i>12.500</i>	<i>22.000</i>	6
LUGS832006	8-32	0.020-0.079	0.383	0.280	0.492	0.681	5
LUGZ103239	10-32	0.070-0.100	0.270	0.260	0.510	0.600	5
LUGS142059	1/4-20	0.025-0.150	0.450	0.390	0.560	0.920	5
LUGS561863	5/16-18	0.025-0.150	0.500	0.437	0.670	0.980	5
LUGS381683	3/8-16	0.050-0.200	0.660	0.562	0.930	1.290	5
<i>LUGS060023</i>	<i>M6x1.0</i>	<i>0.800-4.000</i>	<i>12.000</i>	<i>10.300</i>	<i>14.220</i>	<i>23.370</i>	5
<i>LPGS060023</i>	<i>M6x1.0</i>	<i>0.800-4.000</i>	<i>12.000</i>	<i>10.300</i>	<i>14.220</i>	<i>23.370</i>	6
<i>LUGZ002112</i>	<i>M6x1.0</i>	<i>0.800-3.810</i>	<i>12.000</i>	<i>10.300</i>	<i>14.220</i>	<i>23.370</i>	5
<i>LPGZ002112</i>	<i>M6x1.0</i>	<i>0.800-3.810</i>	<i>12.000</i>	<i>10.300</i>	<i>14.220</i>	<i>23.370</i>	6
<i>LUGZ002241</i>	<i>M6x1.0</i>	<i>0.800-3.810</i>	<i>12.000</i>	<i>10.300</i>	<i>14.220</i>	<i>23.370</i>	5
<i>LPGZ002241</i>	<i>M6x1.0</i>	<i>0.800-3.810</i>	<i>12.000</i>	<i>10.300</i>	<i>14.220</i>	<i>23.370</i>	6
<i>LUGS061512</i>	<i>M6x1.0</i>	<i>0.800-4.000</i>	<i>12.500</i>	<i>7.930</i>	<i>15.000</i>	<i>24.000</i>	5
<i>LUGS060030</i>	<i>M6x1.0</i>	<i>1.000-2.500</i>	<i>19.750</i>	<i>10.300</i>	<i>14.500</i>	<i>29.500</i>	5
<i>LUGS080025</i>	<i>M8x1.25</i>	<i>0.800-4.000</i>	<i>13.000</i>	<i>11.700</i>	<i>17.020</i>	<i>24.890</i>	5
<i>LPGS080025</i>	<i>M8x1.25</i>	<i>0.800-4.000</i>	<i>13.000</i>	<i>11.700</i>	<i>17.020</i>	<i>24.890</i>	6
<i>LPGZ080025</i>	<i>M8x1.25</i>	<i>0.800-4.000</i>	<i>13.000</i>	<i>11.700</i>	<i>17.020</i>	<i>24.890</i>	6
<i>LUGS085725</i>	<i>M8x1.25</i>	<i>1.500-5.500</i>	<i>13.000</i>	<i>11.700</i>	<i>17.020</i>	<i>24.890</i>	5
<i>LPGS085725</i>	<i>M8x1.25</i>	<i>1.500-5.500</i>	<i>13.000</i>	<i>11.700</i>	<i>17.020</i>	<i>24.890</i>	6
<i>LUGS080031</i>	<i>M8x1.25</i>	<i>1.500-5.500</i>	<i>20.000</i>	<i>11.700</i>	<i>17.000</i>	<i>31.500</i>	5
<i>LPGS080031</i>	<i>M8x1.25</i>	<i>1.500-5.500</i>	<i>20.000</i>	<i>11.700</i>	<i>17.000</i>	<i>31.500</i>	6
<i>LUGS100033</i>	<i>M10x1.5</i>	<i>1.500-5.500</i>	<i>17.500</i>	<i>15.000</i>	<i>17.500</i>	<i>32.500</i>	5
<i>LPGS100033</i>	<i>M10x1.5</i>	<i>1.500-5.500</i>	<i>17.000</i>	<i>12.000</i>	<i>24.000</i>	<i>33.500</i>	6

Bold Italics: Metric



5: Free Spin Barrel
6: Prevailing Torque Barrel

Nuts

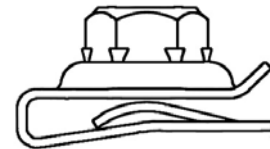
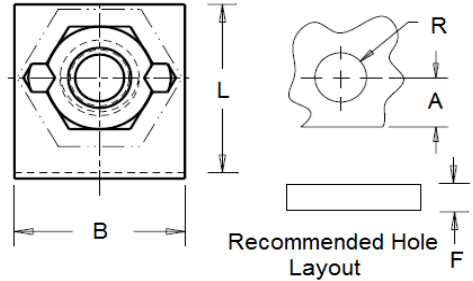
Self-Retaining Threaded Nuts / Bolts

Most of the products featured on this page are manufactured with spring or pre-hardened steel. Nut and bolt components are available in different grades. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes.

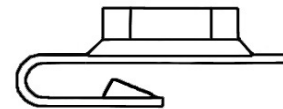
U-Nut Retainer

Part Number	Screw Size (SS)	Panel Thickness (F)	Throat Distance (A)	Hole Diameter (R)	Width (b)	Length (l)	Type
C33962SS-1024	10-24	2.920-3.180	9.520	7.620	17.450	18.040	U-TYPE
C30110-1024	10-24	0.093-0.135	0.375	0.437	0.560	0.730	J-TYPE
C33892-1024	10-24	0.810-2.360	12.700	10.000	15.870	24.010	J-TYPE
C33945-1032	10-32	0.050-0.075	0.375	0.343	0.687	0.710	U-TYPE
C33892-1032	10-32	0.810-2.360	12.700	10.000	15.870	24.010	J-TYPE
C33945-1420	1/4-20	0.050-0.075	0.375	0.343	0.687	0.710	U-TYPE
C30110-1420	1/4-20	0.093-0.135	0.375	0.437	0.560	0.730	J-TYPE
C33896-1420	1/4-20	2.290-3.560	12.700	12.800	19.050	26.290	J-TYPE
C33892-1420	1/4-20	0.810-2.360	12.700	10.000	15.870	24.010	J-TYPE
C33924-1420	1/4-20	0.810-2.360	19.840	10.000	15.870	30.880	J-TYPE
C33952-5618	5/16-18	1.270-2.290	13.870	12.800	19.050	26.670	J-TYPE
C33896-5618	5/16-18	2.290-3.560	12.700	12.800	19.050	26.290	J-TYPE
C33883-5618	5/16-18	3.180-3.430	11.430	12.700	14.730	23.850	J-TYPE
C33953-5618	5/16-18	3.230-4.140	12.700	11.100	19.050	25.400	J-TYPE
C33952-3816	3/8-16	0.050-0.090	0.546	0.504	0.750	26.670	J-TYPE
C33896-3816	3/8-16	2.290-3.560	12.700	12.800	19.050	26.290	J-TYPE
C33896-M61	M6x1.0	2.290-3.560	12.700	12.800	19.050	26.290	J-TYPE
D31758-1032	10-32	0.060-0.070	0.272	0.281	0.500	0.570	U-TYPE

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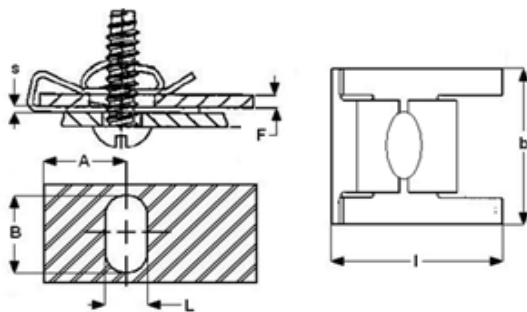


U - Type



J - Type

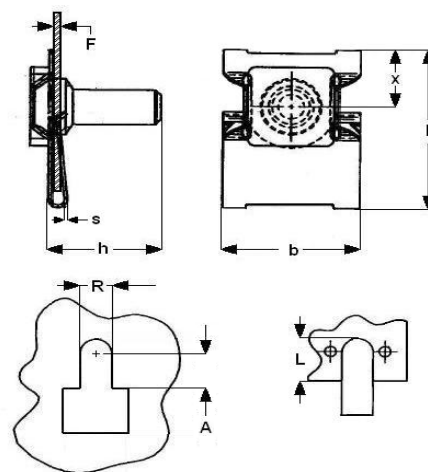
Align Nuts



Part Number	Screw Size (SS)	Panel Thickness (F)	Throat Distance (A)
D98612-8Z	M4.2x1.41	1.80-2.00	7.00

Bold Italics: Metric

U-Shaped Bolt Retainers



Part Number	Screw Size (SS)	Panel Thickness (F)	Throat Distance (A)
C34030-1420	1/4-20	0.098-0.118	0.685

Nuts

Self-Retaining Threaded Nuts

The product displayed in this catalog is a preferred sampling of the larger product offering. For additional product refer to our website or contact a sales professional.

SPEED GRIP CAGE NUTS

ARaymond Tinnerman Cage Nuts combine the benefits of a spring steel fastener with the high-strength of a multi-threaded nut. They snap readily into bolt receiving position at center panel locations and retain themselves in place.

Installation does not require special tools or skills, eliminating the need for special operations. Cage nuts can be applied at any convenient spot along the assembly line. The nut floats within the cage to account for normal build variation. Speed Grip Cage Nuts are ideal for blind location assembly.

Industries and Applications

- Serviceable access panels for HVAC and Appliances
- Cabinet construction for various industries

Benefits

- Serviceable - Parts disassemble easily and reliably
- Self-retaining feature provides easy install
- Strong joint that is able to withstand vibrations
- Easy to assemble, requiring no special tools
- Can be applied at any convenient spot along the assembly line

Performance Specifications

Parts install under 20 lbs. and meet proof load for nut specification.

CUSTOMIZED NUT ASSEMBLIES

ARaymond Tinnerman can manufacture nut assemblies to suit custom applications. Contact a sales professional for a customized solution.

SPEED GRIP BOLT RETAINERS

In some applications it may be advantageous to pre-assemble the bolt to the panel and drive a nut to secure the component. The component can "hang" from the bolt, allowing both hands to be free during the assembly operation. Speed Grip Bolt Retainers use the same cages as Speed Grip Nut Retainer.



Speed Grip Nut Retainer



Speed Grip Bolt Retainer

Nuts

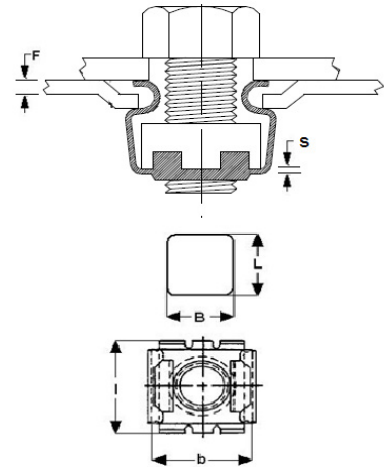
Self-Retaining Threaded Nuts

Most of the products featured on this page are manufactured with spring or pre-hardened steel. Nut and bolt components are available in different grades. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes.

Speed Grip Cage Nuts

Part Number	Screw Size (SS)	Panel Thickness (F)	Hole Width (B)	Hole Length (L)	Width (b)	Length (l)	Material Thick. (s)
D33751-832	8-32	0.025-0.063	0.281-0.286	0.200	0.430	0.450	0.017
D30395-832	8-32	0.025-0.063	0.281-0.286	0.281	0.430	0.450	0.017
D30395-1024	10-24	0.025-0.063	0.281-0.286	0.281	0.430	0.450	0.017
D07931-832	8-32	0.025-0.063	0.342-0.380	0.377	0.490	0.520	0.020
D07931-1032	10-32	0.025-0.063	0.342-0.380	0.377	0.490	0.520	0.020
D07931-1024	10-24	0.025-0.063	0.342-0.380	0.377	0.490	0.520	0.020
D07988-1420	1/4-20	0.025-0.063	0.342-0.380	0.377	0.490	0.520	0.020
D07941-832	8-32	0.064-0.105	0.342-0.380	0.377	0.490	0.520	0.020
D07941-1024	10-24	0.064-0.105	0.342-0.380	0.377	0.490	0.520	0.020
D07941-1032	10-32	0.064-0.105	0.342-0.380	0.377	0.490	0.520	0.020
D98579-1032	10-32	0.064-0.105	0.342-0.380	0.377	0.490	0.520	0.020
D07998-M61	M6x1.0	1.620-2.670	8.710-9.650	9.600	12.450	13.210	0.510
D98580-M61	M6x1.0	1.620-2.670	8.710-9.650	9.580	12.440	13.210	0.510
D07998-1420	1/4-20	0.064-0.105	0.342-0.380	0.377	0.490	0.520	0.020
D98580-1420	1/4-20	0.064-0.105	0.342-0.380	0.377	0.490	0.520	0.020
D07951-1024	10-24	0.093-0.126	0.342-0.380	0.377	0.490	0.520	0.020
D07956-M61	M6x1.0	2.360-3.200	8.710-9.650	9.600	12.450	13.200	0.510
D07956-1420	1/4-20	0.093-0.126	0.342-0.380	0.377	0.490	0.520	0.020
D31365-1024	10-24	0.125-0.156	0.342-0.380	0.377	0.490	0.520	0.020
D31365-1420	1/4-20	0.125-0.156	0.342-0.380	0.377	0.490	0.520	0.020
D98581-1420	1/4-20	0.125-0.156	0.342-0.380	0.377	0.490	0.520	0.020
D33880-1420	1/4-20	0.172-0.192	0.342-0.380	0.377	0.490	0.520	0.020
D07953-5618	5/16-18	0.057-0.092	0.460-0.508	0.462	0.645	0.660	0.025
D07953-3816	3/8-16	0.057-0.092	0.460-0.508	0.462	0.645	0.660	0.025
D07957-5618	5/16-18	0.093-0.126	0.460-0.508	0.505	0.640	0.660	0.025
D07957-3816	3/8-16	0.093-0.126	0.460-0.508	0.505	0.640	0.660	0.025
D31910-5618	5/16-18	0.177-0.197	0.460-0.508	0.505	0.640	0.660	0.025
D31910-M8125	M8x1.25	4.500-5.000	11.680-12.900	12.840	16.260	16.760	0.640
D07968-1213	1/2-13	0.059-0.092	0.573-0.610	0.590	0.860	0.870	0.025
D07969-3816	3/8-16	0.093-0.126	0.573-0.610	0.590	0.860	0.870	0.025
D30683-3816	3/8-16	0.162-0.210	0.573-0.610	0.600	0.860	0.870	0.025
D30683-7614	7/16-14	0.162-0.210	0.573-0.610	0.600	0.860	0.870	0.025
D30096-3816	3/8-16	0.240-0.260	0.573-0.610	0.590	0.860	0.870	0.025

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Palnuts®

Self-Locking Stamped Nuts

Most of the products featured on this page are manufactured with spring steel. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes.



