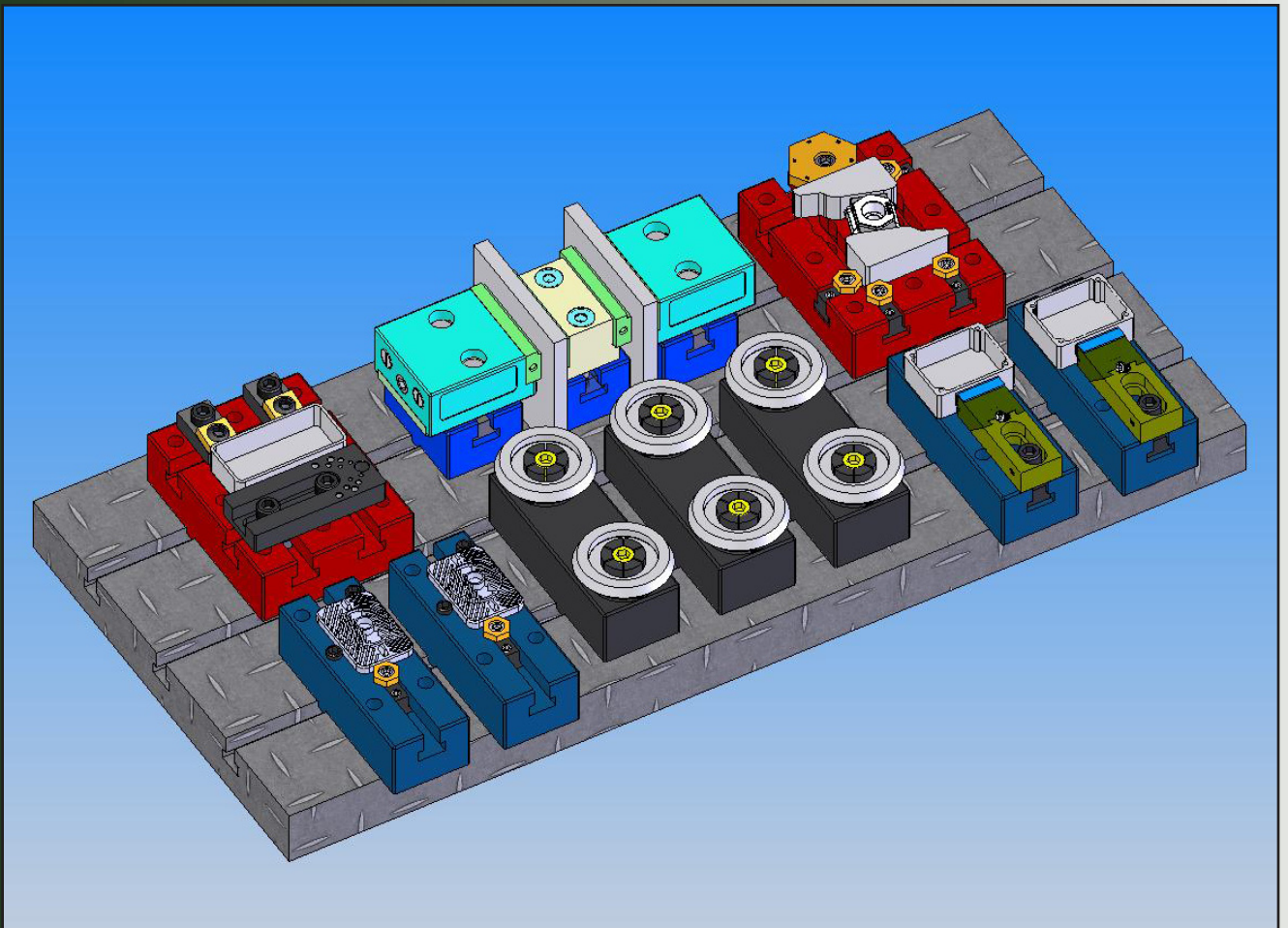


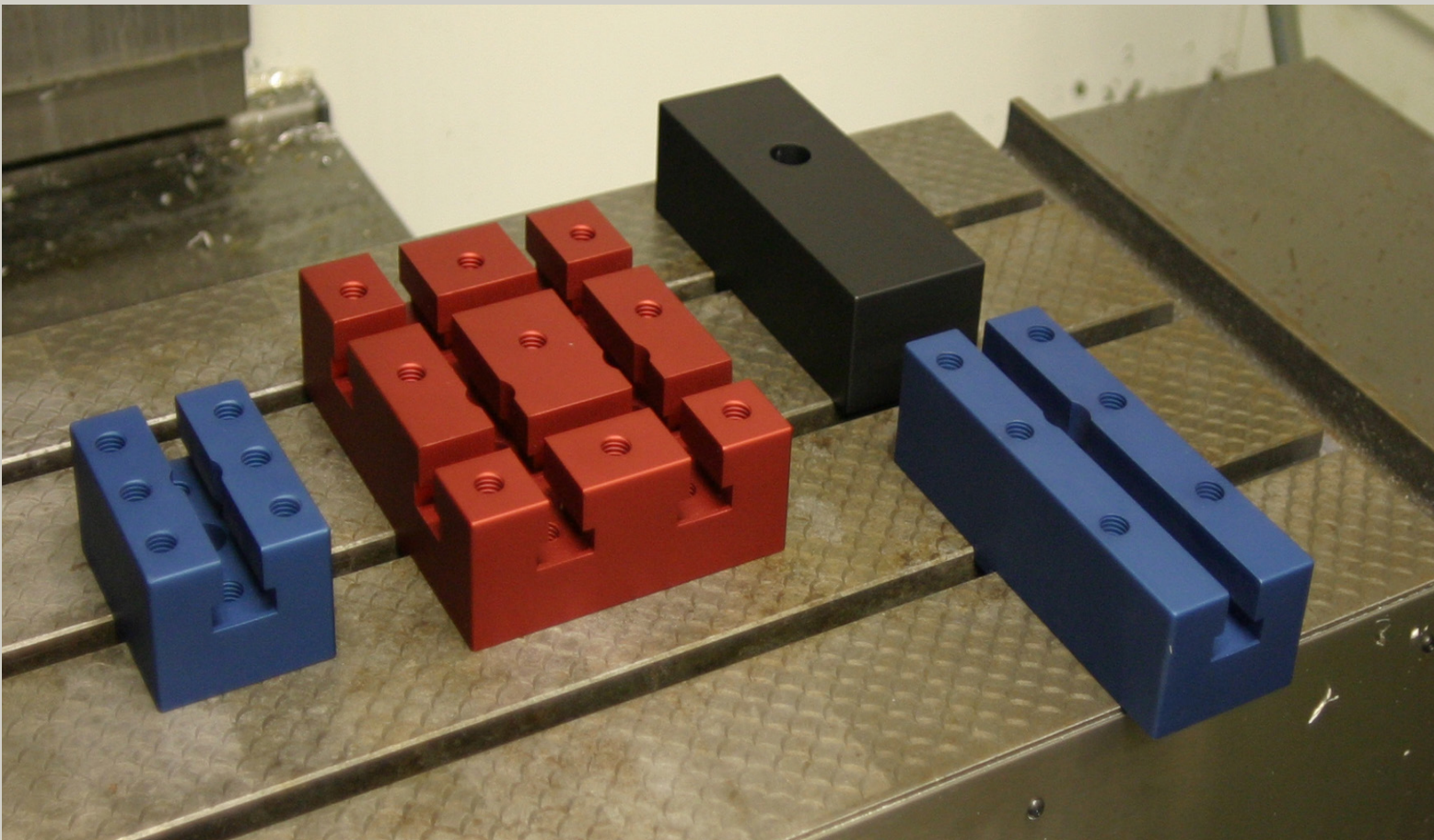
THE T-SLOT BLOCK



THE T-SLOT BLOCK

The T-Slot Block is a new workholding product that is patented. The T-Slot Block is a versatile system for workholding that has many important features and advantages. Features such as industry standard T-Slots, and threaded holes for corresponding T-Nut studs or bolts.

