

Tinnerman® One-Piece Self Sufficient Clips

Material: All parts are **Spring Steel**, heat treated, unless otherwise specified.
 The only variations available are those shown with suffix letters in the part number.
 SS – Stainless Steel BE – Beryllium Copper P – Phosphor Bronze

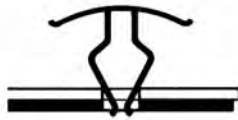


Dart-Type Fasteners

Tinnerman **Dart-Type Fasteners** are one of a group of **Speed Clip Fasteners** which are self-sufficient. That is, they require no screws, rivets, studs, welds or other secondary fastening devices. They require only a cavity or mounting hole. They can be applied from the front or top of a panel thereby eliminating many blind or limited access fastening problems. Being one-piece, they eliminate excessive small parts handling and parts inventories.

Once applied, live spring tension secures the components between the top and shoulders of the clip. The amount of clamping action here varies with the material thickness and design of the fastener. When required, most **Dart-Type Speed Clips** can be removed and reused.

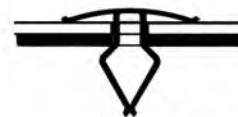
How to apply Dart-Type Speed Clip Fasteners



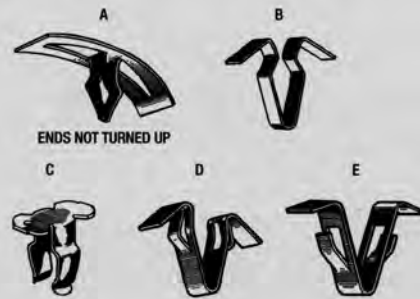
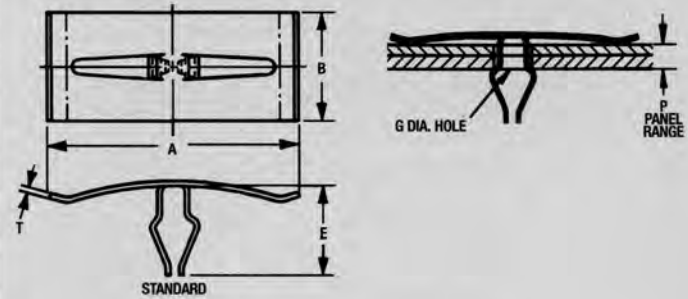
Position **Dart-Type** in mounting hole of panels or components to be secured.



As the clip is pushed into the mounting hole, spring arms compress.



As the shoulders clear the panels they expand. This constant attempt to regain its original shape develops live spring tension between the shoulders and the top of the clip – securing the panels between.



P Panel Range	Design Variation	A Length	B Width	E Height	G Panel Hole Dia.	T Mat'l. Thick.	Part Number
.031-.041	C	.550	.310	.500	.182-.192	.014	C29943-014
.050-.075	C	.550	.340	.490	.182-.192	.014	C22149-014
.050-.090	B	.875	.187	.400	.245-.255	.014	C57973-014
.054-.086	Std.	1.720	.340	.650	.186-.191	.014	C22395SS-014
.075-.150	A	1.050	.310	.390	.182-.192	.022	C3860-022
.093-.110	B	.410	.130	.560	.182-.192	.020	C26740-020
.095-.140	D	1.080	.220	.550	.307-.317	.017	C4792-017
.120-.130	C	.630	.190	.530	.213-.223	.022	C4925-022
.140-.160	B	.760	.130	.540	.182-.192	.014	C24258-014
.165-.185	Std.	1.690	.340	.620	.187-.192	.020	C4789-020
.185-.234	Std.	1.700	.340	.610	.187-.192	.017	C40617-017
.192-.212	B	.750	.130	.590	.182-.192	.014	C3822-014
.224-.244	C	.750	.310	.640	.307-.317	.025	C20341-025
.300-.400	Std.	1.700	.340	.590	.213-.223	.020	C43142SS-020