Lock-Nut - Hex

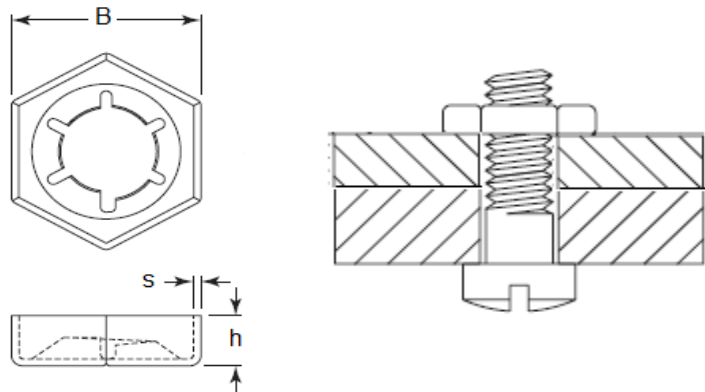
Part Number	Screw Size (SS)	Drive (B)	Height (h)	Material Thick. (s)
RM 632004	6-32	1/4"	0.080	0.012
RF 142000	1/4-20	7/16"	0.123	0.020
RF 516180	5/16-18	1/2"	0.134	0.020
RF 381600	3/8-16	9/16"	0.145	0.020
RL 716200	7/16-20	5/8"	0.150	0.020
RE 716280	7/16-28	5/8"	0.111	0.014
RF 121300	1/2-13	3/4"	0.179	0.026
RF 122000	1/2-20	3/4"	0.172	0.023
RF 916180	9/16-18	7/8"	0.193	0.023
RR 581100	5/8-11	1"	0.224	0.034
RF 341000	3/4-10	1 1/8"	0.246	0.038
RH 180000	1-8	1 5/8"	0.336	0.049
<i>RF 060011</i>	<i>M6x1.0</i>	<i>11mm</i>	<i>3.050</i>	<i>0.460</i>

Bold Italics: Metric

PALNUT® THREADED STAMPED NUTS

ARaymond Tinnerman Threaded Stamped Nuts are used in place of traditional hex-nuts for reduced weight or applications requiring lower torques. Parts are available in common screw sizes. The hex-shaped stamped nuts can be used in applications where screw length is restricted. They can also be used with a standard hex-nut to act as a jam nut.

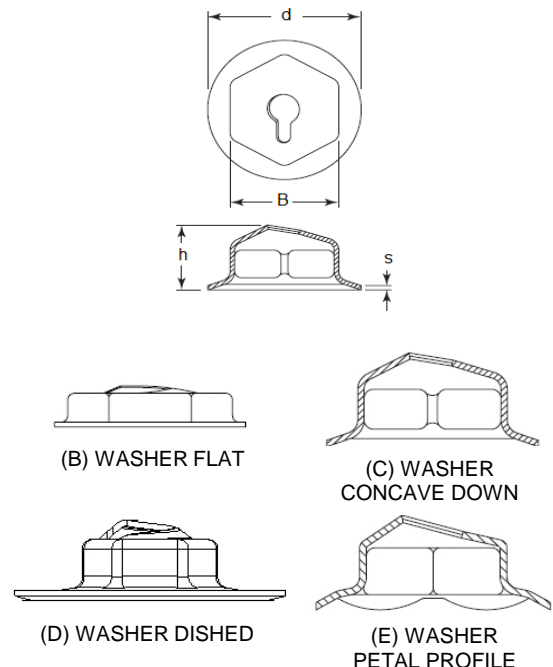
Washer style nuts feature a stamped, integral washer. This allows the part to accommodate a larger hole without the use of a separate loose washer. Sealants can be applied to the washer to reduce moisture and noise intrusion.



Lock-Nut - Washer

Part Number	Screw Size (SS)	Drive (B)	Diameter (d)	Height (h)	Material Thick. (s)	Design Variation
DZ 002191	6-18;6-20	11/32"	0.469	0.212	0.014	B
DO 632007	6-32	5/16"	0.437	0.204	0.014	C
DO 832075	8-32	11/32"	0.469	0.212	0.014	C
DO 832010	8-32	11/32"	0.625	0.234	0.015	C
DO 102408	10-24	3/8"	0.500	0.231	0.017	C
DO 102412	10-24	3/8"	0.750	0.269	0.017	C
DO 142095	1/4-20	7/16"	0.594	0.261	0.020	C
DO 142013	1/4-20	7/16"	0.812	0.292	0.020	C
<i>DO 040012</i>	<i>M4x.7</i>	<i>9mm</i>	<i>12.000</i>	<i>5.650</i>	<i>0.360</i>	<i>C</i>
<i>DO 050014</i>	<i>M5x.8</i>	<i>10mm</i>	<i>14.000</i>	<i>5.790</i>	<i>0.380</i>	<i>C</i>
<i>DZ 002171</i>	<i>M6x1.0</i>	<i>11mm</i>	<i>21.000</i>	<i>6.860</i>	<i>0.460</i>	<i>D</i>
<i>DO 060024</i>	<i>M6x1.0</i>	<i>11mm</i>	<i>24.000</i>	<i>7.750</i>	<i>0.460</i>	<i>C</i>
<i>DFOW060024</i>	<i>M6x1.0</i>	<i>11mm</i>	<i>24.000</i>	<i>7.750</i>	<i>0.460</i>	<i>E</i>
<i>DO 051614</i>	<i>M5x1.6</i>	<i>10mm</i>	<i>14.000</i>	<i>6.400</i>	<i>0.460</i>	<i>C</i>
<i>DO 051619</i>	<i>M5x1.6</i>	<i>10mm</i>	<i>18.880</i>	<i>7.350</i>	<i>0.430</i>	<i>C</i>
<i>DZ 051612</i>	<i>M5x1.6</i>	<i>11mm</i>	<i>21.000</i>	<i>6.850</i>	<i>0.460</i>	<i>D</i>

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Palnuts®

Self-Locking Stamped Nuts

Most of the products featured on this page are manufactured with spring steel. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes.



Self-Threading - Hex

Part Number	Stud Size	Drive (B)	Height (h)	Material Thick. (s)
SR 094005	3/32"	5/16"	0.100	0.017
SR 030008	3mm	8mm	2.650	0.410
SR 125004	1/8"	1/4"	0.088	0.014
SR 156000	5/32-4mm	11/32"	0.110	0.016
SR 188006	3/16"	3/8"	0.116	0.019
SR 050010	5mm	10mm	2.750	0.480
SP 219000	7/32"	7/16"	0.118	0.015
SR 060013	6mm	13mm	3.400	0.640
SR 250000	1/4"	1/2"	0.140	0.025
SR 630013	1/4"	13mm	3.400	0.640
SR 375011	3/8"	11/16"	0.166	0.026

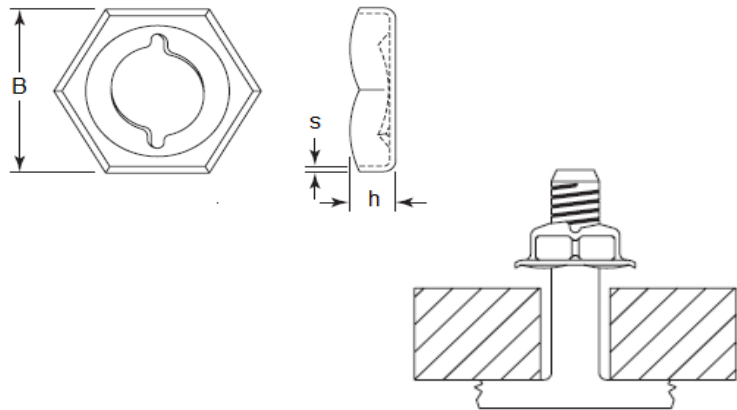
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SELF-THREADING STAMPED NUTS

ARaymond Tinnerman Self-Threading Stamped Nuts have the same features as threaded stamped nuts, but form their own thread on a smooth die cast, mild steel, or plastic stud. The interference caused by the nut and stud creates a strong locking force that prevents disassembly.

The hex-shape has the impression nearer to the base of the part. This can assist when stud height and assembly space is limited.

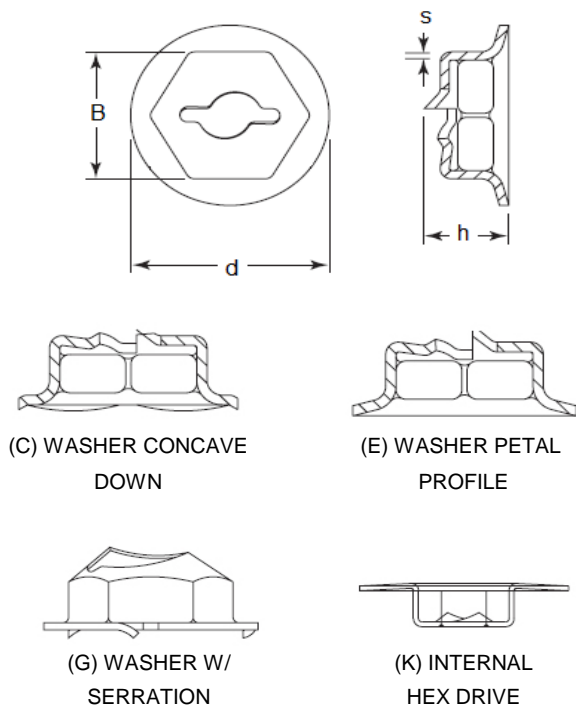
The washer type can accommodate a larger mating hole to compensate for component build variation. A seal can be added to the washer type nut to prevent noise and water intrusion.



Self-Threading - Washer

Part Number	Stud Size	Drive (B)	Diameter (d)	Height (h)	Material Thick. (s)	Design Variation
SD 125007	1/8"	5/16"	0.437	0.186	0.017	C
SD 156007	5/32-4mm	11/32"	0.450	0.202	0.018	C
SD 188008	3/16"	3/8"	0.500	0.217	0.017	C
SZ 001966	3/16"	3/8"	0.750	0.153	0.018	K
SZ 002003	5mm	10mm	14.820	5.030	0.510	G
SD 050015	5mm	10mm	15.000	5.400	0.430	C
SK 050021	5mm	10mm	21.000	6.840	0.480	C
SF 060015	6mm	11mm	15.000	6.350	0.530	E
SF 060018	6mm	11mm	18.000	7.180	0.530	E
SD 250095	1/4"	7/16"	0.594	0.247	0.021	C
SF 630018	1/4"	3/8"	18.000	7.060	0.530	E
SF 312014	5/16"-8mm	1/2"	0.875	0.309	0.023	E
SF 080020	5/16"-8mm	13mm	20.000	7.850	0.580	E
SP 330012	11/32"	9/16"	0.750	0.290	0.022	G
SP 330016	11/32"	1/2"	25.400	7.980	0.580	G

Bold Italics: Metric



The dimensions of the above parts are for reference only. For complete design information please contact your ARaymond Tinnerman Sales Professional.