T-Slots and threaded holes are desinged into each T-Slot Block. This allows the user to employ existing in house T-Slot tooling, such as T-Nuts, Studs, Clamps, Straps, etc. The T-Slot Blocks are modular in nature, meaning that these can be used as dedicated fixture plates, or dedicated setup stations. But the uses don't end there. Actually these can also thought of as an extension of the T-Slot tooling. The T-Slot Block can aid the placement of T-Nuts or studs or bolts anywhere they are needed on the machine table. The T-Slot Blocks offer numerous clamping possibilities and strategies which were difficult and expensive to pursue using modular fixturing kits from various companies. Although most of these "Fixturing Kits" allow the use of T-Slot tooling, the one big difference between the T-Slot Blocks and the so called "Fixturing Kits" is that with the T-Slot Blocks, you will not need expensive mounting plates, locating keys, other mounting peripherals. Simply mount the T-Slot Block onto your existing mill table. One crucial feature of the T-Slot Block is that they all come with built in mounting tabs, or keys. These keys or tabs are on the bottom of the T-Slot Block. They come in 4 popular sizes to fit most mill tables.



Shown above is a sample of the T-Slot Blocks. Notice that there are Blue colored T-Slot Blocks which mean one T-Slot, Red colored which mean 2 T-Slots, and that can mean 2 T-Slots, and that can mean also parallel or perpendicular. The black colored one is a T-Slot Block Blank. Not shown are the green colored T-Slot Blocks. Those are mini T-Slot Blocks that are designed like a strap, but they have T-Slots.

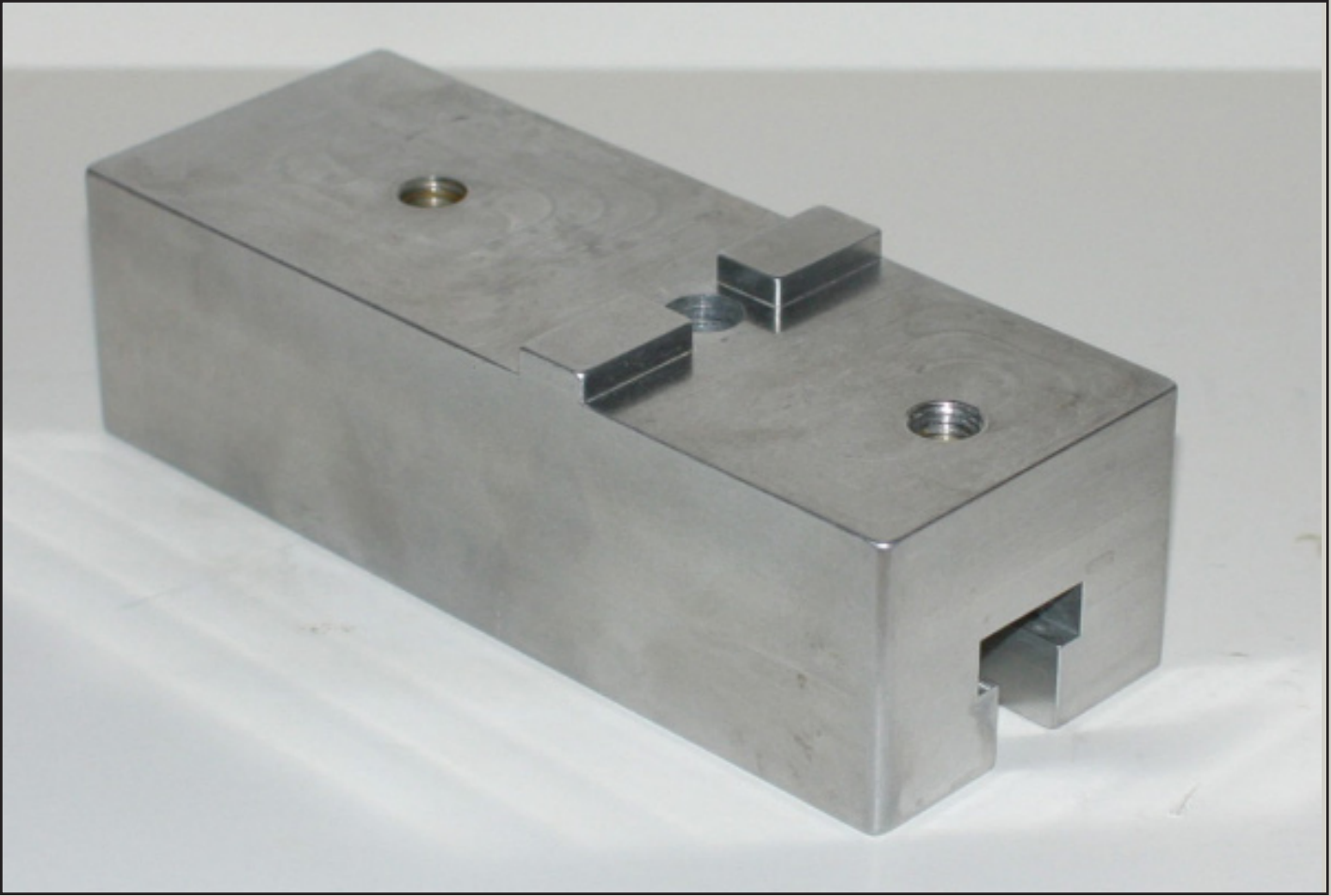
Unique Features of the T-Slot Block

The T-Slot Block has tabs or built in location keys for the mill table's T-Slot.

Use these keys or tabs to quickly mount the T-Slot block onto the machine table.

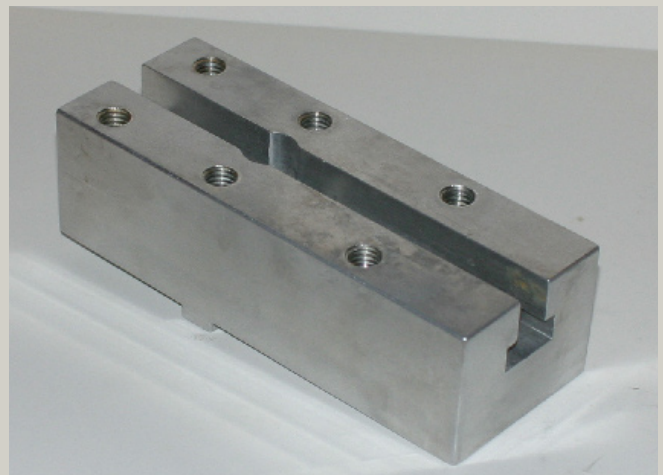
Currently there are 4, T-Slot Block product families. Each family corresponds to a T-Slot size.

The product family's are 1/2", 9/16", 5/8" and 3/4" size T-Slots. And consequently the tabs on the T-Slot Block matches the T-Slot on the mill table. And for the corresponding T-Slot Block family, the T-Slot in the T-Slot Block is the same as the machine tool table. For example if a shop has mills that have 9/16 size T-Slots on their mills they would get the T-Slot Block that was in the 9/16 family. All of the T-Slot tooling, clamps, bolts, studs, straps, edge clamps and so on that the machine shop has would fit the T-Slot Block.