Tinnerman® One-Piece Self Sufficient Clips

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Metric parts listed in italic



Trim Clip Fasteners

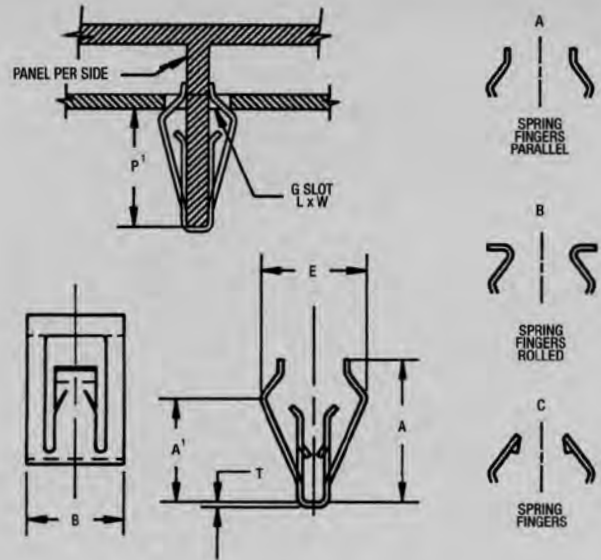
Trim Clip Fasteners recently introduced, these unique Tinnerman fasteners have real potential as a general purpose fastener.

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.

How to apply Trim Clip Fasteners

The **Trim Clip** is simply pressed over the stud, blade, rib, etc., with the barbed, u-shaped retaining legs fully seated. Then, as part of the strip or plate assembly, is pressed into assembled position on the panel, frame, door, appliance, or whatever.

Rectangular mounting holes or gaps between panel or frame members serve as anchor points for the clip. The self-equalizing retaining legs are formed into a dart-type configuration for easy mounting. They assure a snug, rattle free installation, yet will yield to deliberate removal force applied to the trim or plate.