Palnuts®

Self-Locking Smooth Stud Fasteners

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PUSH-ONS

ARaymond Tinnerman Palnut® Push-On fasteners provide a good balance between maximum holding strength and reasonable push-on force. They feature inner teeth that slide over and bite into a round stud, preventing two panels from disengaging. Push-Ons are applied much faster than standard hex-nuts.

PS and PV style push-ons are the most commonly used. The serrated teeth provide flexibility, allowing them to accommodate larger stud variations. The separation of the teeth add flexibility and reduce insertion efforts.

Thin wall fasteners are higher strength versions of the push-on family. The interior design is much more rigid, making them suited for higher retention applications.

Rectangular removeable push-ons offer a different exterior footprint, and can be removed on a D-shaped stud by twisting the part 90 degrees.

Inserts provide a larger bearing surface so parts can be installed with automated assembly or can be pre-assembled to trim pieces.

Palnut® Threaded Push-On Fasteners can also be used in assembly applications where screws or bolts need to be retained in place before a nut is positioned and tightened.

Industries and Applications

- Domestic Appliances
- Toys, lawn carts, and coolers with axles
- Small mechanical or electrical devices

Benefits

- Provides maximum holding power, eliminating warranty issues caused by vibration loosening
- No tools required - eliminating time-consuming assembly operations
- One-piece design eliminates the need for multiple small parts, reducing inventory space
- Low profile design, allowing parts to be used in small mechanical and electrical devices

Performance Specifications

Insertion and retention efforts are dependent on the material and material thickness of the part, the size of the spring fingers and the material of the stud. Retention capability is typically up to three times that of insertion efforts.

ARaymond Tinnerman will offer samples for testing or will perform testing on customer provided components.



Palnut® (PS)



Palnut® (PV)



Thinwall (PG)



Rectangular Push-On



Palnut® - Insert (PN)



Palnut® Bolt Retainer (PT)



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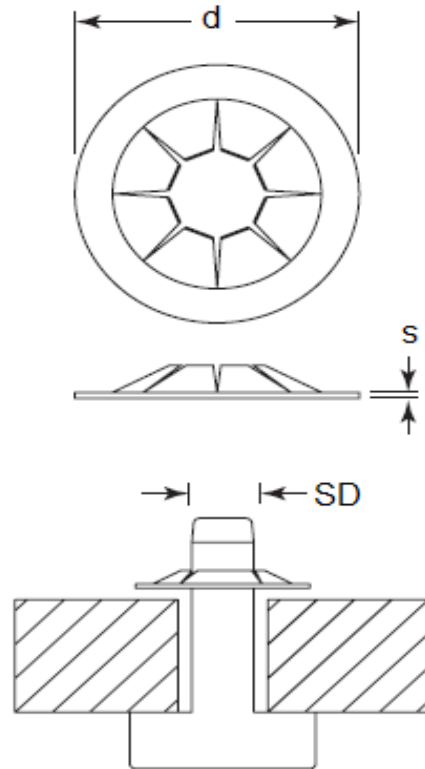
Self-Locking Smooth Stud Fasteners

Most of the products featured on this page are manufactured with spring steel. Some are manufactured in stainless steel for higher corrosion and a more aesthetically pleasing finish.

Push-On (PS)

Part Number	Stud Size	Stud Diameter (SD)	Diameter (d)	Material Thick. (s)	# of Prongs
PS 062032	1/16"	0.060-0.065	0.195	0.010	6
PS 094032	3/32"	0.091-0.097	0.195	0.010	6
PS 125306	1/8"	0.122-0.128	0.375	0.009	6
PS 125006	1/8"	0.122-0.128	0.375	0.014	6
PD 156307	5/32-4mm	0.153-0.158	0.437	0.010	8
PD 156007	5/32-4mm	0.153-0.158	0.437	0.014	8
PS 188307	3/16"	0.185-0.191	0.437	0.010	8
PS 188007	3/16"	0.185-0.191	0.437	0.014	8
PS 050311	5mm	4.920-5.050	11.100	0.250	8
PS 050011	5mm	4.920-5.050	11.100	0.360	8
PD 219385	7/32"	0.216-0.222	0.531	0.012	8
PD 219085	7/32"	0.216-0.222	0.531	0.016	8
PS 060313	6mm	5.920-6.050	13.500	0.250	8
PS 060013	6mm	5.920-6.050	13.500	0.410	8
PS 250385	1/4"	0.247-0.253	0.531	0.012	8
PS 250075	1/4"	0.247-0.253	0.531	0.016	8
PS 312310	5/16"-8mm	0.310-0.316	0.625	0.015	8
PS 312010	5/16"-8mm	0.310-0.316	0.625	0.020	8
PS 375312	3/8"	0.372-0.378	0.750	0.017	8
PS 375012	3/8"	0.372-0.378	0.750	0.026	8
PS 100319	10mm	9.920-10.050	19.000	0.380	8
PS 100019	10mm	9.920-10.050	19.000	0.680	8
PS 438014	7/16"	0.436-0.441	0.875	0.030	8
PS 120022	12mm	11.920-12.050	22.100	0.860	8
PS 500016	1/2"	0.497-0.503	1.000	0.035	8
PZ 002015	5/8"	0.622-0.628	1.000	0.016	8

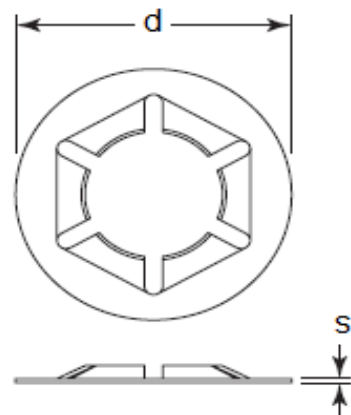
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Push-On (PV)

Part Number	Stud Size	Stud Diameter (SD)	Diameter (d)	Material Thick. (s)
PV 050024	5mm	4.920-5.050	23.800	0.380
PZ 002011	6mm	5.920-6.050	23.800	0.380
PV 250015	1/4"	0.247-0.253	0.937	0.015
PV 312015	5/16"-8mm	0.310-0.316	0.937	0.015
PV 880018	11/32"	8.720-8.850	18.000	0.500
PV 375015	3/8"	0.372-0.378	0.937	0.015
PV 438015	7/16"	0.435-0.441	0.937	0.015
PV 500015	1/2"	0.497-0.503	0.937	0.015

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Self-Locking Smooth Stud Fasteners

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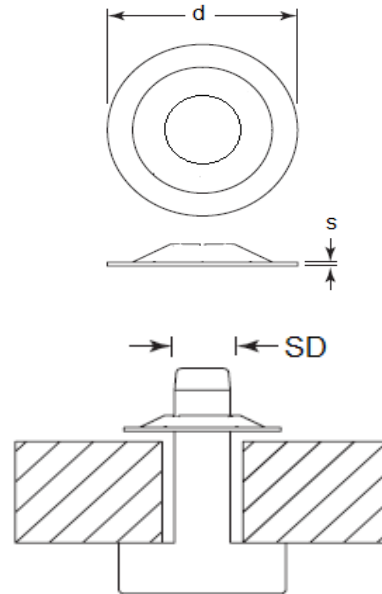
Push-On Thinwalls (Grooveless Retaining Rings - PG)

Part Number	Stud Size	Stud Diameter (SD)	Diameter (d)	Material Thick. (s)
T99220SS-128	1/16"	0.059-0.065	0.150	0.006
T99220SS-93	2mm	0.075-0.081	0.178	0.006
T99220SS-60	3/32"	0.090-0.096	0.218	0.008
T99220SS-83	3mm	0.114-0.120	0.245	0.010
T99220SS-167	1/8"	0.122-0.128	0.194	0.012
T99220SS-96	1/8"	0.122-0.128	0.245	0.008
T99220SS-74	1/8"	0.122-0.128	0.325	0.006
T99220SS-77	0.130"	0.127-0.133	0.245	0.006
T99220SS-153	0.143"	0.140-0.146	0.260	0.008
T99220SS-66	5/32"-4mm	0.153-0.159	0.260	0.008
T99220-162	4mm	0.159-0.165	0.437	0.014
T99220SS-68	3/16"	0.185-0.191	0.312	0.006
T99220SS-126	3/16"	0.185-0.191	0.375	0.012
T99220SS-196	6mm	0.234-0.239	0.531	0.017
PG 237043	6mm	0.237-0.243	0.625	0.022
T99220SS-80	1/4"	0.247-0.253	0.312	0.006
T99220SS-259	1/4"	0.247-0.253	0.437	0.020
T99220-119	1/4"	0.247-0.253	0.625	0.022
T99220SS-137	1/4"	0.247-0.253	0.625	0.010
T99220-171	1/4"	0.247-0.253	0.750	0.025
T99220SS-118	.300"	0.297-0.303	0.500	0.020
T99220SS-64	5/16"	0.310-0.316	0.437	0.010
T99220SS-261	5/16"-8mm	7.950-7.990	12.600	0.510
T99220-112	5/16"	0.310-0.316	0.625	0.022
T99220SS-132	11/32"	0.337-0.346	0.562	0.010
T99220SS-173	3/8"	0.369-0.375	0.500	0.020
T99220SS-91	3/8"	0.372-0.378	0.625	0.010
T99220SS-122	11mm	0.427-0.433	0.625	0.010
T99220SS-172	7/16"	0.434-0.439	0.575	0.010
T99220-201	12mm	11.980-12.050	19.900	1.060

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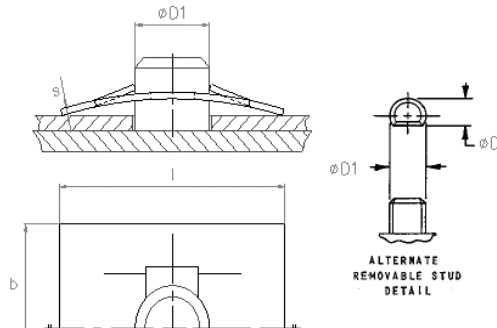
Part Number	Stud Size	Stud Diameter (SD)	Diameter (d)	Material Thick. (s)
T99220-193	.245"	0.492-0.498	0.750	0.010
T99220SS-258	1/2"	12.600-12.600	19.050	0.560
T99220SS-120	1/2"	0.497-0.503	0.750	0.010
T99220-200	14mm	13.980-14.020	21.900	1.060
T99220-223	15mm	14.920-15.050	23.050	0.510
T99220SS-100	5/8"	15.770-15.900	19.050	0.380
136447	17mm	0.666-0.672	1.000	0.034
PG 190025	3/4"	19.000-19.100	25.400	0.640
225547	20mm	19.930-20.000	27.990	1.000
136446	25mm	0.981-0.987	1.438	0.040
T99220-208	1"	0.997-1.003	1.750	0.014

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Push-On (Rectangular - Removable)

Part Number	Stud Diameter (D1)	Alt. Stud Dia. (D)	Length (l)	Width (b)	Material Thick. (s)
C12002-012	3/32"	0.074	0.450	0.230	0.012
D12003-012	1/8"	0.100	0.580	0.310	0.012
D12004-017	5/32-4mm	0.125	0.560	0.380	0.017
C12005-017	3/16"	0.150	0.630	0.380	0.017
C12007-017	1/4"	0.200	0.620	0.440	0.017
C12008-020	5/16"-8mm	0.250	0.690	0.500	0.020



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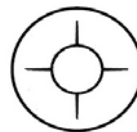
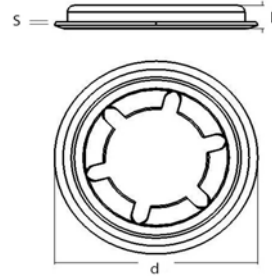
Self-Locking Fasteners

Most of the products featured on this page are manufactured with spring steel. Some are manufactured in stainless steel for higher corrosion and a more aesthetically pleasing finish.