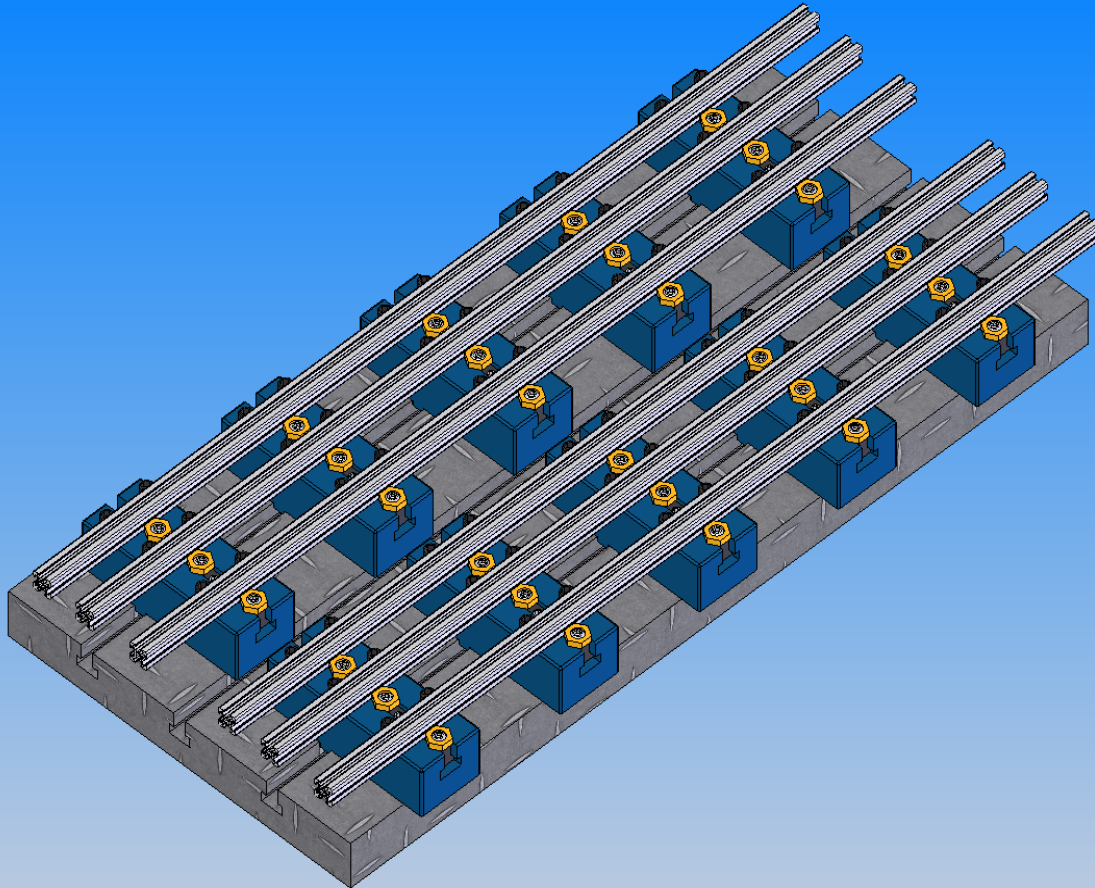
All T-Slot Blocks have 4 important features.

- 1, A T-Slot to accept T-Slot tooling
- 2, Tapped holes or threaded inserts
- 3, A way to mount it to the machine table
- 4, T-Slot location keys or tabs.

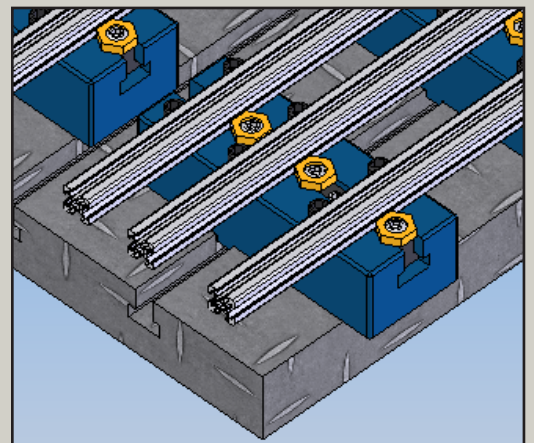


T-Slot Block set up examples

The next few pages show only a small portion of the many possible ways that T-Slot Blocks can be used as workholding devices, setup stations and more.



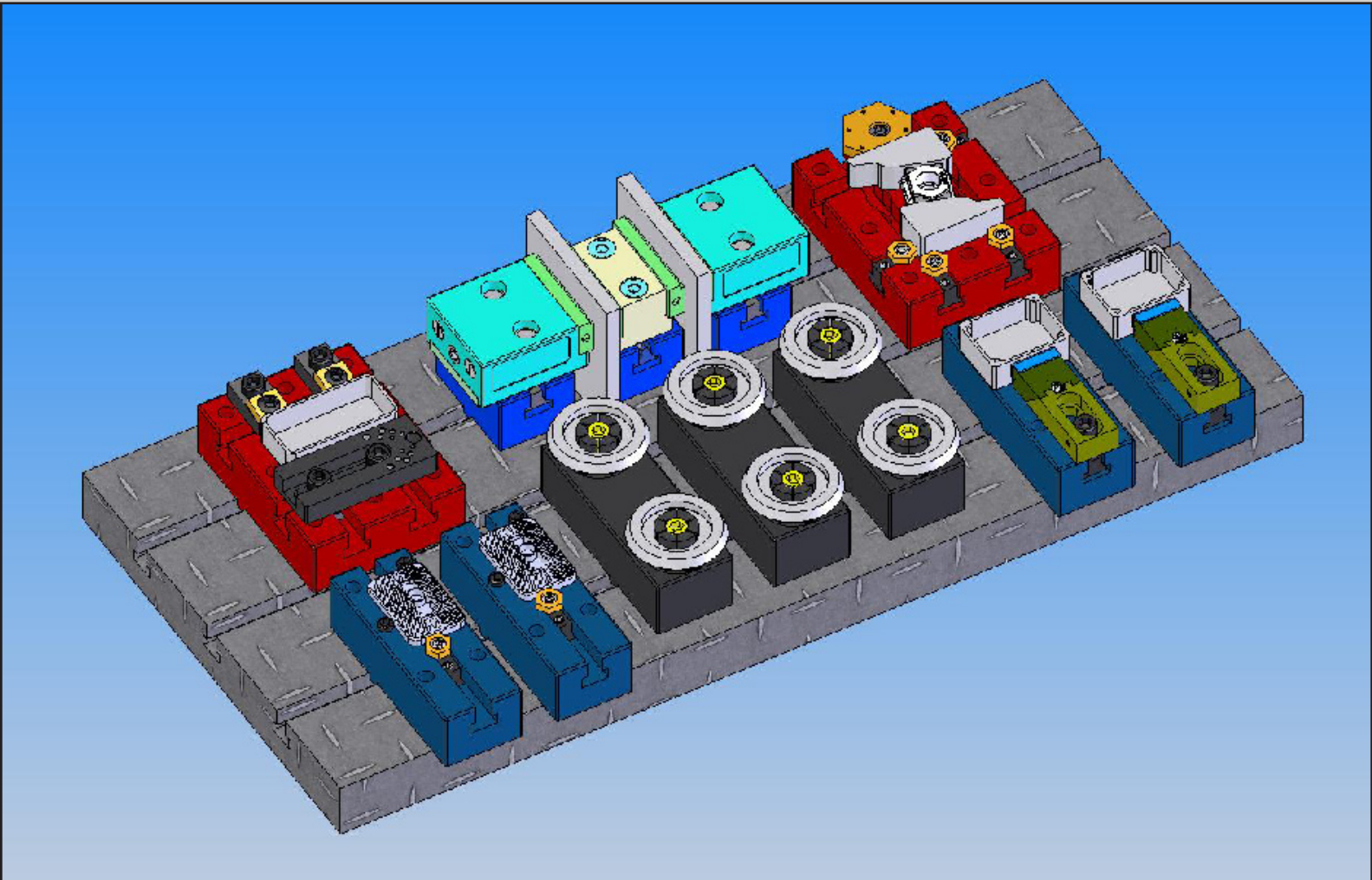
In this example, the T-Slot Block being used to hold multiple extruded aluminum frames. The machine table shown is a small 34 X 16 size table. The extruded aluminum is 20mm X 20mm X 762mm. On the T-Slot Block, work stops, and clamps are pre positioned. Remove the work pieces and the T-Slot Block can be removed from the machine table and stored for repeat work. Set up is fast and all the mini clamps and stops can remain on the T-Slot Block. The T-Slot Block can be used as a dedicated work fixture.