P Panel Range	P1 Panel Range Des. Var.	A Leng.	A1 Leng.	B Width	E Height	G Mounting Hole	T Mat'l. Thick.	Part Number
<i>1.000-1.500</i>	<i>2.500 - 3.000 B</i>	<i>16.200</i>	<i>10.400</i>	<i>10.000</i>	<i>10.700</i>	<i>8.500 x 16.000</i>	<i>.510</i>	<i>C57951-051M</i>
<i>1.120-1.380</i>	<i>---</i>	<i>18.200</i>	<i>10.700</i>	<i>10.000</i>	<i>9.000</i>	<i>6.000 x 12.000</i>	<i>.560</i>	<i>D98676-056M</i>
<i>1.170-1.430</i>	<i>6.460 - 6.460 C</i>	<i>9.500</i>	<i>4.600</i>	<i>10.500</i>	<i>7.800</i>	<i>6.250 x 11.000</i>	<i>.430</i>	<i>D98646-043M</i>
<i>1.250-1.750</i>	<i>---</i>	<i>12.000</i>	<i>5.100</i>	<i>17.800</i>	<i>6.100</i>	<i>5.400 x 25.400</i>	<i>.510</i>	<i>C57979-051M</i>
	<i>5.000 - 6.700 Std.</i>	<i>12.000</i>	<i>5.100</i>	<i>17.800</i>	<i>6.100</i>	<i>5.400 x 25.400</i>	<i>.510</i>	<i>C58179-051M</i>
	<i>5.700 - 5.700 B</i>	<i>13.000</i>	<i>5.500</i>	<i>11.000</i>	<i>6.100</i>	<i>5.400 x 25.400</i>	<i>.360</i>	<i>C58005-036M</i>
<i>1.300-1.800</i>	<i>8.000 - 8.000 C</i>	<i>12.900</i>	<i>4.700</i>	<i>11.000</i>	<i>6.100</i>	<i>5.300 x 25.400</i>	<i>.430</i>	<i>C57998-043M</i>
	<i>8.200 - 8.200 C</i>	<i>12.900</i>	<i>5.400</i>	<i>11.000</i>	<i>6.100</i>	<i>5.300 x 25.400</i>	<i>.430</i>	<i>C58306-043M</i>
<i>1.370-1.770</i>	<i>12.130 - 12.130 C</i>	<i>16.500</i>	<i>10.200</i>	<i>10.000</i>	<i>12.000</i>	<i>8.250 x 20.000</i>	<i>.510</i>	<i>D98648-051M</i>
<i>1.600-2.000</i>	<i>---</i>	<i>15.100</i>	<i>6.250</i>	<i>10.250</i>	<i>12.000</i>	<i>8.250 x 20.000</i>	<i>.510</i>	<i>D98721-051M</i>
<i>1.700-2.000</i>	<i>---</i>	<i>14.880</i>	<i>6.750</i>	<i>10.000</i>	<i>12.700</i>	<i>8.000 x 18.000</i>	<i>.510</i>	<i>D98641-051M</i>
<i>1.700-2.100</i>	<i>---</i>	<i>16.000</i>	<i>9.140</i>	<i>10.000</i>	<i>12.800</i>	<i>8.250 x 16.000</i>	<i>.510</i>	<i>D98714-051M</i>
	<i>12.130 - 12.130A</i>	<i>16.500</i>	<i>10.200</i>	<i>10.000</i>	<i>12.500</i>	<i>8.250 x 16.000</i>	<i>.510</i>	<i>D98595-051M</i>
	<i>12.130 - 12.130A</i>	<i>16.500</i>	<i>10.200</i>	<i>10.000</i>	<i>12.500</i>	<i>8.250 x 16.000</i>	<i>.510</i>	<i>D98568-051M</i>
	<i>12.130 - 12.130A</i>	<i>16.500</i>	<i>10.200</i>	<i>10.000</i>	<i>12.500</i>	<i>8.250 x 16.000</i>	<i>.560</i>	<i>D98568-056M</i>
	<i>12.130 - 12.130B</i>	<i>16.500</i>	<i>10.200</i>	<i>10.000</i>	<i>12.500</i>	<i>8.250 x 16.000</i>	<i>.510</i>	<i>D98674-051M</i>
	<i>---</i>	<i>16.500</i>	<i>10.200</i>	<i>10.000</i>	<i>12.500</i>	<i>8.250 x 16.000</i>	<i>.510</i>	<i>D98640-051M</i>
	<i>---</i>	<i>14.550</i>	<i>8.800</i>	<i>10.000</i>	<i>14.000</i>	<i>10.800 x 19.200</i>	<i>.560</i>	<i>D98653-056M</i>
<i>1.800-2.250</i>	<i>---</i>	<i>14.250</i>	<i>10.400</i>	<i>10.000</i>	<i>10.700</i>	<i>8.500 x 16.000</i>	<i>.510</i>	<i>D98460-051M</i>
	<i>12.300 - 12.300B</i>	<i>14.250</i>	<i>10.400</i>	<i>10.500</i>	<i>10.700</i>	<i>8.500 x 16.000</i>	<i>.510</i>	<i>D98666-051M</i>
<i>2.000-2.250</i>	<i>---</i>	<i>7.400</i>	<i>4.500</i>	<i>10.500</i>	<i>7.500</i>	<i>5.500 x 12.700</i>	<i>.300</i>	<i>D98597-030M</i>

Tinnerman® One-Piece Self Sufficient Clips

Material: All parts are **Spring Steel**, heat treated, unless otherwise specified.
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Knob-to-Shaft Fasteners (Compression Rings)