Push-On Inserts (PN)

Part Number	Stud Diameter (SD)	Diameter (d)	Height (h)	Material Thick. (s)	Design Variation
C70578-010	1/16"	0.312	0.026	0.010	D4
PN 125007	1/8"	0.433	0.625	0.010	D4
C13790-012	5/32"	0.375	0.040	0.012	D4
C10592-012	3/16"	0.470	0.030	0.012	C
207300	3/16"	0.562	0.070	0.012	F3
PN 050011	5mm	11.000	1.590	0.250	D4
PN 060011	6mm	11.000	1.590	0.430	F4
207500	1/4"	0.562	0.700	0.012	F4
206600	1/4"	0.726	0.085	0.017	F4
206700	5/16"	0.726	0.085	0.017	F6
PR 375010	3/8"	0.625	0.056	0.015	F8
206300	3/8"	0.726	0.085	0.015	F6
207600	3/8"	1.145	0.110	0.017	F6
206800	9mm	18.520	2.160	0.430	F6
206900	7/16"	0.726	0.085	0.017	F6
207900	7/16"	1.145	0.110	0.017	F6
207700	1/2"	1.145	0.110	0.017	F6
207800	5/8"	1.145	0.110	0.017	F6
212900	3/4"	1.145	0.110	0.017	F6
PN 220036	22mm	35.500	0.625	0.500	F8

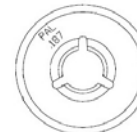
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(D4) 4 PRONG-SHEARED



(C) SIDE PRONGS



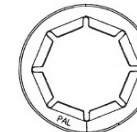
3 PRONG-SLOTTED



(F4) 4 PRONG-SLOTTED



(F6) 6 PRONG-SLOTTED

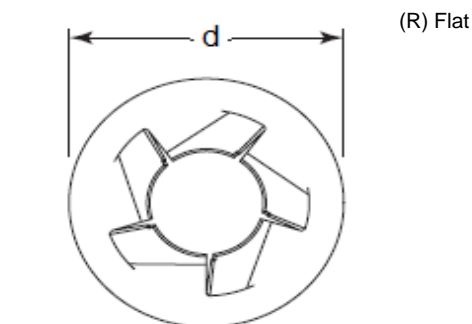


(F8) 8 PRONG-SLOTTED

Push-On Bolt Retainers (PT)

Part Number	Screw Size (SS)	Diameter (d)	Height (h)	Material Thick. (s)	Design Variation
PT 138055	6-18;6-20	0.344	0.001	0.010	RT4
PT 164006	8-15;8-18	0.375	0.049	0.010	RT4
PT 190007	10-12;10-16	0.437	0.001	0.012	RT4
PT 250008	1/4-20	0.500	0.001	0.010	RT5
PT 312010	5/16-18	0.625	0.001	0.014	RT5
PT 375125	3/8-16	0.783	0.001	0.015	RT6
PT 438135	7/16-20	0.843	0.001	0.015	RT6
PT 500015	1/2-20	0.938	0.001	0.015	RT6
PT 040010	M4x.7	9.520	0.001	0.250	RT4
PT 050011	M5x.8	11.100	0.001	0.300	RT5
PT 060013	M6x1.0	12.700	2.180	0.250	RT5
PT 060017	M6x1.0	17.000	0.001	0.250	RT5
PT 080016	M8x1.25	15.900	0.001	0.360	RT5
PZ 002185	M8x1.25	23.800	2.580	0.330	MT6
PT 100020	M10x1.5	19.870	0.001	0.380	RT6
PT 120021	M12x1.75	21.410	0.001	0.380	RT6
PT 140025	M14x2.0	25.000	0.001	0.380	RT6

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(R) Flat



(M) Dished

Palnuts®

Self-Locking Stud Decorative - Special

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TWO-PIECE DECORATIVE CAPS

ARaymond Tinnerman's decorative two piece push-on fasteners combine the reliability of high carbon spring steel with an aesthetically appealing cap to hide unattractive stud ends. Used over shaft, stud, or rod ends for a multitude of applications, the colorful plastic push-on caps will enhance any product while providing dependable, vibration resistant assembly.

Caps are made out of Phthalate and lead-free materials and are RoHS compliant. Available in standard colors of red, white, and black, custom colors are also available with a modest upcharge. The parts are durable to withstand impact forces necessary for assembly and the retention of the cap to the metal insert is very strong.



ONE-PIECE DECORATIVE HIGH-HAT (PW)

Used over shaft, stud or rod ends for a multitude of applications, the shiny high-hats will enhance any product while providing dependable, vibration resistant assembly.



Industries and Applications

- Miscellaneous household items that feature axles such as toys and garbage can wheels
- Nameplates and any other injection molded parts that feature injection molded studs

Performance Specifications

Insertion and retention to stud is dependant on stud size and material. ARaymond Tinnerman will offer samples for testing or will perform testing on customer provided components.

PARTS FOR GROOVED SHAFTS

ARaymond's grooved shaft parts provide an excellent way to assemble panels to grooved shafts. The lower leg is tapered, pulling the parts together while protecting the mating surface. The upper leg snaps behind the shaft to act as a redundant and serviceable stop.

BALL STUD SPEED CLIPS

Ball stud speed clips are used on doors and other serviceable panels. Wear and tear on bosses and panels are eliminated because there is no direct contact. When latched, the spring legs of the clip continually bear inward on the stud, holding the latched unit snug against the panel.



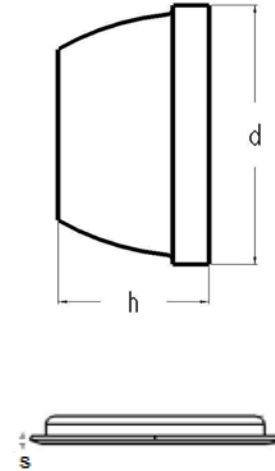
Palnuts®

Self-Locking Stud Decorative - Special

Most of the products featured on this page are manufactured with spring steel. Some are manufactured in stainless steel for higher corrosion and a more aesthetically pleasing finish. The plastic caps are available in black, red, or white and can be customized to meet a specific app.

Push-On Capped (KPS) *Refreshed Line*****

Part Number	Description	Stud Diameter (SD)	Diameter (d)	Height (h)	Material Thick. (s)	Shaft Height (SH)	# of Prongs
KPS 125105	Small Cap	1/8"	0.656	0.344	0.012	0.150-0.250	3
KPS 156105	Small Cap	5/32"	0.656	0.344	0.012	0.150-0.250	3
KPS 188105	Small Cap	3/16"	0.656	0.344	0.012	0.150-0.250	3
KPS 250105	Small Cap	1/4"	0.656	0.344	0.012	0.150-0.250	4
KPS 250135	Medium Cap	1/4"	0.835	0.440	0.015	0.175-0.350	4
KPS 312135	Medium Cap	5/16"	0.835	0.440	0.015	0.175-0.350	6
KPS 375135	Medium Cap	3/8"	0.835	0.440	0.015	0.175-0.350	6
<i>KPS 009215</i>	<i>Medium Cap</i>	<i>9mm</i>	<i>21.200</i>	<i>11.200</i>	<i>0.380</i>	<i>4.400-8.900</i>	<i>6</i>
KPS 438135	Medium Cap	7/16"	0.835	0.440	0.015	0.175-0.350	6
KPS 375210	Large Cap	3/8"	1.300	0.645	0.017	0.200-0.525	6
KPS 438210	Large Cap	7/16"	1.300	0.645	0.017	0.200-0.525	6
KPS 500210	Large Cap	1/2"	1.300	0.645	0.017	0.200-0.525	6
KPS 625210	Large Cap	5/8"	1.300	0.645	0.017	0.200-0.525	6
KPS 750210	Large Cap	3/4"	1.300	0.645	0.017	0.200-0.525	6

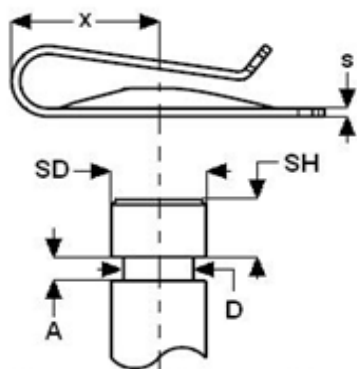


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One Piece Decorative Top Hat - *New*****

Included in 3rd quarter 2014 catalog release.

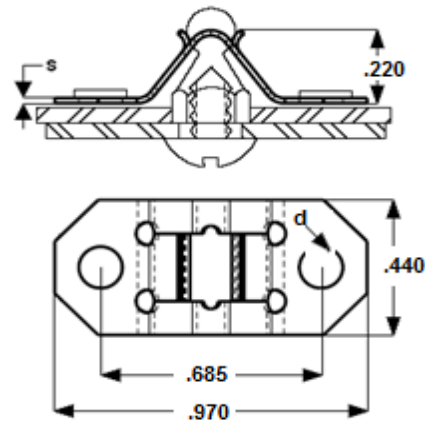
Special Stud Receivers - Grooved Shaft



Part Number	Stud Diameter (SD)	Groove Diameter (D)	Groove Height (A)
<i>054633</i>	<i>6mm - 1/4"</i>	<i>4.900-5.100</i>	<i>1.30</i>
<i>C57843-071M</i>	<i>8mm - 5/16"</i>	<i>5.760-5.920</i>	<i>1.98</i>

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Ball Stud Receivers - Spring Catches



Part Number	Pull Out Force (lbs)	Mounting Hole Dia (d)	Material Thick. (s)
C01663-017	8.0-9.0	0.135	0.017
C04893-012	3.5-5.0	0.105	0.012

Panel Clips / Trim Clips

Snap Fit Design

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TRIM CLIPS

ARaymond Tinnerman's Trim Clip fasteners are designed for use over rectangular studs or integrally molded blades, ribs, etc. on trim strips, access plates, or any light application where removability is a factor.

Trim clips are simply snapped into a specified hole in the substrate making installation and removal easy. The self-equalizing retaining legs are formed into a dart-type configuration for easy mounting and assure a snug, rattle-free installation, yet will yield to deliberate removal force applied to the trim or plate.

Standard trim clips are most widely used. They can be used to allow panels to withstand disassembly with light to moderate loads.

High strength trim clips are used in similar panel orientations as standard trim clips, but used when panels are subjected to stronger or cyclical loading.

Single-sided trim clips are usually used in tandem with other single sided trim clips to engage an edge of a cavity.

Dart style clips are used in applications where the substrate is some distance from the mating panel, in many cases these are used to allow a wire path between the two panels.

Right angle trim clips can be used to attach two parallel sheet metal surfaces.

Tubular style trim clips could be easily categorized as a stud receiver. This part snaps into the substrate, hole first, then accepts a stud.

Industries and Applications

- Trim applications
- Close-out applications
- Vending
- ATM
- Specialty furniture applications

Benefits

- Parts are hidden - Provides for unblemished exposed panel surfaces
- Removeable, reusable
- Easy install - Snap together in seconds
- No tools required
- Serviceable - Parts disassemble easily and reliably

Note: Excessive removal can cause some degradation to mating panels

Performance Specifications

Insertion and retention performance is dependent on component attributes and material. ARaymond Tinnerman will offer samples for testing or will perform testing on customer provided components.



Standard



High Strength



Single-Sided



Dart Style - Square



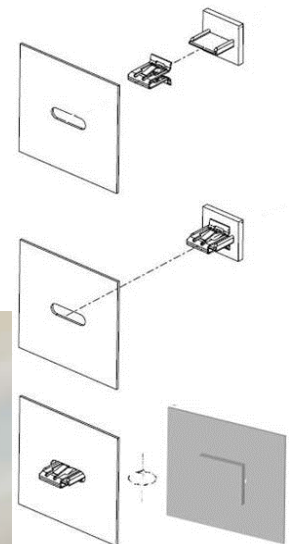
Dart Style - Round



Right Angle



Tubular



Panel Clips / Trim Clips

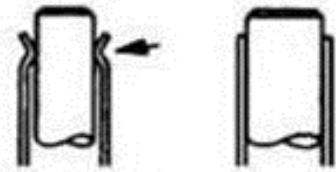
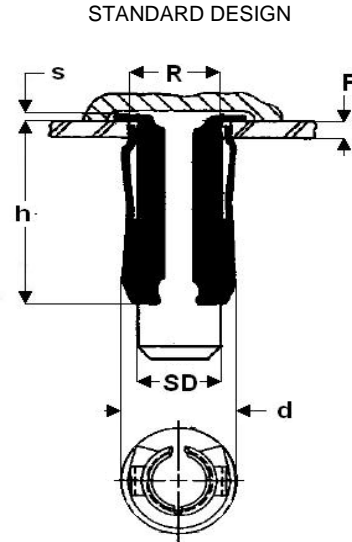
Snap Fit Design

Most of the products featured on this page are manufactured with spring steel. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes. Parts may also be available in stainless steel.