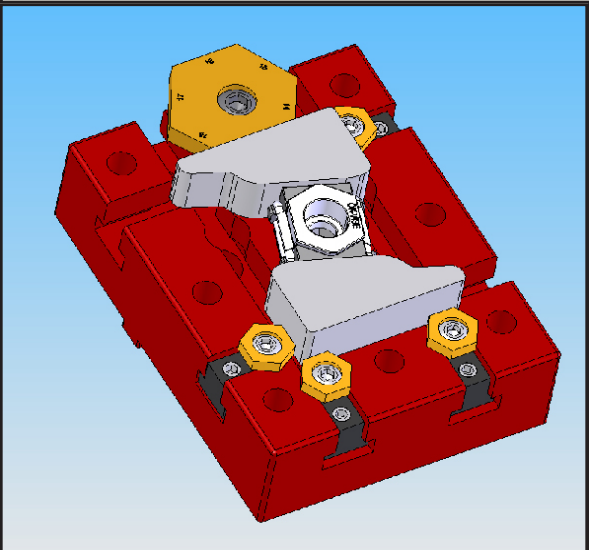
Picture at right is a close up of the image above

T-Slot Block set up example #2

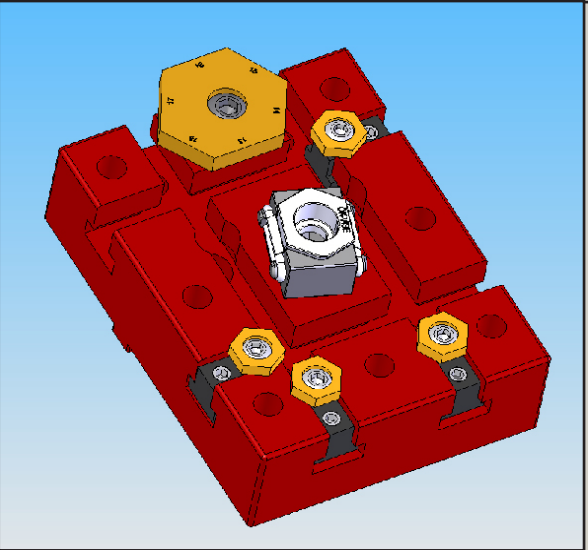
In this set up example various T-Slot Blocks are used for holding various parts. Also common off the shelf edge clamps, work stops and other work holding items are employed.



In this example, multiple T-Slot Blocks are used to hold multiple work pieces. The machine table shown is a small 34 X 16 size table. The work pieces vary in size and shape. On the T-Slot Blocks, work stops, and clamps or even mini vises are used

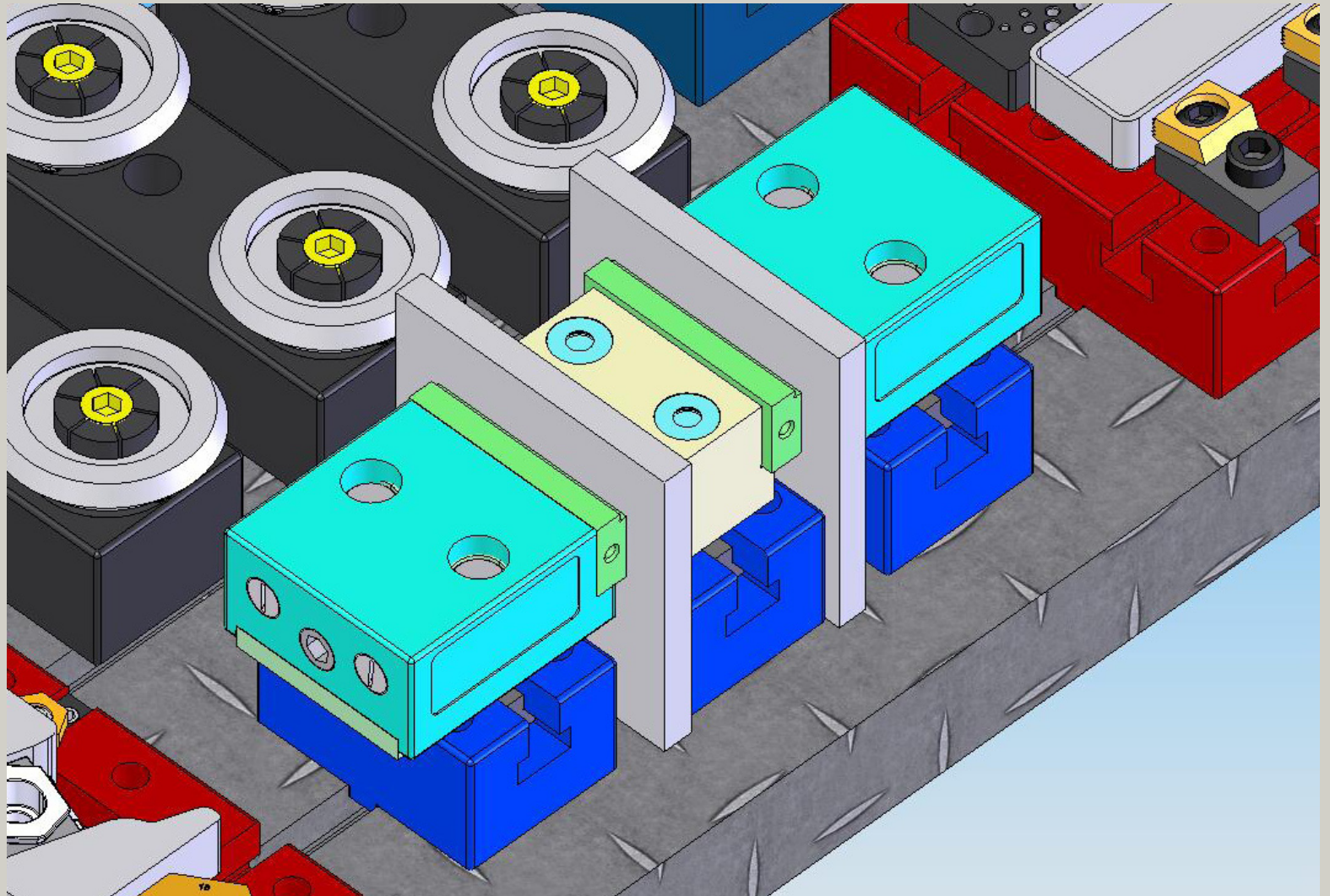


Shown here is the T-Slot Blok T2P2. The image to the left shows the T2P2 with clamps and a work piece. The image to the right shows the T2P2 without the work piece. The T2P2 is setup as a dedicated fixture base. Simply bolt the T2P2 onto the mill table with all the clamps preset, great for repeat jobs.



T-Slot Block set up example #2, continued

This image is taken from the same example #2. Notice below how the T-Slot block Minis are used to hold some vise components. The work pieces are tall plates that must be milled and taped on the edges. Set up is fast and easy.



Set up in this vise application is very simple.

Insert or install the T-Slot Block Minis.

Insert or install the vise components. If the vise components have location keys use them on the T-Slot Block. Bolt the vise components onto the T-Slot Block using T-Nuts.

It is ready to begin machine work.

In this work holding application, tall plates have to be held so that mill work can be done on the edges. Using a conventional vise for this sort of work may not be suitable. In a conventional vise the unsupported area of the work piece may vibrate and flex during machining.