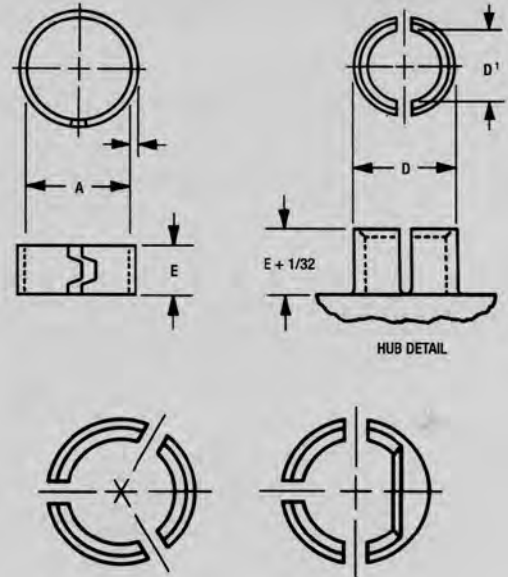
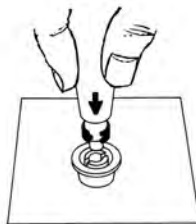
Self-retaining Tinnerman **Speed Clips** solve a host of **Knob-to-Shaft** assembly problems. They eliminate inserts and setscrews for reduced molding costs and easier, faster assembly. Stresses are distributed evenly around the hub during application while the strength and durability of spring steel reinforces critical wearing points and harnesses cold-flow tendencies. Knobs can be removed and replaced repeatedly without danger of loosening or developing "knob-wobble".

Two basic designs are available for standard applications. **Compression Rings** are for use on thermoplastic knobs with split hubs. They squeeze the hub around the shaft insuring firm, reliable retention. **Round, D-shaped or Knurled Shafts** can be used depending upon the hub cavity design. **"C" Clips** are recommended for die cast or thick-walled thermosetting plastic knobs. For use with D-shaped shafts only, they bear against the flat side of the shaft clamping it firmly within the hub cavity.

Where knob designs do not permit the use of either **Compression Rings** or **"C" Clips**, **Speed Clips** are available, or can be designed to fit within the knob cavity. Several variations are illustrated at the end of this section.

How to apply Knob-to-Shaft Speed Clip Fasteners

A simple tool picks up and expands the **Compression Ring**. The end of the tool is placed over the knob hub and the ring is transferred from the tool to the outer circumference of the hub in one easy motion. **"C" Clips** can be assembled over the hub with a similar tool or lightly rapped in place with a mallet. Data on these simple assembly tools is available on request.



D Hub O.D.	Shaft Dia. Min.	D1 Hub I.D. Max.	A Ring I.D.	E Ring Height	T Material Thickness	Part Number
.235 - .252	.125	.175	.220	.130	.017	C2133-017
.307 - .317	.182	.192	.280	.250	.014	C2304-014
.335 - .345	.245	.255	.300	.250	.014	C2122-014
.351 - .367	.219	.269	.320	.130	.017	C2684-017
.361 - .371	.234	.281	.320	.250	.014	C2401-014
.389 - .421	.272	.322	.370	.190	.028	C2155-028
.432 - .442	.375	.385	.410	.250	.017	C4101-017
.526 - .536	.362	.372	.470	.250	.025	C2166-025
.683 - .693	.558	.568	.600	.250	.020	D5794-020