Tubular Clips

Part Number	Stud Diameter (SD)	Panel Thickness (F)	Hole Diameter (R)	Height (h)	Material Thick. (s)	Stud Engaging Feature
D04483-032	3/32"	0.032-0.040	0.120	0.170	0.010	Standard
C02374SS-012	1/8"	0.060-0.066	0.161	0.250	0.012	Standard
C03810-012	1/8"	0.089-0.095	0.162	0.220	0.012	Standard
C02198-032	3/16"	0.030-0.036	0.228	0.450	0.012	Standard
D02822-064	3/16"	0.062-0.068	0.228	0.450	0.012	Standard
C02201-081	3/16"	0.079-0.081	0.228	0.450	0.011	Standard
C02201-094	3/16"	0.092-0.098	0.228	0.450	0.012	Standard
C22519-115	3/16"	0.115-0.121	0.228	0.460	0.011	Standard
C03598-036	1/4"	0.034-0.040	0.281	0.460	0.012	Standard
C03598SS-075	1/4"	1.850-2.000	7.170	12.200	0.300	Standard
C24583-012	1/8"	NA	0.162	0.220	0.011	Standard
C25112-049	5/32-4mm	0.049-0.059	0.228	0.440	0.011	Standard
D02350-032	3/16"	0.030-0.044	0.228	0.460	0.012	Standard
C02442-081	3/16"	0.079-0.085	0.228	0.460	0.012	Standard
C44043-081	3/16"	0.081-0.097	0.228	0.460	0.011	Standard
C02866-125	3/16"	0.123-0.129	0.228	0.460	0.011	Standard
C22310-030	1/4"	0.030-0.034	0.312	0.360	0.014	Standard
C21585-040	1/4"	0.040-0.062	0.312	0.360	0.014	Standard
C03318-125	1/4"	0.123-0.129	0.312	0.360	0.014	Standard
<i>D98747-036M</i>	<i>9mm</i>	<i>NA</i>	<i>10.500</i>	<i>6.400</i>	<i>0.360</i>	<i>Standard</i>

Bold Italics: Metric



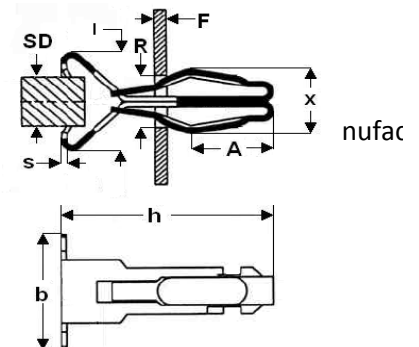
REMOVABLE LOCK

SLIDE FIT

Dart Style Trim Clips (Round Holes)

Part Number	Stud Diameter (SD)	Hole Diameter (R)	Set-up Height (A)	Height (h)	Material Thick. (s)
D98728-045M	7.00-7.30	7.25-7.75	13.50-16.00	26.50	0.45
D99256-071M	4.65-4.85	7.25-7.75	13.50-16.00	26.50	0.71
D98872-045M	7.17-7.26	7.25-7.75	13.50-16.00	26.50	0.45
D98801-071M	7.00-7.30	7.25-7.75	13.50-16.00	26.50	0.71

All Dimensions in Metric



Panel Clips / Trim Clips

Snap Fit Design

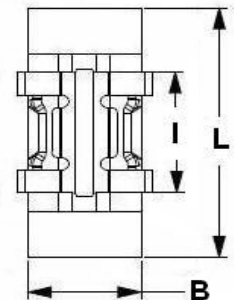
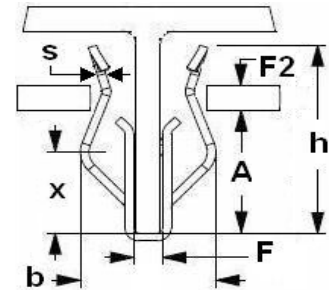
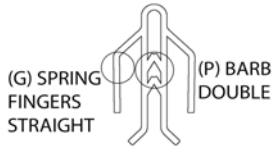
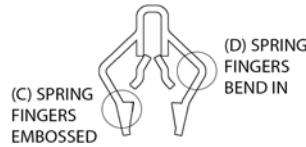
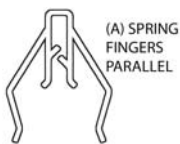
Most of the products featured on this page are manufactured with spring steel. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes. Parts may also be available in stainless steel.

Standard Trim Clips

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Part Number	Rib Thickness (F)	Slot Width (B)	Set-up Height (A)	Slot Length (L)	Height (h)	Design Variation
D98786-051M	0.90-1.10	5.70-6.20	6.00-7.00	20.00	14.70	G
D99299-043M	1.10	5.30-5.70	5.60	20.00	7.80	B
D98676-056M	1.12-1.38	5.70-6.20	12.25	12.00	18.20	B
D99301-064M	1.13-1.37	5.75-6.25	4.50	21.00	15.50	LV
D98646-043M	1.17-1.43	6.20-6.70	6.10	11.00	9.50	D
C58005-036M	1.25-1.75	5.20-5.60	6.00-7.00	25.40	13.00	B
D98648-051M	1.37-1.77	8.00-8.50	12.13	20.00	16.50	D
D98901-051M	1.40-1.60	5.70-6.20	7.50-8.50	20.00	14.70	GP
D98810-051M	1.40-1.80	8.00-8.50	11.60-12.80	16.00	16.50	B
D98721-051M	1.60-2.00	8.00-8.50	7.75-8.75	20.00	15.10	C
D98640-051M	1.70-2.10	8.00-8.50	11.60-12.80	16.00	16.55	B
D98568-056M	1.70-2.10	8.00-8.50	12.13	16.00	16.50	A

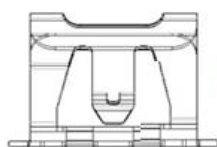
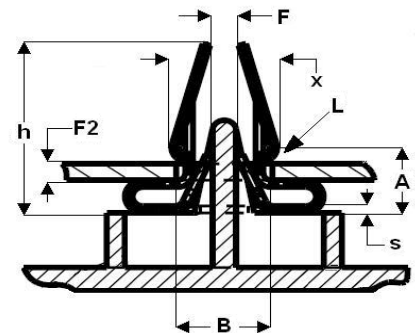
All Dimensions in Metric



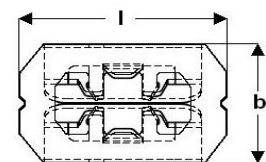
High Strength Trim Clips

Part Number	Rib Thickness (F)	Slot Width (B)	Panel Thickness (F2)	Slot Length (L)	Height (h)	Design Variation
D99214-064M	1.10-1.30	5.75-6.03	0.80-3.00	20.00	15.50	-
D99142-064M	1.75-2.00	5.75-6.03	0.70-0.90	20.00	15.50	C
D98992-064M	1.90-2.10	8.25-8.75	2.30-2.80	22.00	15.50	-
D98991-064M	1.90-2.10	7.75-8.03	0.70-1.20	25.40	15.50	-
D98988-064M	1.90-2.10	7.75-8.03	1.40-1.60	25.40	15.50	-
D98976-064M	1.90-2.10	7.95-8.35	2.90-3.30	25.40	15.50	-

All Dimensions in Metric



(C) Non-Serviceable Tabs



Panel Clips / Trim Clips

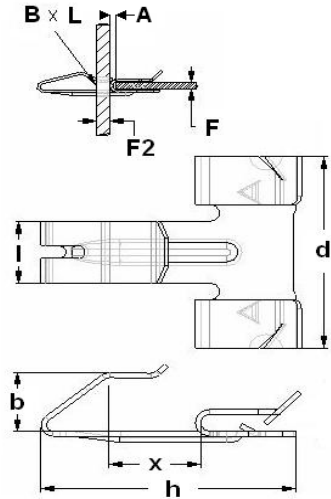
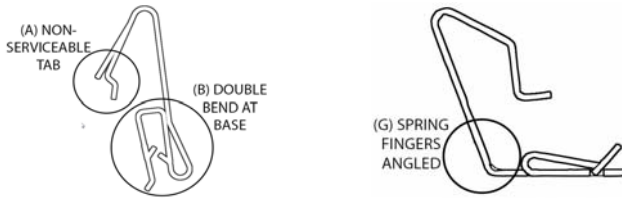
Snap Fit Design

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Dart Style Trim Clips (Square Holes)

Part Number	Rib Thickness (F)	Slot Width (B)	Panel Thickness (F2)	Set-Up Height(A)	Dart Width (I)	Design Variation
D98910-051M	0.90-1.10	6.15-6.65	2.75-3.25	10.700	9.000	G
D98826-051M	1.20-1.50	3.90-4.10	2.40-2.60	3.550	6.350	-
D98680-043M	1.40-1.60	5.90-6.10	2.00-2.50	NA	15.000	AB
D99311-051M	2.40-2.60	11.75-12.25	3.000	7.800	22.000	

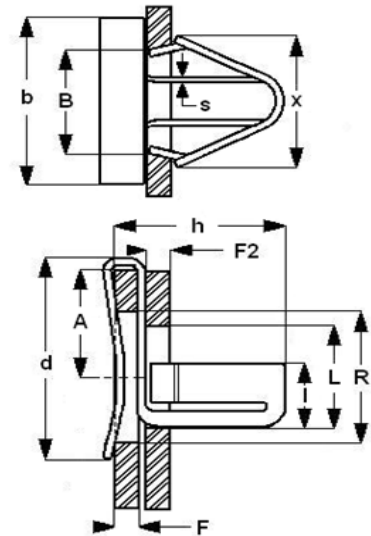
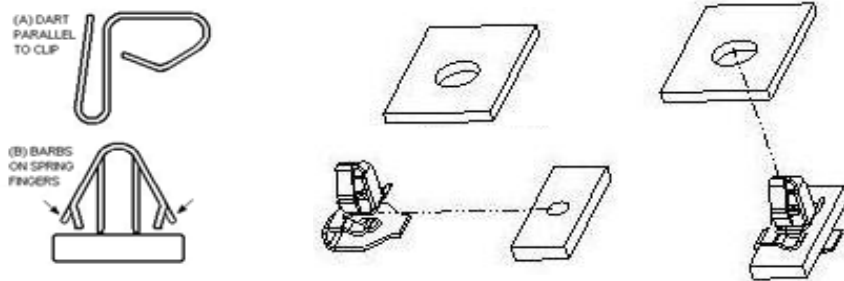
All Dimensions in Metric



Right Angle Trim Clips

Part Number	Panel Thickness (F)	Throat Distance(A)	Panel Thickness (F2)	Slot Width (B)	Slot Length (L)
D98652-071M	0.80-2.00	4.50-5.00	0.81-2.00	7.10-7.90	12.00

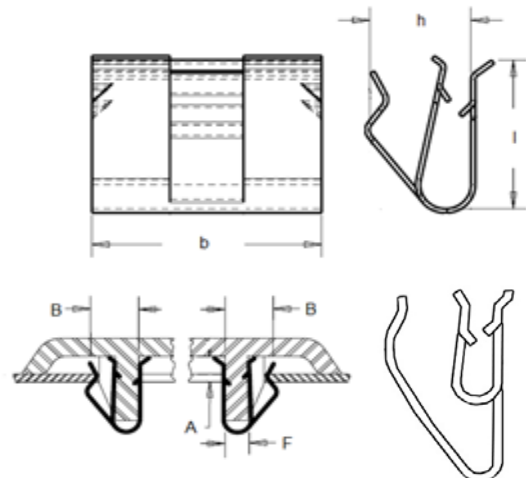
All Dimensions in Metric



Single-Sided Trim Clips

Part Number	Rib Thickness (F)	Set-up Height (A)	Slot Width (B)	Width (b)	Length (I)	Form
C53121-012	0.040-0.052	0.255	0.185	0.190	0.180	Std
C21449-014	0.040-0.090	0.250	0.156	0.161	0.151	Std
C44725-014	0.045-0.055	0.130	0.145	0.150	0.130	Std
D57067-043M	1.000-1.500	6.600	6.100	5.250	4.750	Std
C22112-020	0.070-0.080	0.220	0.200	0.230	0.200	Alt
C27946-017	0.070-0.080	0.400	0.380	0.290	0.260	Alt

Bold Italics: Metric



Notes: Parts can fit in slots or open cavity

* Set-up dimension should be confirmed with ART Product Engineering

Alt Design

Panel Clips / Trim Clips

Self-Sufficient One-Piece Fasteners

The product displayed in this catalog is a preferred sampling of the larger product offering. For additional product refer to our web-site or contact a sales professional.

U-CLIPS

ARaymond Tinnerman's U-Shaped Panel Clips slide easily over metal, plastic or wooden panels providing a strong clamping action for firm, vibration-free assembly. They are self-sufficient requiring no holes, screws, welds, rivets or other secondary fastening devices. Turned-up lead lips on one or both legs allow fast assembly over the panel edges. Some are equipped with barbs for positive retention of the panel.



U-Clip



S-Clip

S-CLIPS

ARaymond Tinnerman's S-Shaped Panel Clips are used for attaching parallel panels in opposing directions. The spring steel "cushions" the joint, preventing chipping and other damages during shipping and handling. They eliminate the need for holes in panels or flanges.

METAL DART TYPE FASTENERS

ARaymond Tinnerman's metal dart type fasteners require no screws or other secondary fastening devices. They require only a cavity or mounting hole. Dart type fasteners can be applied from the front or top of a panel eliminating many blind or limited access fastening problems. The spring tension secures the components between the base and knuckles of the clip. The amount of clamping action depends on the material thickness and design of the clip.



Dart Clip



U-Clip Special

U-CLIP SPECIALS

ARaymond Tinnerman has developed several special U-Clips to solve specific applications, and demonstrate our comprehensive engineering capabilities. All designs feature a "U-shaped" clip that secures to one panel, and another feature that secures or interferes with an additional component. There are several design variations to consider. ARaymond Tinnerman can create new designs if needed for specific applications.

Industries and Applications

- Universal - Can be used across most industries
- Ceiling light fixtures

FAN BALANCE CLIPS

U-Shaped or V-Shaped self-retaining fasteners are designed to assemble to fan blades. The key objective of fan blades is to meet a specific weight. Motor and fan manufacturers use these to balance out fans so the unit can run properly. Weight is usually measured in grains or ounces. Basic dimensions have also been provided on two of the more popular series.