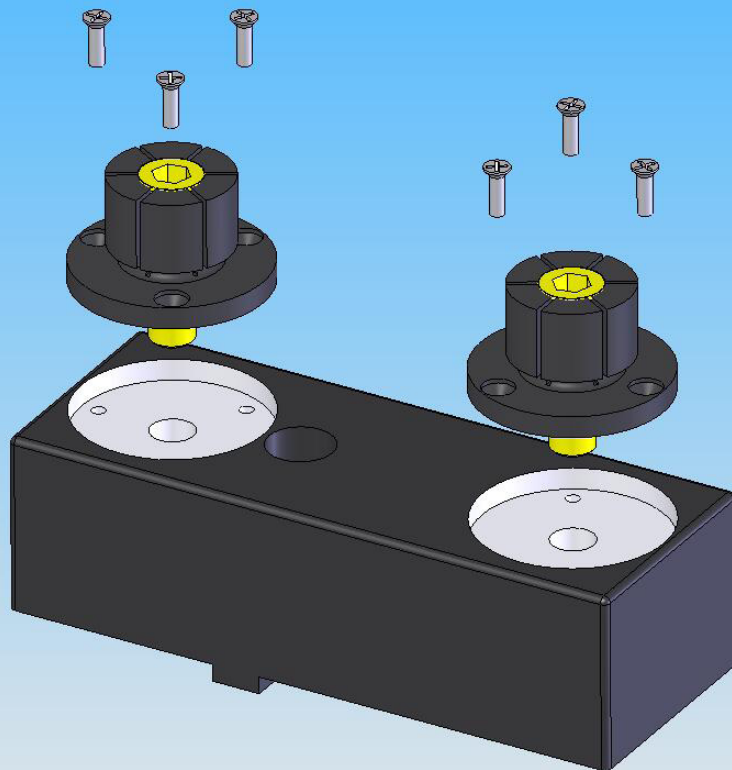
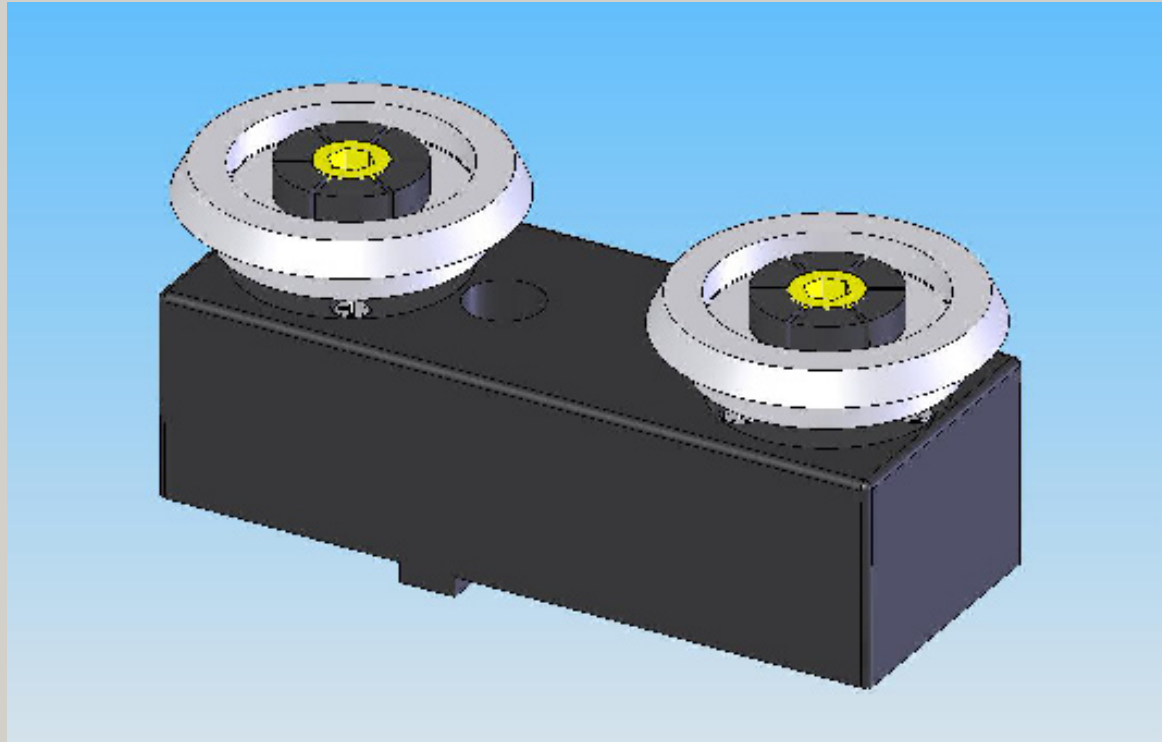
T-Slot Block set up example #2, continued

The T-Slot Block Blank is used in this work holding example. Pockets were milled into the Blank part. Also tapping was done in the pocket. This was done to allow the use of some ID clamps.

The ID clamps are bolted into the T-Slot Block Blank.

Then the part to be machined is added and clamped.

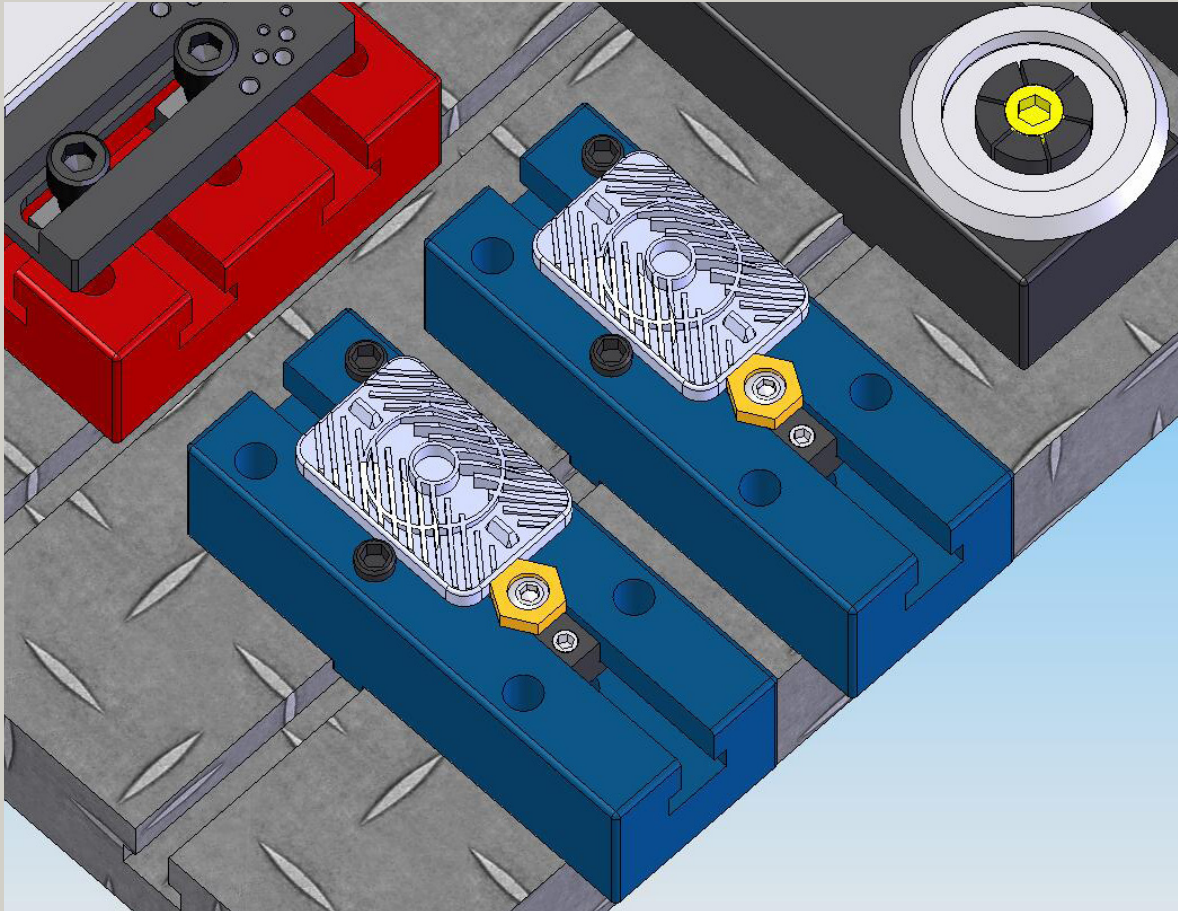
This work holding setup can be used again and again. Once the mill work is done, leave the ID Clamps in place on the T-Slot Block Blank and just remove the T-Slot Block Blank from the mill table. And store for repeat work.



A simple, yet powerful concept.

