

47/4C Captive Screws

Panel preparation and installation

Installation Notes

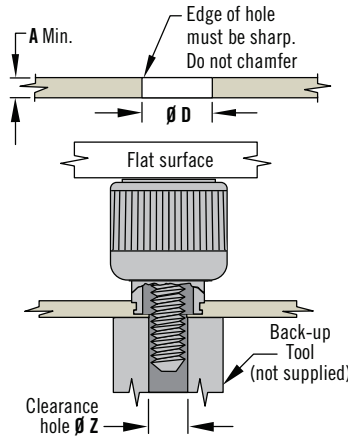
1. Prepare panel as shown. Top edge of hole should be sharp
2. Press captive screw into panel until ferrule is installed as shown

Installation closer to the panel edge requires a fixture to constrain the panel edges

Notes

Recommended minimum distance from edge of panel to centerline of hole is $1.5 \times \phi D$

Press-In Style



See page 497 for additional installation guidelines

Notes: For use in material hardnesses RB85 or less, such as low carbon steels that are half hard or softer, stainless steels in the annealed condition and aluminum.

Thread Size	ϕD	Clearance Hole ϕZ
M3 or 4-40	$5.6^{+0.03}_{-0.05}$ (.219 ⁺ ₀)	3.2 (.125) $^{+0.2}_{-0.1}$ ($^{+.008}_{-.004}$)
M3.5 or 6-32	$6.4^{+0.03}_{-0.05}$ (.250 ⁺ ₀)	3.7 (.146)
M4 or 8-32	$8^{+0}_{-0.08}$ (.315 ⁺ ₀)	4.4 (.173)
M5 or 10-32	$8^{+0}_{-0.08}$ (.315 ⁺ ₀)	5.2 (.205)
M6 or 1/4-20	$9.5^{+0.1}_{-0}$ (.375 ⁺ ₀)	6.2 (.260)

Performance Details

Pullout force: 360 N (80 lbf)
Side load against unfastened knob: 200 N (45 lbf)

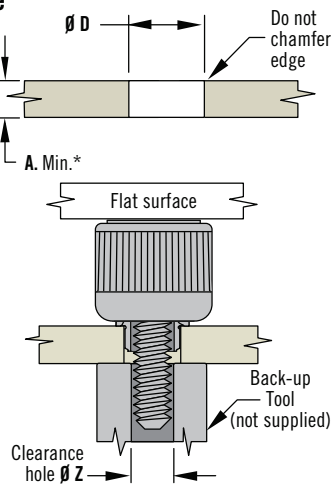
Installation Notes

1. Prepare panel as shown.
2. Use pilot lead-in to guide assembly into hole and press knurl into panel until ferrule shoulder contacts surface

Notes

Strength data based on drilled holes in G-10 P.C. Board

P.C. Board Style



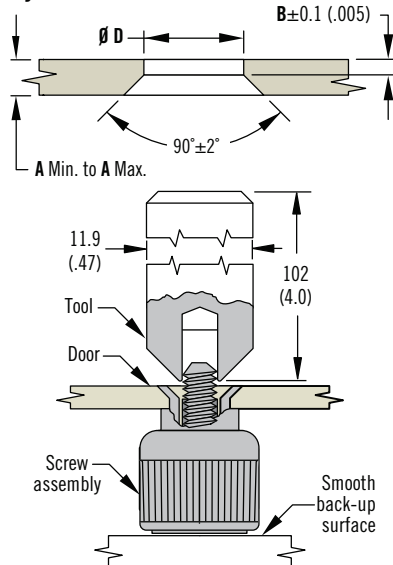
Thread Size	ϕD	Clearance Hole ϕZ
M3 or 4-40	$5.6^{+0.1}_{-0.05}$ (.219 ⁺ ₀)	3.2 (.125) $^{+0.2}_{-0.1}$ ($^{+.008}_{-.004}$)
M3.5 or 6-32	6.4 ± 1 (.252 \pm .004)	3.7 (.146)

Installation Notes

1. Prepare panel as shown.
2. Install tool in suitable press. Only LIGHT pressure will be required
3. Insert screw assembly into prepared hole in panel
4. Place work under press, center tool over screw thread and flare ferrule into counter-sink in panel. Use LIGHT pressure