Tinnerman® One-Piece Self Sufficient Clips

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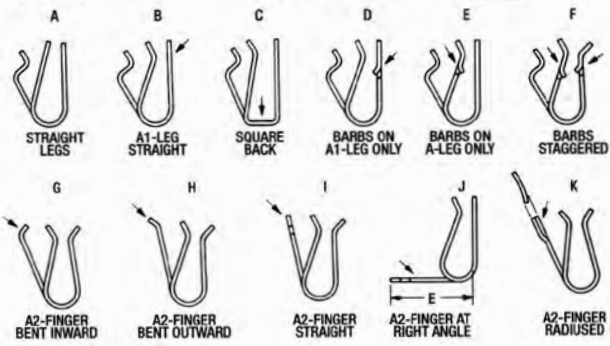
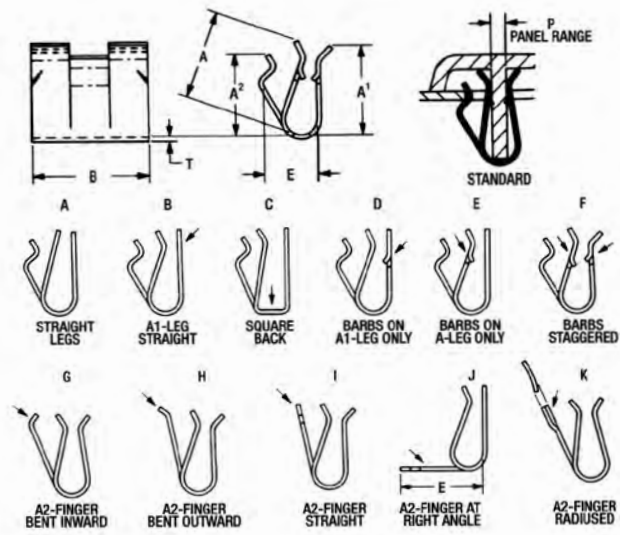
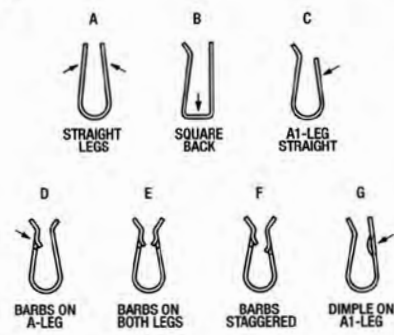
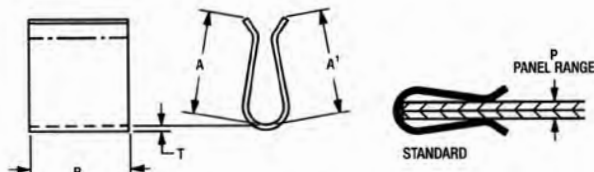
Metric parts listed in italic



U-Type Fasteners (Standard)

Tinnerman **U-Type Speed Clip Fasteners** snap 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. They are low cost, removable and reusable requiring only the simplest assembly procedure. 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.

Depending upon design, they can be used to clamp or hinge panels together, provide a removable spring catch, apply delicate spring tension on fragile surfaces, secure light components within cavities, etc. Fastening applications for these heat-treated, spring steel **Speed Clips** are limited only by the imagination.



How to apply U-Type Speed Clip Fasteners



Align panels to be secured and lead **U Clip** over the edges at a slight angle. Once both legs are started over the panel, simply press until fully seated.

P Panel Range	Design Variation	A	A1	B Width	T Mat'l. Thick.	Part Number
.015 - .060	F	.340	.340	.500	.014	C22503-014
<i>1.140 - 2.540</i>	<i>CD</i>	<i>11.680</i>	<i>9.700</i>	<i>19.050</i>	<i>.510</i>	<i>C57527-051M</i>
.046 - .056	ABE	.200	.200	.380	.014	C23928-014
.050 - .100	CE	.340	.350	.500	.017	C20285SS-017
.060 - .090	E	.390	.390	.500	.014	C21465-014
.080 - .140	CD	.350	.300	.380	.014	D98284-014
.093 - .187	CG	.360	.560	.220	.020	C21592-020
.100 - .156	D	.680	.680	.630	.025	C21457-025
.115 - .185	E	.420	.420	.500	.014	C27091-014
.125 - .187	F	.680	.660	.630	.025	C43978-025
<i>3.560 - 3.810</i>	<i>E</i>	<i>17.150</i>	<i>19.050</i>	<i>12.750</i>	<i>.430</i>	<i>C57997-043M</i>
.170 - .205	E	.430	.430	.500	.014	C43806-014
.245 - .255	BE	.360	.360	.500	.014	C45931-014
.320 - .340	BE	.270	.270	.500	.014	C56147-014