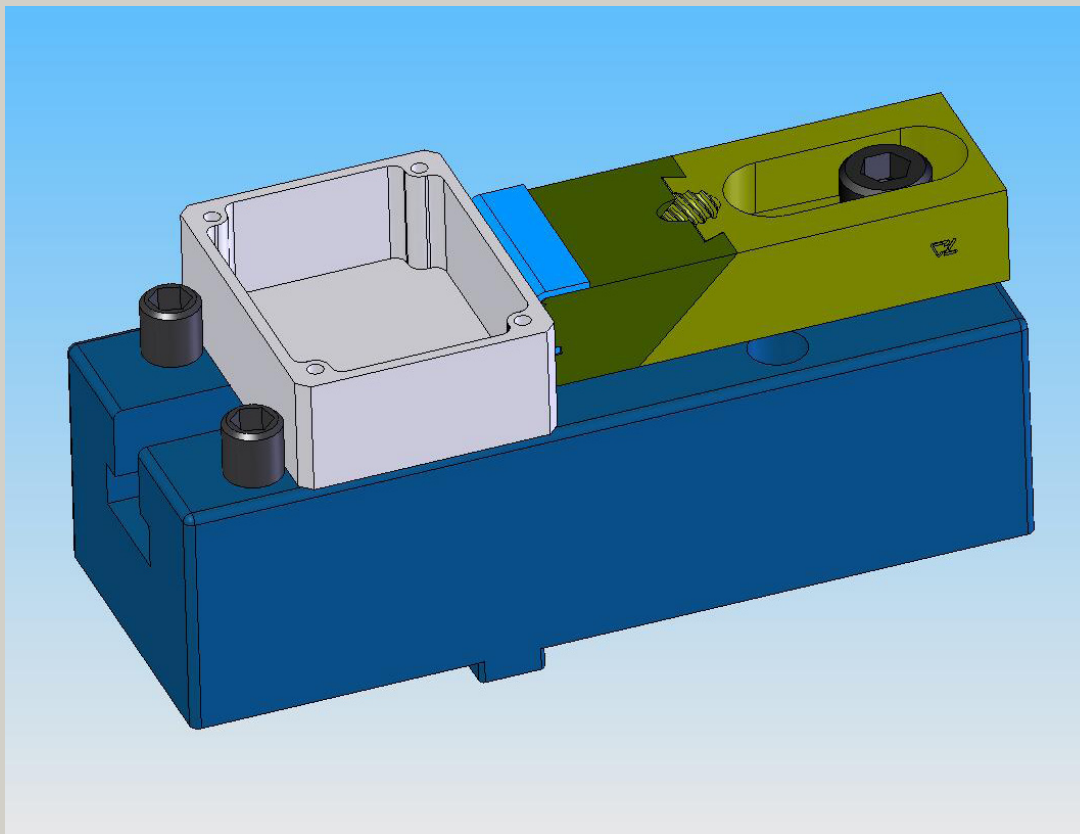
Modular work holding to hold or handle modular clamps or work holding tools. The user decides what clamps to use and where and then mills the placement for those work holding tools in the T-Slot block Blank. The ID Clamps shown here are just a miniscule example of the ways in which The T-Slot Block Blank can be used. Of course other work-holding tools can be used in this manner, such as Edge Clamps, T-Slot tooling, Vise components can be used as well.

T-Slot Block set up example #2, continued



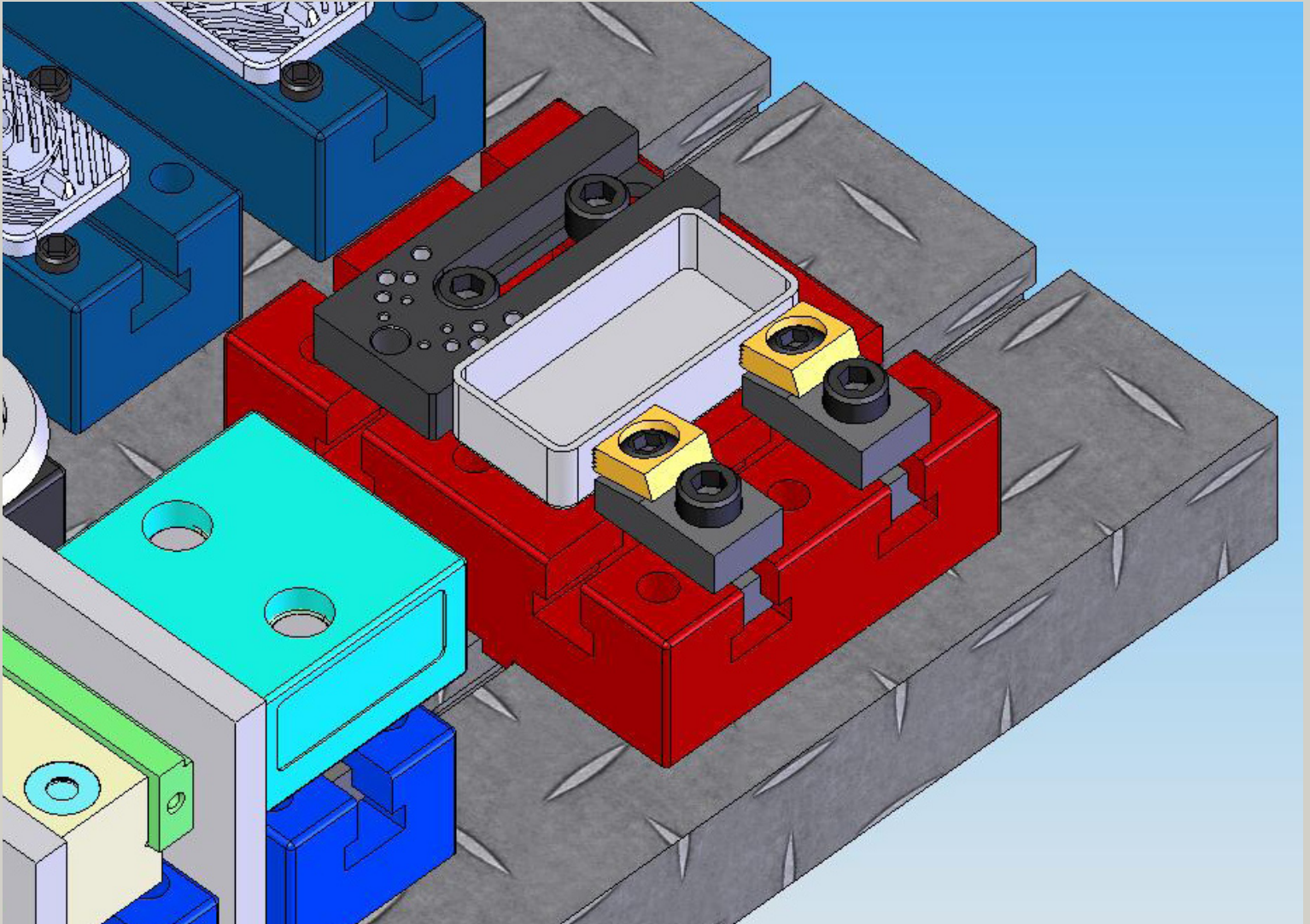
The T-Slot Block Standard is used to hold an injection molded part for a tapping operation. Work stops consist of 1/2-13 inch set screws. The clamp is a readily available common T-Nut-type Edge Clamp.

Setting up The T-Slot Block is quick, and consist of installing the set screws and positioning the T-Nut Edge Clamp



The T-Slot Block Standard is used in this work holding set up. Set screws serve as work stops, and a common off the shelf edge clamp [different from the one above]is used to secure the part.