Installation Force:
1600 N (350 lbf) to 2500 N (550 lbf)
Installation force depends on thread size

Flare-In Style

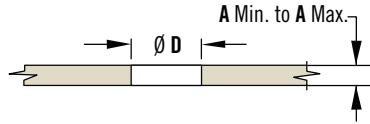
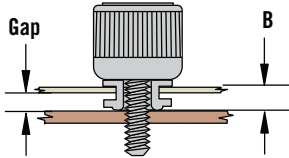


Dimensions in millimeters (inch) unless otherwise stated

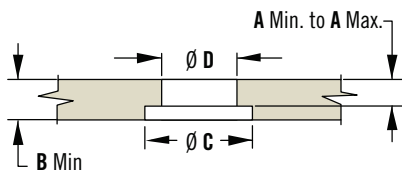
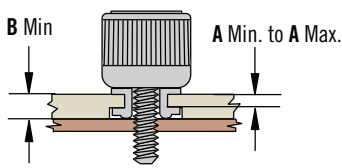
Thread Size	ϕD	Tool Part Number
M3 or 4-40	$4.8^{+0.08}_{-0.05}$ (.187 ⁺ ₀)	47-104
M3.5 or 6-32	$5.4^{+0.1}_{-0}$ (.213 ⁺ ₀)	47-106
M4 or 8-32	$6.8^{+0.08}_{-0.04}$ (.266 ⁺ ₀)	47-108
10-32	$6.8^{+0.08}_{-0.04}$ (.266 ⁺ ₀)	47-110
M5	$6.8^{+0.08}_{-0.04}$ (.266 ⁺ ₀)	47-115
M6 or 1/4-20	$8.2^{+0.1}_{-0}$ (.323 ⁺ ₀)	47-125

Floating Style

Panel preparation 1

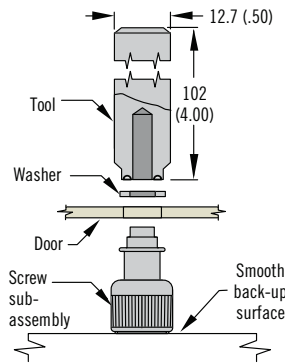


Panel preparation 2



Thread Size	Tool Part Number
M3 or 4-40	47-04
M3.5 or 6-32	47-06
M4 or 8-32	47-08
M5é	47-05
10-32	47-10
M6 or 1/4-20	47-25

Thread Size	ϕD <small>+0.008 (+.003) -0.03 (-.001)</small>	Counterbore Min. ϕC
M3 or 4-40	6.4 (.250)	9.4 (.375)
M3.5 or 6-32	7.2 (.283)	10.5 (.413)
M4 or 8-32	8.8 (.346)	12 (.469)
M5 or 10-32	8.8 (.346)	12 (.469)
M6 or 1/4-20	10.5 (.413)	13.5 (.531)



Installation Notes

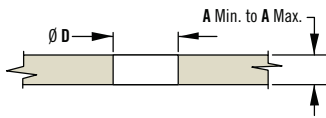
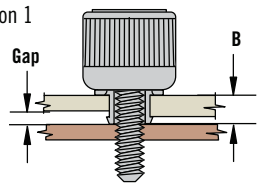
Floating and Snap-in style:
 Panel preparation 1:
 Requires space between inner and outer panels.
 Specify the fastener for panel thickness A to fall between the range A Min. to A Max.:
 $gap = B - A$ outer panel thickness
 Panel preparation 2:
 Counter bore the panel (B = Min. panel thickness) to a thickness (A) between the range of A Min. and A Max.

Minimum bore depth =
 panel thickness - A Max.
 For $gap = \phi$, panel thickness must be $\geq B$ value (before counterbore) for the given part number

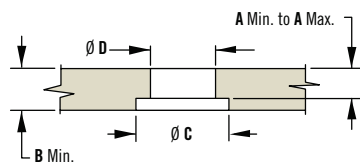
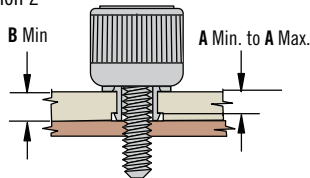
Notes
 B and A Max. values are provided in the corresponding fastener selection tables for each part number
 If holes are drilled, top edge of hole should be chamfered