U-Type Fasteners (Special)

P Panel Range	Design Variation	A	A1	A2	B Width	E	T Mat'l. Thick.	Part Number
.025 - .035	BFI	.270	.300	.460	.500	.350	.014	C41140-014
<i>1.000 - 1.500</i>	<i>F</i>	<i>10.000</i>	<i>9.250</i>	<i>9.600</i>	<i>12.700</i>	<i>6.350</i>	<i>.430</i>	<i>D57067-043M</i>
.040 - .090	Std.	.340	.340	.340	.500	.210	.014	C2855SS-014
	Std.	.340	.340	.320	.500	.220	.014	C21449-014
.043 - .053	BFK	.200	.300	.280	.500	.510	.017	C25467-017
.055 - .065	BFH	.310	.310	.340	.500	.460	.014	C29019-014
.070 - .090	CD	.160	.160	.200	.375	.310	.012	C57854-012
.075 - .105	FH	.240	.410	.340	.500	.320	.014	C21527-014
.090 - .110	EI	.340	.340	.100	.750	.350	.017	D98327-017
.125 - .140	CFI	.210	.260	.240	.500	.435	.017	C57817-017
.150 - .160	FG	.300	.330	.400	.500	.290	.020	C43824SS-020

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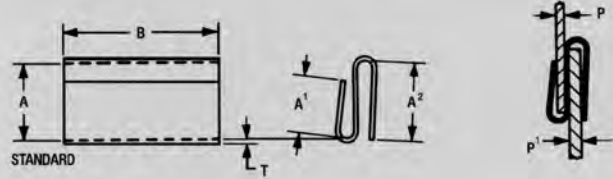
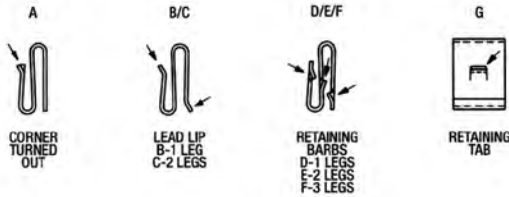


S-Clip Fasteners

Tinnerman **S-Clip Fasteners** are used for attaching panels with a spring cushion fastening that prevents chipping or crazing from expansion or stains in handling of shipment. Eliminate holes in panels or flanges.

Design Variations

Parts shown as **Standard** or with **Design Variations** are available only in that particular design.



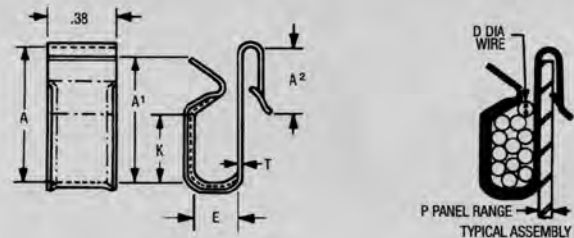
P Panel Range	P1 Panel Range	Des. Variation	A Length	A1 Short Leg	A2 Long Leg	B Width	T Mat'l. Thick.	Part Number
.026 - .032	.112 - .118	CE	.480	.450	.480	.380	.020	C53241-020
.036 - .044	.036 - .044	CG	.350	.360	.360	.380	.017	C24649-017
.042 - .066	.052 - .076	CD	.980	.680	.740	.500	.034	C56268-034
.048 - .065	.080 - .110	CF	.530	.400	.470	.380	.020	C44684-020
.070 - .080	.070 - .110	CF	.530	.390	.470	.380	.020	C48766-020
.090 - .130	.090 - .130	CE	.530	.390	.470	.380	.020	C55113-020
.105 - .146	.065 - .075	Std.	.540	.500	.560	1.130	.025	C3952-025
3.200 - 3.200	1.000 - 1.000	CF	9.950	12.750	7.150	7.500	.510	C58072-051M
.156 - .187	.050 - .080	BE	.980	.610	.760	.500	.025	C58156-025



Cable, Wire, Rod & Tube Clips

Tinnerman **Clips** offer the most efficient means of securing cable, wire and tubing safely away from danger areas. Made of high carbon **Spring Steel**, heat-treated, they are one-piece and self-retaining in most cases, requiring only a mounting hole, flange end or panel edge for fast easy installation. Available in several standard designs for a wide range of line diameters and panel thicknesses, many have rolled edges as an added safeguard against fraying or chafing. They can also be supplied with a dipped neoprene cushion.

