



CLoc® SK203, SK213, SK215, SK245 Adjustable Receptacles

This family of adjusting receptacles for CLoc® 2000 and 4000 Series Fasteners were designed and patented in the early 1990s by Skybolt founder, Ned Bowers. The general properties of standard OEM 1/4-Turn panel

fastener requires an inventory of fastener stud assembly lengths for every .030 in panel thickness variations. Imagine the typical engine cowling where two surfaces do not mate or face perfectly. It does not take much face misalignment (surfaces are angled) to eat up .030

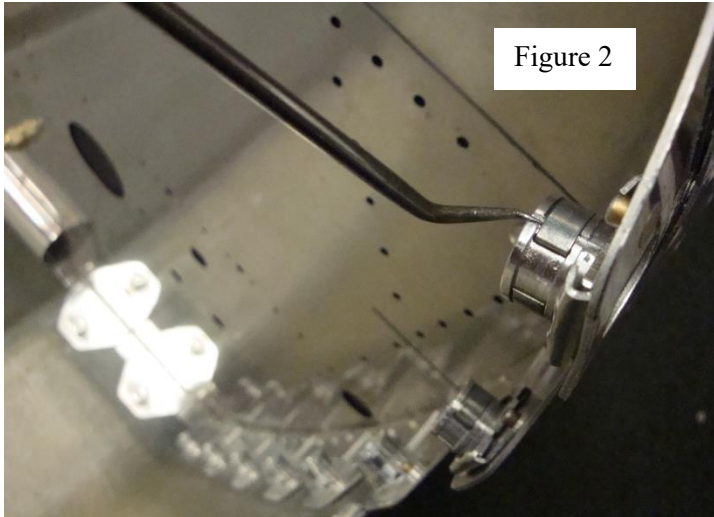
of an inch. That is why grip charts can be very frustrating. In other words, a .032 panel plus another .032 panel can easily add up to .080 or more because of how the two panels face each other. That is why most aircraft IPC manuals simply state AR (as required) to describe a panel fastener. Simply stating in a parts manual that the cowling uses 10ea 40S5-4 studs when in reality, only -5 studs will work is not the best document to seek FAA approvals. So, many parts manuals simply state "AR". Even the big aircraft manufacturers cannot get it right by referencing a chart. Compound curved panels really add to the frustration.



For 40 years, Skybolt has been inside and out of hundreds of engine cowling applications; thus we found a need for the "Adjustable" concept in order to answer so many everyday problems associated with panels and fastener design. Our designs have been so successful, even the military has figured out the cost benefit of "one size fits all" when it comes to field spares. Our original Dash 2/4 design remains the forerunner of our new design and kit business; in other words, it is our go to for new applications from TC aircraft to drones to Army tanks, to space craft and beyond.

For now, we will describe the mechanics of the SK203, SK213; the SK215 and SK245 Series Receptacles –

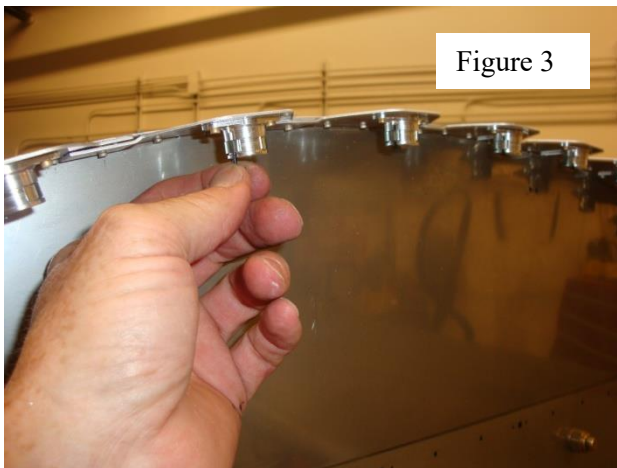
Before you begin installation, note the anti-lock rivet-pin installed at the back of the receptacle (Figure 1). This pin has one function: to allow for the initial adjustment setting. You will note that the inner member (insert) is free to rotate. It is important to note the orientation of the anti-lockpin as you mount the receptacle. Obviously, it can be mounted orientated in two directions.



You want to mount the receptacle such that the pin, better worded, the locking clip “tang” is accessible as noted in Figure 2. After the initial adjustment, you will want ease of access to the locking clip if any further adjustment is required. In Figure 2, the antilock pin has been removed (after adjustment the first time....and probably the last) and further adjustment is required. Note: the locking clip can be accessed from the face of the inside panel only if an access offset hole was made prior to installation. After years of using and

seeing these parts used in the field, few applications required front access, therefore, the offset hole is usually not required. In fact, with a curved pick tool, the re-adjustment process is easier from the back....as long as you mounted the receptacles oriented properly.