Fan Balance Clip - 69 Series



Fan Balance Clip - 17/18 Series

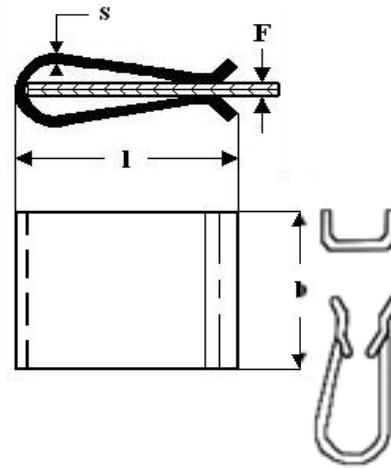
Panel Clips / Trim Clips

Self-Sufficient One-Piece Fasteners

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U-Clips

Part Number	Panel Thickness (F)	Width (b)	Length (l)	Material Thick. (s)	Design Variation
C25341-014	0.035-0.045	0.380	0.200	0.014	ACE
C23928-014	0.046-0.056	0.380	0.200	0.014	ACE
D20285-017	0.050-0.100	0.500	0.340	0.017	BE
D27091-014	0.115-0.185	0.500	0.420	0.014	E
D43806-014	0.170-0.205	0.500	0.430	0.014	E
C45931-014	0.245-0.255	0.500	0.360	0.014	CE
C57065-014	0.270-0.320	0.500	0.265	0.014	CD
C56147-014	0.320-0.340	0.500	0.270	0.014	CE

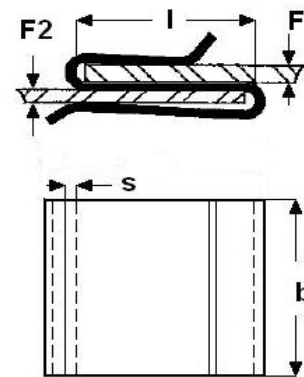


DESIGN VARIATIONS

- (A) STRAIGHT LEGS
- (B) ONE LEG STRAIGHT
- (C) SQUARE BACK
- (D) BARBS ON ONE LEG
- (E) BARBS ON BOTH LEGS
- (F) BARBS STAGGERED

S-Clips

Part Number	Panel Thickness (F)	Panel Thickness (F2)	Width (b)	Length (l)	Material Thick. (s)	Design Variation
C53241-020	0.026-0.032	0.112-0.118	0.375	0.475	0.020	CE
<i>D99269-051M</i>	<i>0.900</i>	<i>2.500</i>	<i>15.050</i>	<i>14.000</i>	<i>0.510</i>	<i>CD</i>
C28173-025	0.040-0.080	0.120-0.136	0.500	0.545	0.025	B
C22306-025	0.043-0.053	0.025-0.060	0.562	0.540	0.025	CD
D44684-020	0.048-0.080	0.070-0.110	0.375	0.530	0.020	CF
<i>D98707-051M</i>	<i>1.250-2.000</i>	<i>1.800-2.800</i>	<i>9.550</i>	<i>13.450</i>	<i>0.510</i>	<i>BF</i>
C52161-020	0.050-0.070	0.050-0.070	0.380	0.565	0.020	CE
C58137-025	0.055-0.060	0.025-0.060	0.562	0.540	0.025	C
D40991-020	0.055-0.065	0.080-0.110	0.375	0.530	0.020	BF
<i>C58675-064M</i>	<i>1.500-2.000</i>	<i>1.500-2.000</i>	<i>12.750</i>	<i>19.000</i>	<i>0.640</i>	<i>E</i>
C48766-020	0.070-0.080	0.070-0.110	0.375	0.530	0.020	CF
C55113-020	0.090-0.130	0.090-0.130	0.375	0.530	0.020	CE
<i>D99044-043M</i>	<i>2.300-3.300</i>	<i>2.300-3.300</i>	<i>9.550</i>	<i>13.500</i>	<i>0.430</i>	<i>BF</i>
<i>C57908-043M</i>	<i>2.500-2.800</i>	<i>2.500-2.800</i>	<i>9.530</i>	<i>22.360</i>	<i>0.430</i>	<i>CF</i>
C55638-020	0.161-0.170	0.090-0.130	0.375	0.520	0.020	CE



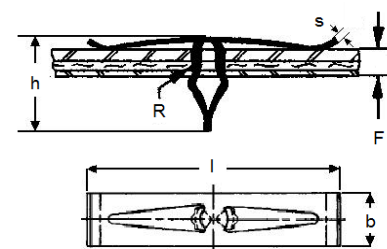
DESIGN VARIATIONS

- (B) LEAD UP ON ONE LEG
- (C) LEAD UP ON TWO LEGS
- (D) RETAINING BARBS ON ONE LEG
- (E) RETAINING BARBS ON TWO LEGS
- (F) RETAINING BARBS ON THREE LEGS

Bold Italics: Metric

Dart Clips - Metal

Part Number	Panel Range Thickness (F)	Hole Diameter (R)	Height (h)	Length (l)	Width (b)	Material Thick. (s)
C40617-017	0.190-0.230	0.190-0.190	0.610	1.700	0.330	0.020



Panel Clips / Trim Clips

Self-Sufficient One-Piece Fasteners

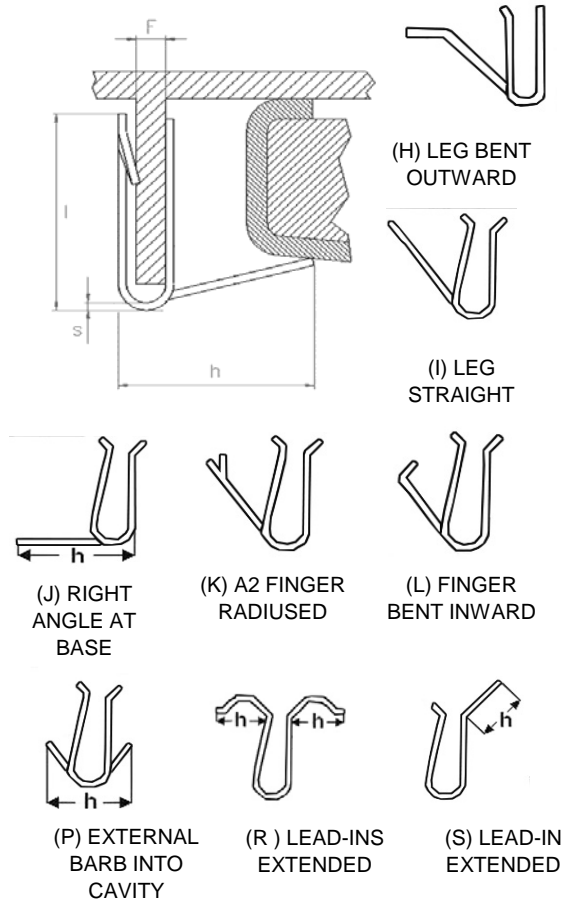
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U-Clips - Special

Part Number	Panel Thickness (F)	Leg Height (h)	Width (b)	Length (l)	Material Thick. (s)	Design Variation
C44140-014	0.025-0.035	0.350	0.500	0.460	0.014	BFI
C20597-017	0.042-0.048	0.610	0.500	0.300	0.017	BFJ
C23259-017	0.042-0.062	0.525	0.500	0.290	0.017	BFJ
C29019-014	0.055-0.065	0.360	0.500	0.310	0.014	BFH
C41412-017	0.070-0.090	0.525	0.500	0.290	0.017	BEJ
C21527-014	0.075-0.105	0.315	0.500	0.410	0.014	FH
C28015-025	0.030-0.110	0.190	0.875	0.635	0.025	FI
C54150-017	0.120-0.125	0.545	0.500	0.260	0.017	FIJ
C25672-017	0.125-0.140	0.545	0.500	0.260	0.017	BCFJ
D99073-043M	0.780-1.040	9.440	12.700	8.280	0.430	BFI
D98920-043M	1.820-1.950	3.000	25.400	10.500	0.430	FJ
C28036-017	0.090-0.110	0.180	0.500	0.350	0.017	BFS
C58664-064M	2.650-2.750	3.000	21.000	18.500	0.640	CEGR
D98672-064M	1.100-3.100	1.000	18.000	17.500	0.640	CR
C58172-064M	3.450-3.550	0.075	12.700	17.800	0.640	CERZ
D28601-014	0.067-0.077	0.196	0.500	0.350	0.014	EP
C58521-028	0.080-0.080	0.080	0.437	1.125	0.028	P
D47463-017	0.105-0.115	0.240	0.500	0.380	0.017	AP

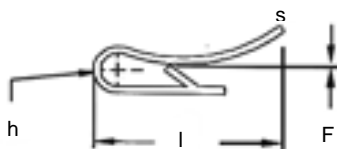
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Refer to U-Clip design variations for A through E



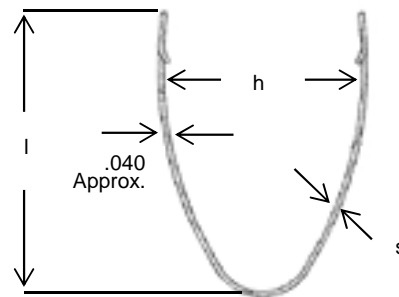
Balance Clips - 69 Series Thin Blade

Part Number	Weight (Grains)	Width (b)	Length (l)	Height (h)	Material Thick. (s)	Gap Max (F)
97-09017	6.25	0.216	0.630	0.030	0.013	0.000
69-125	12.50	0.343	0.795	0.078	0.012	0.000
97-09016	12.50	0.435	0.630	0.030	0.013	0.000
69-25	25.00	0.343	0.782	0.078	0.025	0.020
69-37 1/2	37.50	0.515	0.833	0.078	0.025	0.015
69-50	50.00	0.688	0.816	0.078	0.025	0.020
97-09009	62.00	0.860	0.810	0.078	0.026	0.020
69-75	75.00	1.032	0.814	0.078	0.025	0.020
97-09011	87.00	1.203	0.810	0.078	0.026	0.020
69-100	100.00	1.375	0.826	0.078	0.025	0.020
69-150	150.00	1.500	0.897	0.156	0.032	0.030
69-200	200.00	2.000	0.890	0.156	0.032	0.030



Balance Clips - 17-18 Series Thick Blade

Part Number	Weight (Ounce)	Width (b)	Length (l)	Height (h)	Material Thick. (s)
17-1	0.13	0.625	1.076	0.738	0.020
17-2	0.25	1.125	1.173	0.774	0.020
17-3	0.50	1.500	1.062	0.778	0.031
17-4	1.00	2.500	1.057	0.743	0.035
17-5	1.50	2.500	1.057	0.782	0.047
17-6	2.00	2.500	1.043	0.655	0.062
18-1/4	0.25	0.500	1.750	1.187	0.028
18-1/2	0.50	1.000	1.750	1.187	0.028



Push-Pins

Plastic Self-Retaining Fasteners

The product displayed in this catalog is a preferred sampling of the larger product offering. For additional product refer to our website or contact a sales professional.

PUSH-PINS (A)

ARaymond Tinnerman's Plastic Push-Pins are versatile fasteners with many diversified application possibilities. They may be used for light retention as hole plugs, bearings or spacers and are ideally suited for simplified assembly or products shipped knocked-down for consumer assembly. In addition to being corrosion-proof, push-pin fasteners are shock and vibration resistant, and will not work loose.

FIR TREE FASTENERS (B) ****NEW****

Similar to plastic darts, these fasteners hold two panels together without the need for screws or other secondary fastening devices. The fir tree barbed feature digs into the panels with ease, requiring minimal force to apply. The fir tree can accommodate a wide panel range, and is assembled into holes or cavities.

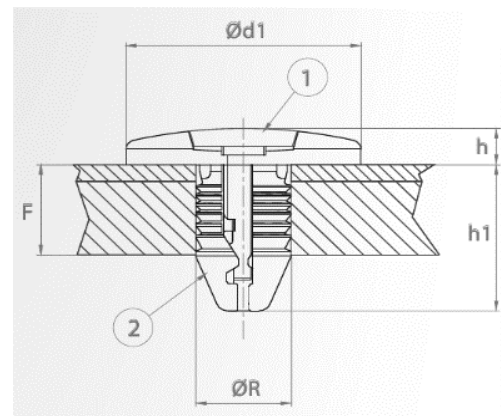
PLASTIC PUSH-RIVETS (C) ****NEW****

These two-piece plastic fasteners work like metal rivets but do not require special tools for assembly. The button or plunger is pushed into the center of the dart shaped pin, causing the legs to expand behind the mating panel and provides an uncharacteristically strong joint for a plastic fastener. Plastic rivets are ideal for assemblies where special tooling is not permissible and/or threaded fasteners are not a viable option. Many of these parts are serviceable.