Though quick and simple to install, they provide positive retention for reliable, trouble-free service.



D	P	A	A1	A2	E	K	T	Part Number
.085-.095 (7)	.054-.089	.695	.655	.420	.205	.300	.017	D98281-017
	.115-.135	.700	.620	.410	.190	.290	.017	D22042-017
.085-.095 (12)	.025-.055	.830	.710	.400	.290	.430	.017	C20213-017
	.120-.130 (9)	.030-.050	.500	.740	.500	.390	.450	.017
.120-.130 (9)	.031-.086	.520	.750	.490	.390	.450	.017	D99274-017
	4.600-4.700(1)	2.290-3.050	15.240	14.230	9.650	4.830	5.840	.510
.245-.255 (1)	.054-.066	.700	.620	.460	.190	.290	.017	C23214-017
.270-.280(1)	.100-.120	.690	.630	.420	.230	.300	.020	C54337-020
.338-.348(1)	.083-.093	.810	.810	.400	.280	.410	.017	C26410-017

Tinnerman® Clamps

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Metric parts listed in italic



Cable, Wire, Rod & Tube Clips (continued)

How to apply Cable-Type Clips

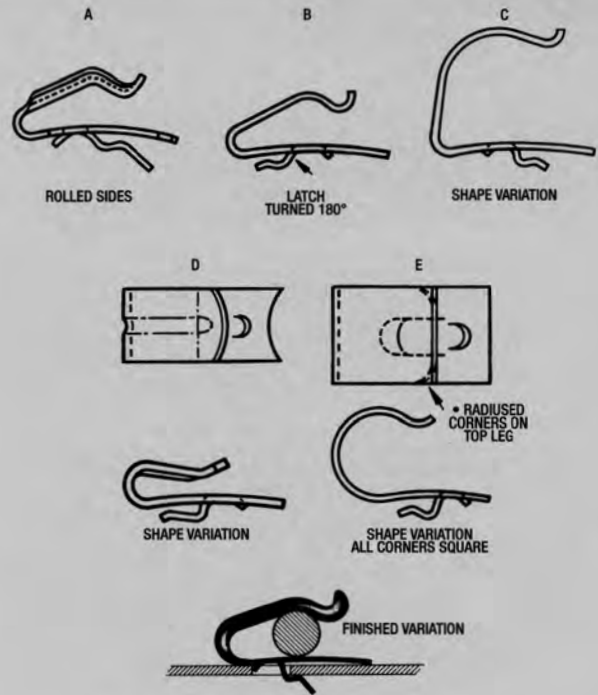


Clips provided with a self-retaining "heel and toe" impression are simply positioned in the mounting hole as shown above. Pressure at the back of the **Clip** forces it forward until the "heel" snaps into locked position. The cable, wire, etc. is then installed for final assembly.



To remove "heel and toe" **Clips** simply raise the fastener with a simple tool to release the "heel" and press rearward to disengage the toe. These fasteners can be re-used indefinitely.

Types with "U" shaped retaining legs are pressed over panel or flange ends and lock firmly in place.



