

FixLogix Six Point Fixture Nest Example

Here are some pictures of a **six point fixture nest**, which provides a classic 3-2-1 alignment. This is the most important fixture nest to remember, just like using a 3-2-1 scheme to align the part in your inspection software. We just add a bit of clamping ☺ The six point nest is a recurring application on a wide variety of part shapes.

Building the 3-2-1 fixture:

- **“A” datum plane:** (3) 3” standoffs to set the plane. Raising the part allows the CMM to measure the primary plane.
- **“B” datum:** on two of the 3” standoffs run a stainless threaded pin in till they bottom out in the hole. These turn two of the 3” standoffs into 2-way locators to set and lock rotation.
- **Tertiary datum:** (1) end stop using (1) 1” standoff on the bottom, and (1) 1.5” standoff, (1) stainless pin with (1) locknut so you can lock the pin with some height adjustability.

Now here is a handy clamping concept... the **pinch-clamp**. This concept is used very regularly in machining applications, and our t-slot plate design gives us a distinct advantage as we can also use this technique. The pinch clamp is in a slot in-between the end-stop and the B datum pin standoffs. This gives a more secure clamping action and tends to drive the part into the B locators as well as the end-stop. This style makes for a very clean fixture with no clamps on top of the part.

- **Pinch clamp:** (1) end stop using (1) 1” standoff on the bottom, and (1) 1.5” standoff, (1) stainless knob (doubles as a jackstand for some apps.), also used with a locknut for some Z adjustability.

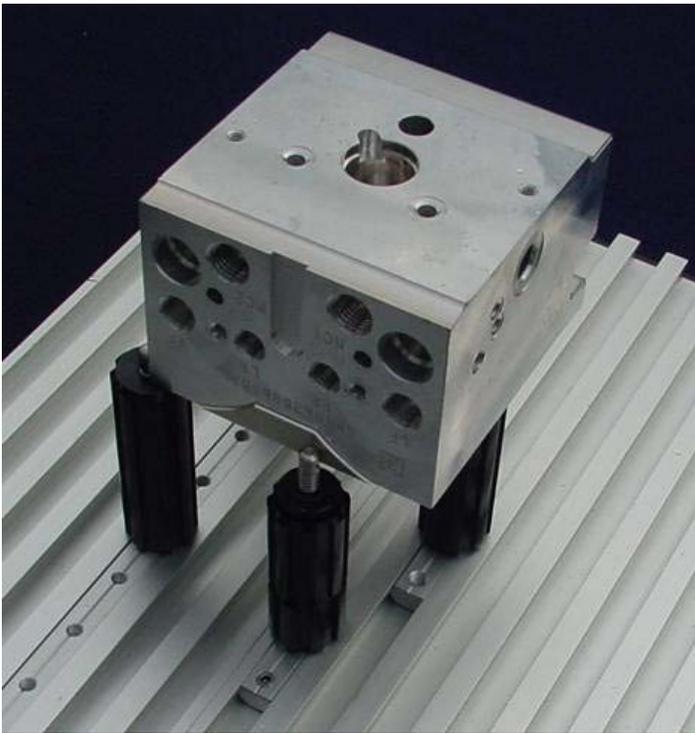
Example pictures: note that the two pin locators in the full-length t-nut strip. This is not required; we’re just showing it in use. It can be handy for repeatable setups for DCC machines if you have to tear down and re-setup the fixture from time to time.



View of fixture without part. The bare standoff is the third A datum locator. Remember that the end-stop (tertiary locator) should not make contact with the A datum, it is an end locator only.



End view for tertiary locator. Note the set screw into the extra hole in the t-nut. This helps lock this locator in place securely. Also note the end locator doesn't make contact with the A datum.



Pinch-clamp end view:

Note that the pinch clamp could be any component that is handy to “push” the part into the locators. The stainless knob just happened to work nicely for this part. A quarter-turn off the tightened position allows the detail to slide smoothly, and makes it easier to snug back down once the pinch-clamp is pressed against the part.



In summary, you will find that a variety of part shapes can be held with a simple six point fixture nest. In this basic example a very clean fixture with no overhead clamping is accomplished by sliding component a component in the t-slot and “pinching” the part against the fixture nest.