Plastic Panel Pin Fasteners

Part Number	Panel Thickness (F)	Hole Diameter (R)	Height (h1)	Head Diameter (d1)	Head Height (h)	Part Type
C61546AG-028	0.035-0.100	0.182-0.192	0.475	0.420	0.100	A
C61782AA-060	0.060-0.100	0.182-0.192	0.595	0.445	0.062	A
C61622AG-130	0.130-0.180	0.182-0.192	0.555	0.420	0.100	A
C61375AG-170	0.170-0.234	0.182-0.192	0.595	0.420	0.050	A
C61758AG-170	0.170-0.234	0.182-0.192	0.595	0.445	0.062	A
C63100AA	2.540-6.640	6.200-6.500	15.530	17.780	2.500	B
C62571AA	1.500-12.700	9.500-10.400	20.250	21.150	3.660	B
207926	4.500	15.000	13.700	22.000	4.500	C
017489	4.600	12.000	10.000	18.000	6.000	C
020074	4.500-5.000	10.000	11.500	17.800	5.000	C
013011	4.000-7.000	7.900-8.700	12.000	16.000	2.000	C
018610	0.800-7.000	7.800-8.800	13.000	15.500	4.500	C
201793	2.000-7.500	8.100-8.300	13.000	20.500	3.000	C
018795	3.000-8.000	4.600-5.100	11.500	15.000	3.000	C
015269	2.500-8.500	7.000	17.000	15.000	6.000	C
208580	7.500-8.500	14.000	20.000	21.000	4.000	C
202493	3.000-10.000	6.500	14.000	22.000	2.600	C
C62381AA	28.500-29.500	11.500-12.000	50.200	30.000	15.000	C

Bold Italics: Metric



Wire Management

Plastic Clips, Ties, Assemblies

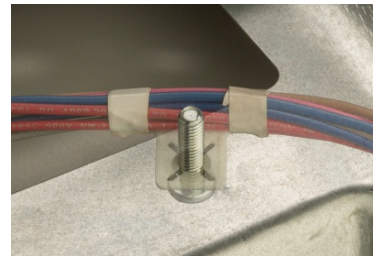
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ARaymond Tinnerman plastic cable clips and ties offer the most reliable means of securing cable, wire and tubing safely away from moving parts and panel edges that can cause damage. Parts are manufactured out of high quality nylon or acetal materials and are available in several standard designs for a wide range of tube and wire diameters and panel thicknesses. In addition, plastic components can be combined with spring steel clips for improved performance and retention.



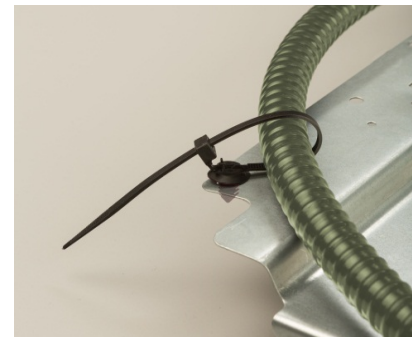
Tape-On Clips

The assembly of these parts is included in the bundling assembly operation. Once affixed to the wire with tape, the bundle is transported to the final assembly location. These parts have a feature that installs reliably into a hole on an adjacent panel or onto a nearby stud. Parts are simple to install, reliable and inexpensive. Cost of assembly is included within wiring bundle process.



Value Added Cable Ties

Standard cable ties accommodate a wide range of tube or wire bundle diameters. ARaymond Tinnerman cable ties combine tie straps with additional features to attach to panels or components. Cable ties are combined with fir trees, dart style, edge mounting and other assembly options. The self-retaining features on all ARaymond products ease the assembly of the cable bundle to the cable strap.



Performance Specification - Tensile strength of the bundle is 45 lbs. minimum. Recommended tightening load should not exceed 28 lbs. Application specific testing provided upon request.

Assemblies - Swivel Clips

Wire management assemblies combine metal and plastic components to provide the optimized assembly solution. Swivel clips rotate with respect to each other. The versatile swivel clips can accommodate different panel sizes and orientations, eliminating the number of fasteners required in a manufacturing facility or in the field.



Create your own - Only a select few swivel clip combinations are represented in this brochure. In most cases, the swivel clip component can be combined with other swivel clip components to create a unique solution. If possible, try to select from the list provided. These are more readily available.

Performance Specification - Retention between swivel clip components is 25 lbs minimum. Application specific testing provided upon request.

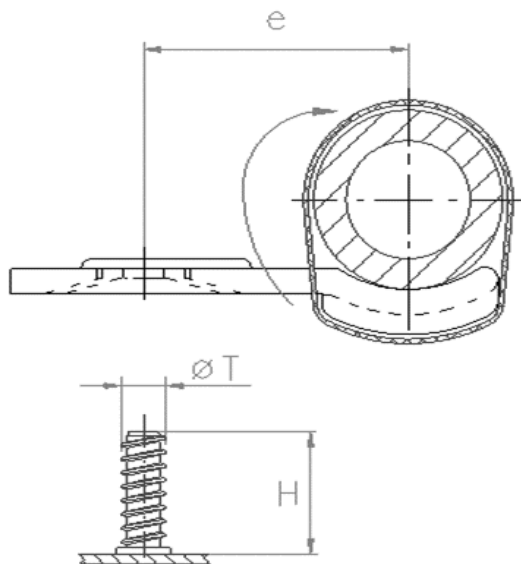


Wire Management

Plastic Cable Clips and Ties

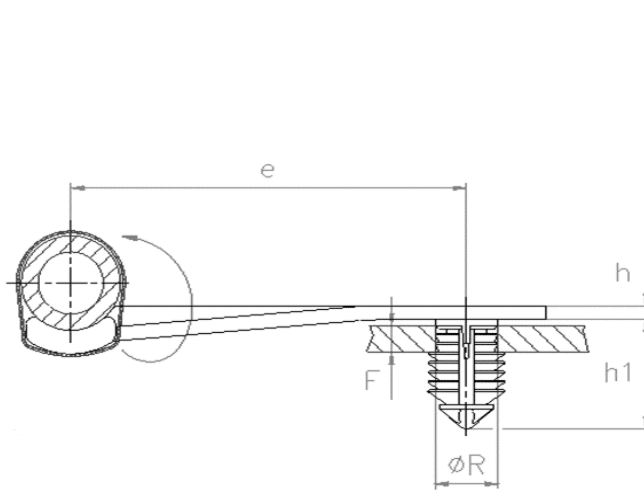
Material: Most products are made with high quality nylon and acetal materials. Additives are added to improve the strength, temperature resistance, and UV stabilization.

Tape On - Stud Mount



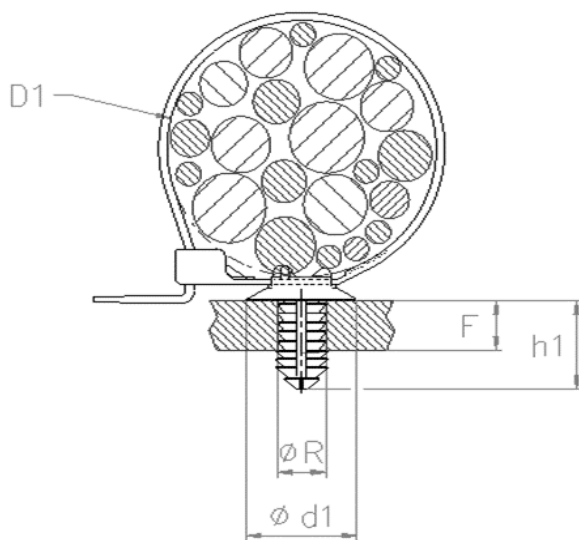
Part Number	Screw Specification (T)	Off-set (e)
164440	M6x1.0 or 1/4-20	14.00

Tape On - Plug Mount (Fir Tree)



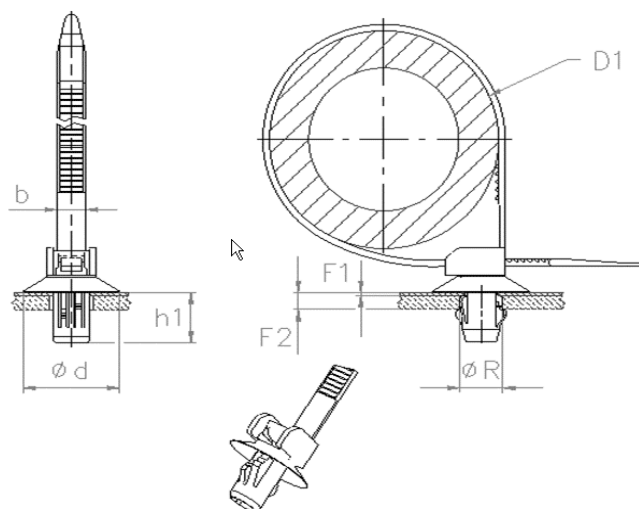
Part Number	Panel Thickness (F)	Hole Diameter (R)	Off-set (e)
164452	0.70-4.00	6.10-6.50	32.00

Cable Tie - Plug Mount (Fir Tree)



Part Number	Tube / Bundle Dia. (D1)	Panel Thickness (F)	Hole Diameter (R)
164460	1.00-40.00	0.70-4.00	6.10-6.50

Cable Tie - Plug Mount (Dart - Universal)



Part Number	Tube / Bundle Dia. (D1)	Panel Thickness (F2)	Hole Diameter (R)
175200	1.00-40.00	0.60-3.00	6.20-7.20

All dimensions are metric

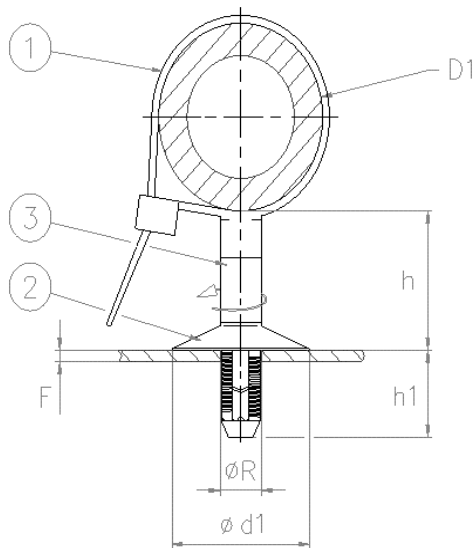
The dimensions of the above parts are for reference only. For complete design information please contact your ARaymond Tinnerman Sales Professional.

Wire Management

Swivel Clip Assemblies

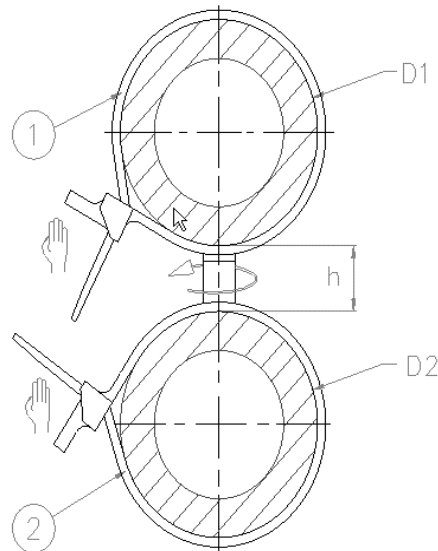
Material: Most products are made with high quality nylon and acetal materials. Additives are added to improve the strength, temperature resistance, and UV stabilization. Edge-biter components are made with spring steel.

Swivel Tie - Plug Mount (Fir Tree)



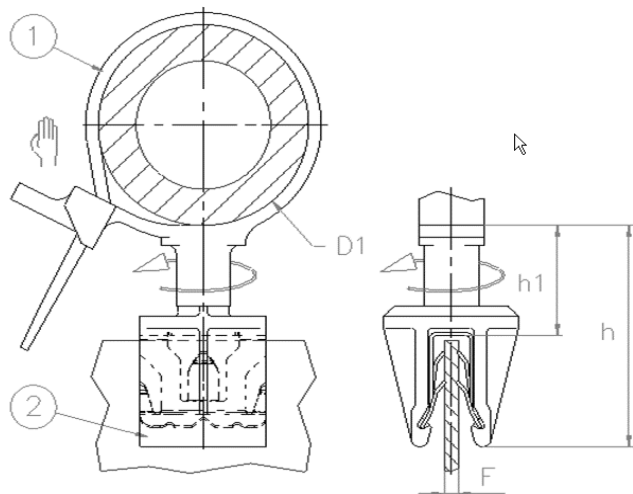
Part Number	Tube / Bundle Dia. (D1)	Panel Thickness (F)	Hole Diameter (R)
168821	8.00-33.00	0.80-6.00	6.50-6.70

Swivel Tie - Tie Mount



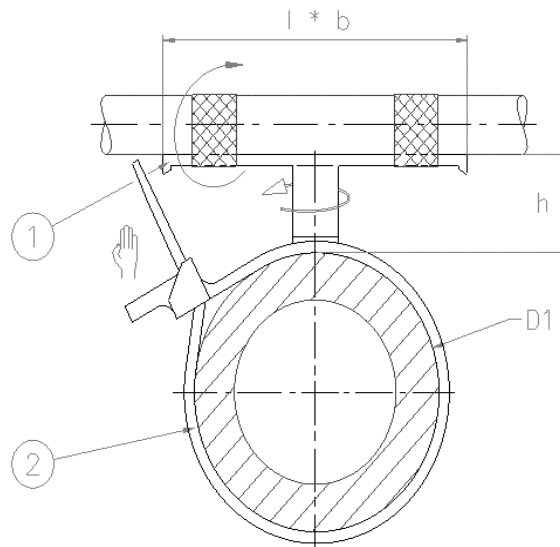
Part Number	Tube / Bundle Dia. (D1)	Tube / Bundle Dia. (D2)
168780	8.00-50.00	8.00-50.00

Swivel Tie - Edge Mount



Part Number	Tube / Bundle Dia. (D1)	Panel Thickness (F)
168971	8.00-50.00	2.00-4.00

Swivel Tie - Tape On Mount



Part Number	Tube / Bundle Dia. (D1)
168806	8.00-50.00

All dimensions are metric

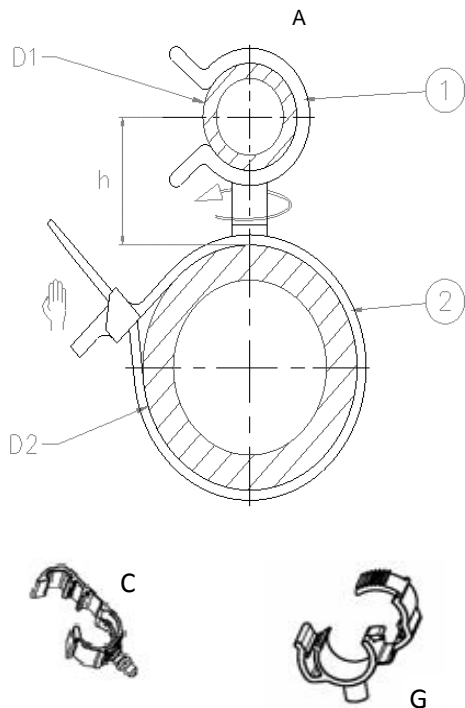
The dimensions of the above parts are for reference only. For complete design information please contact your ARaymond Tinnerman Sales Professional.