Snap-In Style

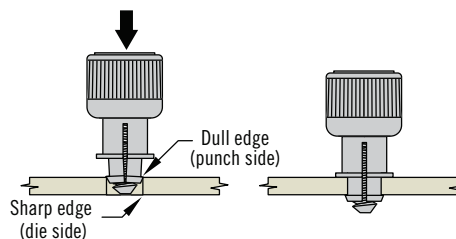
Panel preparation 1



Panel preparation 2



Thread Size	ϕD <small>+0 -0.1 (± .002)</small>	Counterbore Min. ϕC
M3.5 or 6-32	6.4 (.250)	7.5 (.295)
M4 or 8-32	6.4 (.250)	7.5 (.295)
M5 or 10-32	6.4 (.250)	7.5 (.295)



Dimensions in millimeters (inch) unless otherwise stated

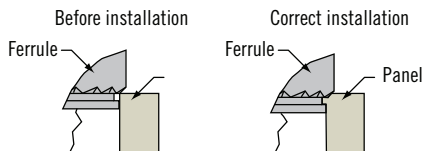
Installation Guidelines

for *SOUTHCO*® Self-Clinching products

Self-clinching product installation is offered on these *SOUTHCO*® products, making them easy-to-use captive panel fasteners:

- Captive Screws
- Receptacles for Quarter-turn Fasteners
- Receptacles for Fast-lead Thread Screws

When pressed into a properly prepared hole, self-clinching captive fasteners cold-flow (move) the panel material into the retaining groove of the fastener. This material then retains the fastener in the panel.



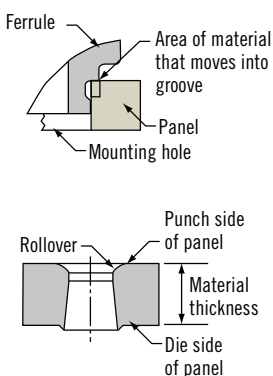
Successful press-in installations depend on:

Material:

The hardness of the panel material must not exceed *SOUTHCO*® recommendations. If the panel is too hard, the fastener will not install correctly.

Installation Holes:

Mounting holes may be drilled, punched, or cast.

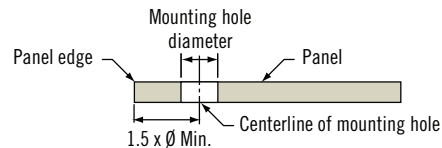


- Hole edge: the top hole edge must be sharp but with no broken edges. Do not chamfer or debur edge.
- Punched holes: use a punch and die with a small clearance to minimize the rollover and fracture angle.
- Hole diameter: measure the hole diameter at the panel surface on the side on which the fastener will be installed. The diameter must be within *SOUTHCO*® specifications for that product.

- If the hole is too large, not enough material will flow into the retaining groove and the fastener may not be retained adequately.
- If the hole is too small, the fastener will not fit and installation may become difficult and unsafe.
- Hole distance from the edge of panel: the minimum recommended distance is 1.5 x the diameter of the mounting hole, unless otherwise indicated.

- Spring-loaded Plungers
- Captive Nuts
- Threaded Inserts

- Installing too close to the edge will cause the material to flow in the opposite direction, deforming the edge of the panel. To install closer to the edge, you may need to restrain the panel edge.



Panel Thickness:

The thickness of the panel at the mounting hole location must meet or exceed Southco's stated minimum recommendations.

If the material is too thin, panel deformation and/or damage to the fastener may result.

Installation is fast and easy if you follow these tips:

How to install: Use the recommended force where noted and a proper back-up tool.

- use any parallel-acting press
- use a punch whose diameter is larger than the head of the fastener

Installation Force: Proper installation requires an even distribution of adequate force. It does not depend on the distance the fastener is pressed into the panel.

- Southco does not recommend using a hammer. The impact force does not provide an even distribution of force to allow the panel material to completely flow into the fastener's retaining groove.
- Installation force varies from application to application, depending on the criteria noted above.
- On parts without a collar to provide a hard stop, press-in until the edge of the knurl is just barely visible.

When to Install:

Installation is recommended after plating or finishing has been applied to the panel.

The hole diameter must meet specifications before finish or plating is applied.

- Do not over-install parts. This interrupts the material and will reduce the retention strength.