T-Slot Block set up example #2, continued

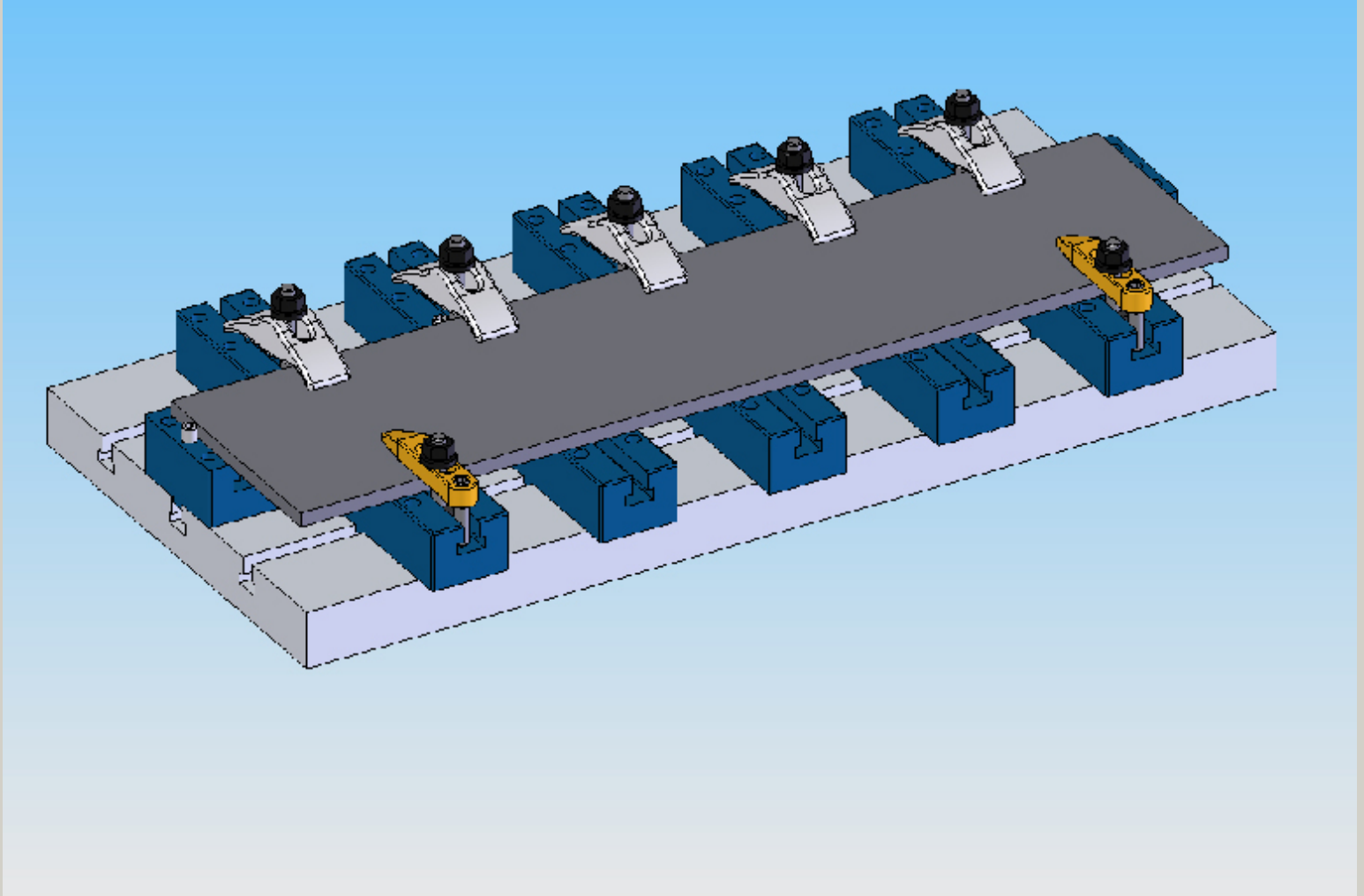


The T2P2 T-Slot Block is used to hold this work piece. The work piece is a plastic off the shelf electronic instrument enclosure. Cut outs for buttons and switches must be milled. Work stops can consist of what ever a shop has handy. In this case a strap is used. Clamping is done by inexpensive edge clamps.

So why not just use a regular vise ? Sometimes a vise is in use on another machine and is not available. Or for a particular operation the part is thin and fragile and the part must be supported from the bottom.

To do that in a conventional vise would require machining custom soft jaws, or using custom supports to hold the part. With the T-Slot Block, simply lay it down on the T-Slot Block. Since the T-Slot Block has T-Slots attaching clamps is easy. The fragile work piece is supported, and if necessary high density work holding can be done in this manner. For high density work holding or multiple work holding, the T2P2 T-Slot Block can be loaded or configured off of the machine table. [Possibly while the CNC Mill is working]. Then the T2P2 can be clustered all over the CNC Mill table.

T-Slot Block set up example #3 Holding large parts



In this example a large steel plate has to be machined. In this case a 45 degree chamfer must be milled on the edge of the part. The steel plate measures 8" X 30" X 1/2". The steel plate is too large for most vises. Only large and heavy vises could hold this. But then milling that chamfer on the edge may also be challenging with a vise.

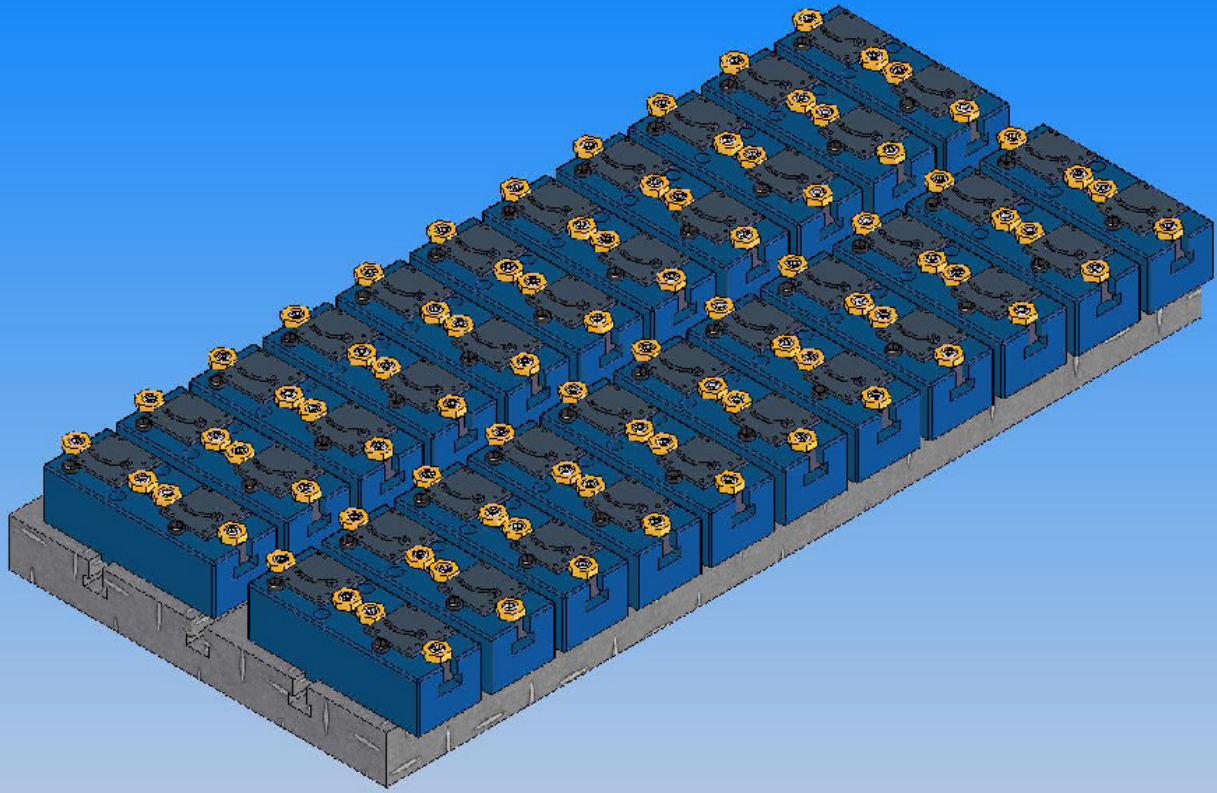
At a fraction of the cost 2 big heavy vises, 10 T-Slot Blocks and 2 T-Slot Block Minis are used. The clamping consists of 5 medium sized strap clamps, and 2 small strap clamps. The 2 T-Slot Block Minis serve as edge reference placement for the steel plate. In this scenario the cutting tool can reach most of the edge of the steel plate.