Finish Variation

Where desired these **Speed Clips** can be furnished with a dipped neoprene cushion. To specify neoprene use -16 as the finish dash number. Example: C20635-020-16

D Diameter	P Panel Range	Design Vari- ation	A Length	B Width	G Panel Hole Dia.	T Mat'l. Thick.	Part Number
.085-.095	.040-.051	BD	.760	.380	.281	.020	C20635SS-020
.125-.140	.078-.095	BD	.790	.380	.281	.020	C3966-020
.175-.185	.048-.054	A	.810	.500	.253	.017	C23150-017
.187-.250	.025-.040	Std.	.790	.500	.250	.022	C3958-022
<i>5.725-6.250</i>	<i>1.370-1.680</i>	<i>Std.</i>	<i>20.000</i>	<i>12.700</i>	<i>6.350</i>	<i>.560</i>	<i>C57515-056M</i>
.250-.312	.025-.035	B	.790	.500	.250	.022	C28461-022
.375-.406	.025-.040	Std.	.970	.630	.250	.025	C2832-025
.432-.442	.038-.062	BE*	.740	.500	.250	.025	C43025-025

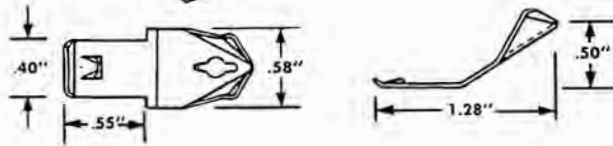
Specialty Fasteners

Recessed Fixture Retaining Clips

Plaster Frame Mounted Style

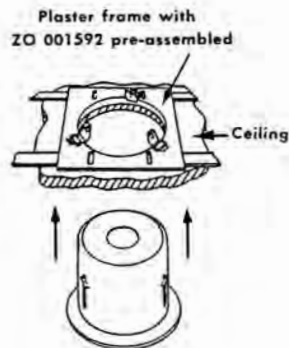


Part ZO 001592 mounts either round or rectangular housings. Only basic dimensions are given below, but complete details are shown on the drawing which accompanies all samples.



To Install

1. Slide housing through ceiling opening into plaster frame. Plaster frame must be fastened firmly in place, nailed, plastered or with hanger bars.
2. Twist housing until PALNUT Clips snap into slots in housing.
3. Push housing up until snug against ceiling.



To Remove

Round Housings

Each fastener, in succession, is pressed away from housing with screwdriver. As this is done, housing "walks" downward. When down enough to be grasped, the housing is rotated to free the Clips from slots. Housing is then pulled down and out.

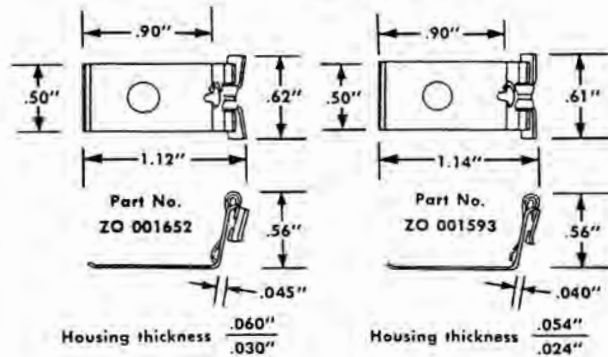
Rectangular Housings

Housing is moved sideways until Clips are free of slots, then pulled down and out.

Housing Mounted Style

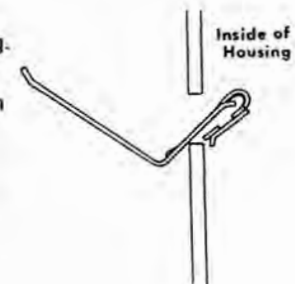


Part ZO 001652 mounts round; Part ZO 001593 mounts rectangular housings. Only basic dimensions are given below, but complete details are shown on the drawing which accompanies all samples.



To Install

1. Clip is inserted through "T" slot from inside housing.
2. Downward force is then applied, with screwdriver on top of Clip or engaged in screwdriver slot in Clip's flange, until Clip is snugly seated.



To Remove

1. A small screwdriver is inserted through the Clip's slot and pressed against the opposite side of the Clip.
2. Push up with screwdriver to raise Clip to cross slot.