TIP – Even if the receptacle locking clip is not accessible from the back, it is possible to retract the locking clip by inserting the pick through the front via the groove between the insert and the outer barrel. The curved pick is more effective than a straight pick.



Note: Check that the inserts are biased (positioned) towards the face of the receptacle.

Once the receptacle is properly mounted and the fastener (stud or grommet and stud) is installed in the outer panel, place the panel in position and lock the fastener into the receptacle. (If the insert is too far inside of the receptacle barrel, you may not be able to lock the fastener).

The studs are locked when the heads protrude above the panel surface (the cup or the grommet). **Pull on the stud to ensure they are**

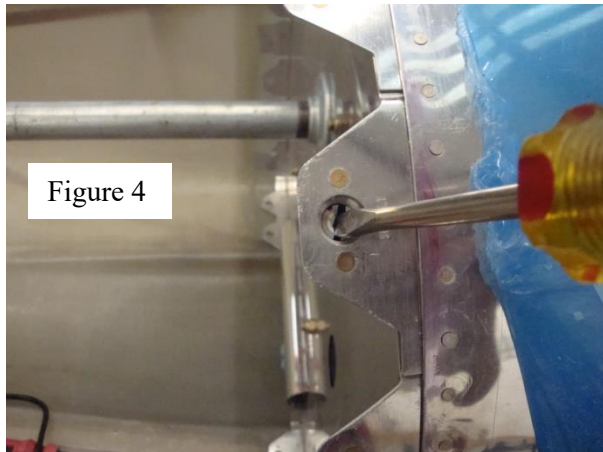
properly locked. Once locked, continue to turn the fastener as if it is a simple machine screw. This will draw the fastener to the proper clamped and locked position which is approximately .020-.030 from fully bound (clamped). If you screw the inserts until they are “clamped”, the pins cannot clear the apex to unlock. The .030 from clamped is also known as the stud rebound when locked. Thus, any spring-loaded fastener is subject to panel separation (spring compression), say, in a pressurized compartment.

Note Figure 6 – The mechanics of the locking motion include the ramp riser (as the stud turns the crosspin rides up the ramp riser drawing the stud down. Before the stud has completely

compressed against the spring, the pin must clear the apex of the ramp riser. Further rotation of the stud causes the pin to drop into the locked position called the saddle.

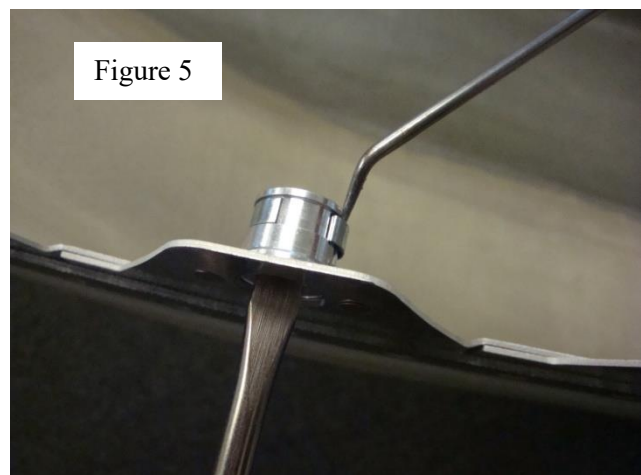
With a quick push-turn motion (counterclockwise), unlock the fastener(s). Remove the panel for access to the receptacle(s) and remove the anti-lock pin as shown in Figure 3. The anti-lock pin is discarded.

It is not required but good practice, pre-position the insert slots by turning clockwise until the insert slot is as shown – at the 1:00 o'clock to the 7:00 o'clock position. You will feel and hear the insert lock. See Figure 4



Re-adjustment of Receptacle

In Figure 5, with the outer panel removed, insert the curved pick tool into the rear groove to lift the locking clip and use a standard screwdriver to turn the insert accordingly. Remove the pick and check that the insert is locked.



You may find that, due to the memory in fiberglass, a perfect adjustment, after 6 months of use, a particular fastener may require an occasional adjustment, but as described it is very easy. You may

also find that a fastening sequence can change a perfect adjustment to a not-so-perfect adjustment. Simply note which fastener requires adjustment and accomplish the next time the panel is removed.

Figure 6 - Typical Receptacle Insert