One way to mill the chamfer is to mill the central edge. Then without moving the steel plate, simply relocate the 2 small forged clamps.

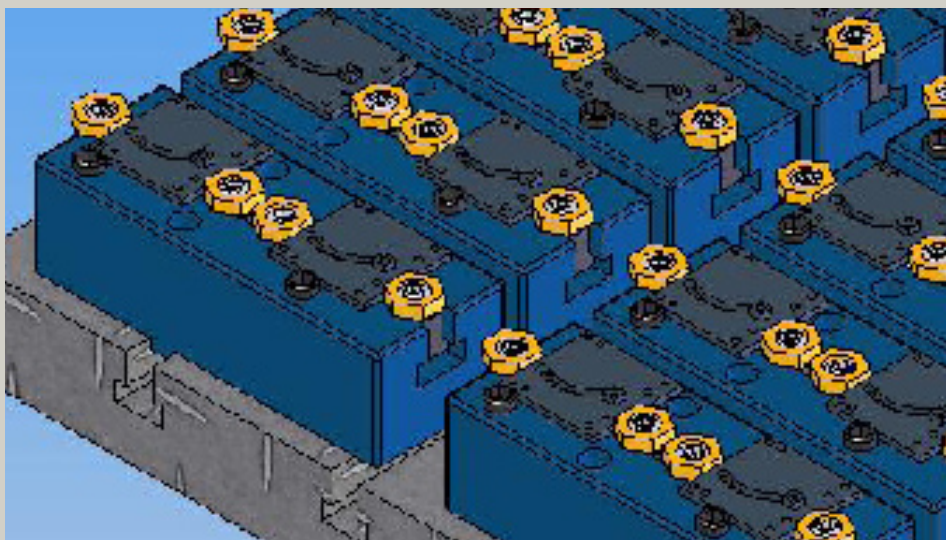
Working with large pieces is something that most vises can not handle. And the cost of using fixture plates and all the required tooling that is associated with that is very expensive. And most of the tooling for the fixture plates only works with "Those Fixture Plates".

The T-Slot Blocks are designed to work with common T-Slot tooling. And in some cases can work with fixture plates and or fixture tooling. If a shop has common T-Slot tooling and they find themselves needing more work holding options but don't like the idea of investing in fixture plates and fixture tooling due to the high cost, then the T-Slot Block fits that need. T-Slot Blocks require a much smaller investment, and are compatible with existing work holding tooling.

T-Slot Block set up example #4, High Density Work Holding

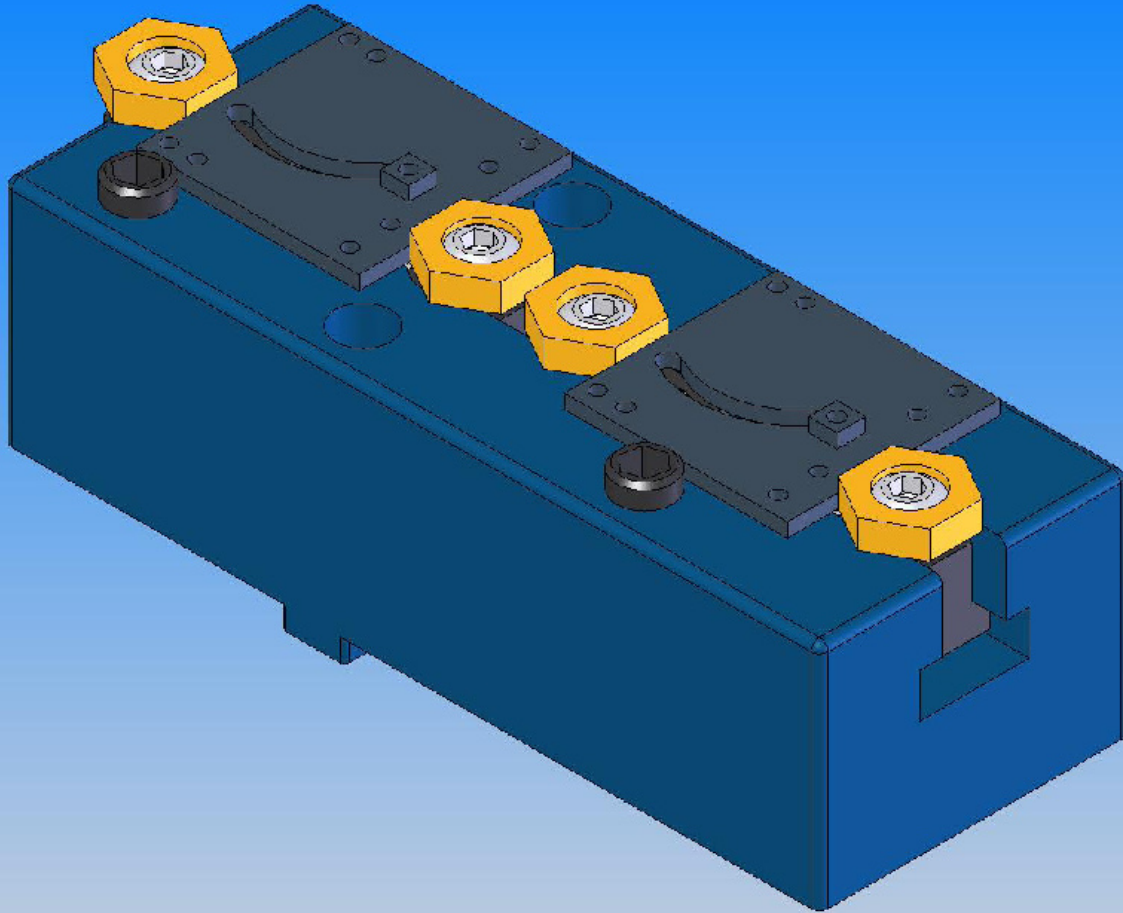


For high density work holding the T-Slot Blocks can easily offer many possibilities. Shown above is an example of The T-Slot Blocks arranged in a cluster. There are 22 T-Slot Blocks. Each T-Slot Block can hold 2 work pieces. That is 44 parts that can be machined at one setting. Custom fixture plates, are not needed. Expensive cluster vises are not needed. To get this many parts on the machine table one would need very expensive and possibly custom made vises. The cost of which would far exceed the 22 T-Slot Blocks used here. With it's varied work holding capability, the T-Slot Blocks are well suited for this type of work holding. In this example shown above the T-Slot Blocks are in essence a giant fixture plate, that has T-Slots, tapped holes, and easy mounting to the machine tool table. In fact the T-Slot Blocks can replace the acorn type fixture plate. More modular, more utilitarian, the T-Slot Blocks offer more ways to adapt to work pieces and common off the shelf T-Slot tooling, clamps, bolts, straps and etc. can be used.



In this close up view of the cluster arrangement, the components consists of the T-Slot Block, 2 edge clamps, one for a work stop and one for clamping. A set screw to act as a reference edge. This for one work piece. The T-Slot Blocks can handle 2 sets or 2 work pieces. Plus if this is a repeat job, all of the clamping components can remain on the T-Slot Block and the T-Slot Block can be stored for future work. Installing on the machine tool table is very fast.

T-Slot Block set up example #4, High Density Work Holding



The T-Slot Block shown above with the 2 work pieces. Edge clamps, set screws are attached and the T-Slot Block is now a high density work holding tool. Easily attached to the machine tool table.

The T-Slot Block has many desirable qualities. Modular, compatible with off the shelf T-Slot tooling, it can be arranged in many configurations with various components, the uses are endless.

In this brochure only a small sample showing the ways that the T-Slot Block can be used are illustrated. And this is just for the milling machine applications. Welding, and other forms of manufacturing can benefit from the T-Slot Block.

More T-Slot Blocks are being developed, such as right angled versions, T-Slot Block accessories are also being developed. Whatever the work holding requirements, the T-Slot Block will offer more choices, more flexibility, and more advantages in that setting up is faster, and easier. In the world of highly competitive manufacturing, where companies are looking for any advantage they can gain to increase productivity, the T-Slot Block will offer many opportunities for companies to increase productivity.