Wire Management

Swivel Clips

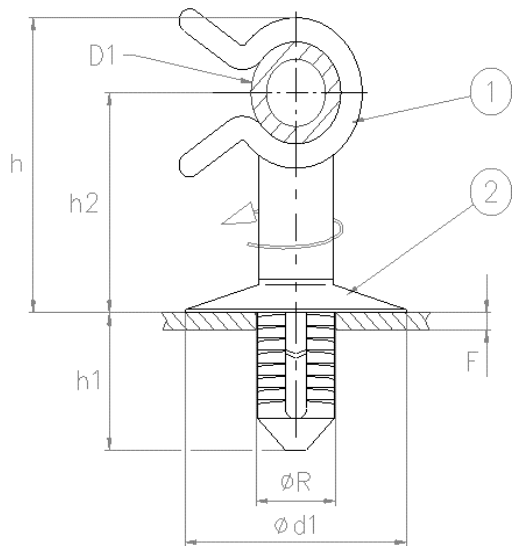
Material: Most products are made with high quality nylon and acetal materials. Additives are added to improve the strength, temperature resistance, and UV stabilization.

Swivel Tie - Tube Mount



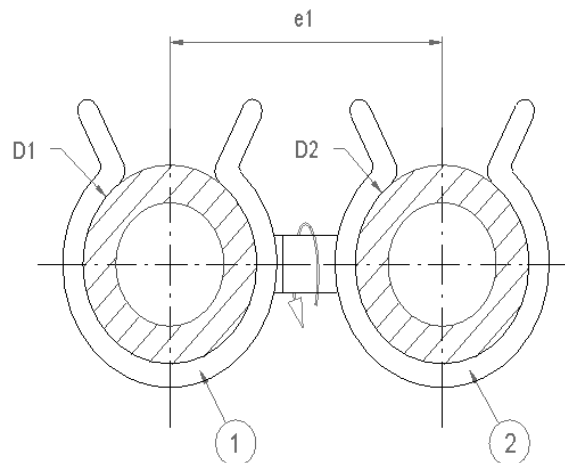
Part Number	Tube Diameter (D1)	Tube / Bundle Dia. (D2)	Design Variation
168750	6.00-6.50	8.00-50.00	A
081717	8.00-9.00	8.00-20.00	A
168869	8.00-9.00	8.00-50.00	A
168787	9.50-10.50	8.00-20.00	A
168797	9.50-10.50	8.00-33.00	A
168853	9.50-10.50	8.00-50.00	A
168803	11.00-13.00	8.00-33.00	A
168752	15.00-16.00	8.00-50.00	A
168804	15.00-16.00	8.00-33.00	A
082282	16.00-18.00	8.00-33.00	A
168751	18.00-20.00	8.00-20.00	A
168781	18.00-20.00	8.00-33.00	A
081190	22.00-24.00	8.00-33.00	A
202609	28.00-30.00	8.00-33.00	A
214116	12.60-13.20	8.00-33.00	C
082646	7.80-8.50	8.00-33.00	G

Swivel Tube - Plug Mount (Fir Tree)



Part Number	Tube Diameter (D1)	Panel Thickness (F)	Hole Diameter (R)
081568	8.00-9.00	0.80-6.00	6.30-6.70

Swivel Tube - Tube Mount



Part Number	Tube Diameter (D1)	Tube Diameter (D2)
168791	8.00-9.00	4.30-5.20

All dimensions are metric

The dimensions of the above parts are for reference only. For complete design information please contact your ARaymond Tinnerman Sales Professional.

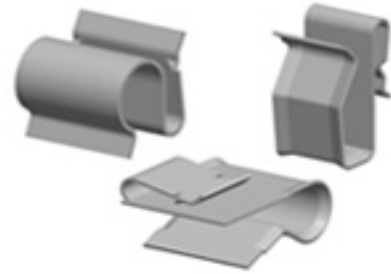
Wire Management

Spring Clips

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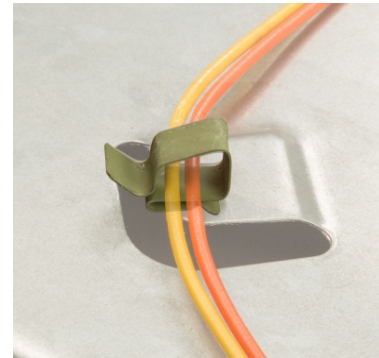
CABLE CLIPS

ARaymond Tinnerman Spring Clips offer the most efficient means of securing cable, wire and tubing safely away from dangerous areas. Made of heat-treated high carbon spring steel these one-piece, self-retaining fasteners require only a mounting hole, flange end, or panel edge for fast, easy installation. Available in several standard designs for a wide range of wire diameters and panel thicknesses, many have rolled edges as an added safeguard against fraying or chafing and can also be supplied with a dipped, neoprene cushion. Spring clips are easy to install and provide positive retention for reliable, trouble-free service.



Cable Clip - Edge Mount (Bundle)

Parts secure hoses and wire bundles by self-retaining to adjacent panels via barbs. After easily snapping into place, cables or wires are installed to a serviceable wire retention feature. The opening of the spring clip accepts small wires, and the clip itself holds multiple wires simultaneously.



Cable Clip - Edge Mount (Tube)

Parts work similarly to Bundle - Edge Biter Clips except clip is designed to hold one cable, tube or wire.

Cable Clip - Plug Mount (Dart)

Parts work similarly to Bundle/Tube - Edge Biter Clips, but instead of retaining to the panel via barbs, the part is assembled through a hole or slot in a panel via a dart feature. The design of the hose retaining feature can accommodate one single tube or multiple smaller tubes, wires, and/or cables.

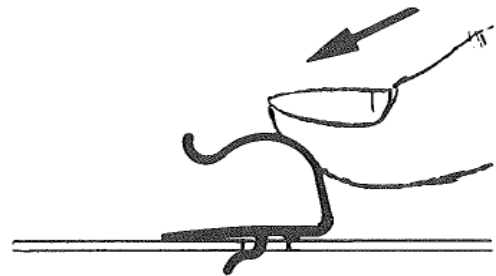


Cable Clip (Heel Toe)

These self-retaining clips are simply positioned in the mounting hole. Pressure pushed on the back of the clip forces it forward until the "heel" snaps into a locked position. Depending on the design of the parts, these clips can either hold one single tube or multiple smaller tubes, wires, and/or cables.

Benefits - Parts are simple to install, are reliable and inexpensive.

Performance Specifications - Application dependent but most cable clips install around 10 lbs. and retain about 15 to 20 lbs. Application specific testing provided upon request.



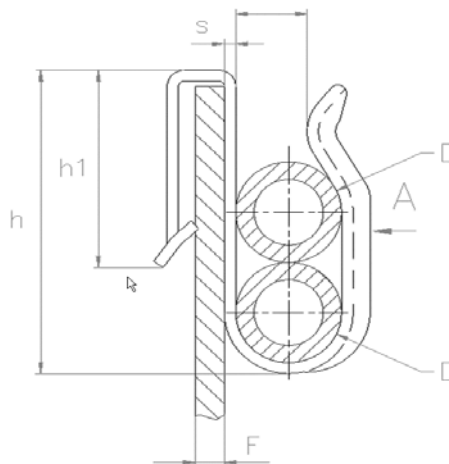
Wire Management

Spring Clips

Most of the products featured on this page are manufactured with spring steel. Parts may also be available in stainless steel. ARaymond Tinnerman offers these parts in corrosion protection and/or aesthetically pleasing finishes.

Cable Clip - Edge Mount (Bundle)

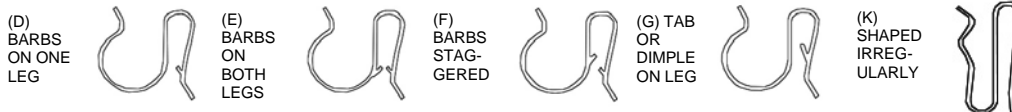
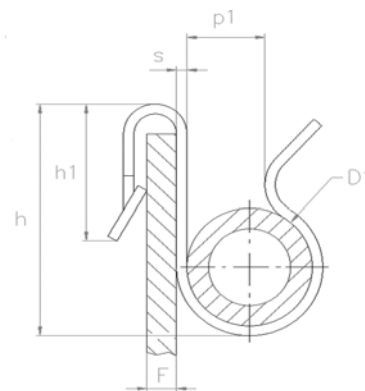
Part Number	Panel Thickness (F)	Tube Diameter (D)	Max # of Tubes	Height (h)	Width (b)	Material Thick. (s)
C23747-017	.025-.055	.085-.095	12	0.830	0.375	0.017
C41892-017	.032-.052	.185-.195	2	0.710	0.375	0.017
C43641-017	.031-.082	.120-.130	9	0.710	0.375	0.017
D98281-017	.054-.089	.085-.095	7	0.695	0.375	0.017
C45065-017	.060-.089	.151-.161	3	0.670	0.375	0.017
C24837-017	.115-.135	.120-.130	9	0.720	0.375	0.017
D46088-017	.040-.080	.245-.255	1	0.800	0.565	0.017



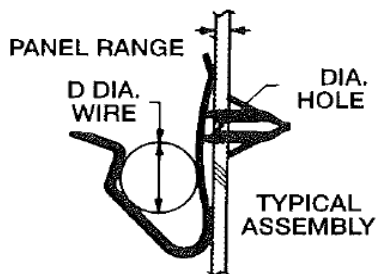
Cable Clip - Edge Mount (Tube)

Part Number	Panel Thickness (F)	Tube Diameter (D1)	Design Variation	Height (h)	Width (b)	Material Thick. (s)
C20154-017	.036-.044	.085-.095	GK	0.360	0.375	0.017
C55726-020	.250-.290	.335-.345	CD	0.615	0.500	0.020
<i>C58548-051M</i>	<i>3.00-4.00</i>	<i>9.00-10.50</i>	<i>F</i>	<i>23.100</i>	<i>15.880</i>	<i>0.510</i>

Bold Italics: Metric



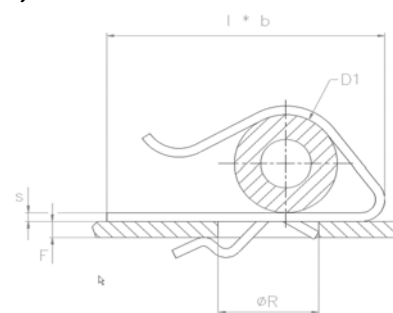
Cable Clip - Plug Mount (Dart)



Part Number	Panel Thickness (F)	Tube Diameter (D)	Max # of Tubes
<i>D22999-017</i>	<i>0.80-1.00</i>	<i>2.80-12.70</i>	<i>1</i>

Bold Italics: Metric

Cable Clip (Heel Toe)



Part Number	Panel Thickness (F)	Tube Diameter (D1)	Max # of Tubes
C55966-022	.054-.089	.187-.250	1
<i>C58497-064M</i>	<i>0.64-1.02</i>	<i>7.00-9.00</i>	<i>1</i>

Bold Italics: Metric

The dimensions of the above parts are for reference only. For complete design information please contact your ARaymond Tinnerman Sales Professional.

Rev. 2
June 15, 2014



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