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Instruction Manual: Royal Products manual/automation Self-Centering Vises, manual/pneumatic Receivers & Multi-Vise Pyramids.

Part Numbers: 66000, 66002, 66004, 66008, 66010, 66014, 66051, 66052, 66053, 66060, 66061, 66062, 66063, 66066, 66070

## Usage and Maintenance

### General Guidelines:

- Keep the Vise lead screws clean and clear of debris and chips. Use a soft brush to clean the leadscrew.
- Never exceed the maximum recommended torque as shown in table below.
- Never use impact guns or power tools to operate vises.
- Never strike clamping handle or vise with a hammer or any other blunt instrument.
- When machining aluminum jaws, first clamp on a small spacer block applying the same torque to the spacer block that will be used when clamping the parts to be machined.
- Keep the lead screw well lubricated with an anti-seize lubricant.
- Use only (6) point sockets to drive hex of lead screw when tightening vises.
- T-Handle Allen Keys are only for Jaw removal. Do not use them to tighten vise jaws.
- Keep stud receiving pockets in Receivers clean and well lubricated.

### Jaw Removal:

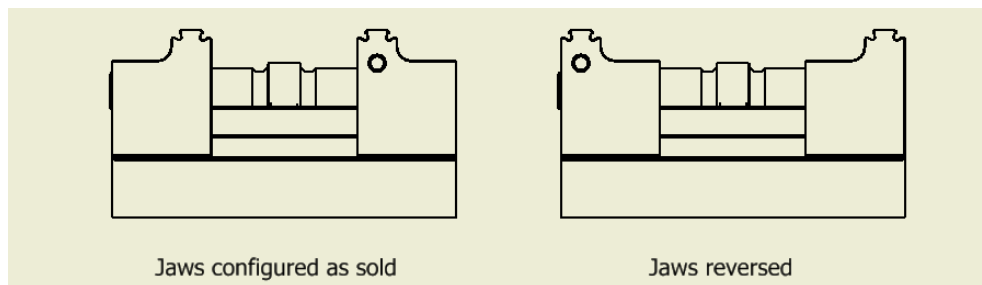
- Using T-Handle Allen Key, turn CCW until Jaws extend beyond limits of lead screw.

### Jaw Installation:

- NOTE: The SLV lead screws all have two threads, one lefthand and one righthand. Jaw sets are marked “R” and “L”. The Jaws marked “R” must always mount on the righthand thread of the lead screw and the Jaws marked “L” must always mount on the lefthand side of the lead screw.
- Slide Jaws onto ways of Vise base until touching both ends of lead screw.
- While applying gentle pressure on both jaws, pushing them toward each other, insert T-Handle Allen Key through the threaded hole of front Jaw and turn lead screw CW and the lead screw will engage both jaws and pull them together equidistant from vise center.

### Reverse Jaw Installation:

- Same as above, except with Jaws rotated 180 degrees for reverse Jaw loading.



### Centering:

Jaws are self-centering, no special methods required, except as described above.

### Vise Mounting options onto Royal Z-Lock Quick-Change Receivers and also onto 52mm and 96mm Stud Pattern Base Plates:

Royal Products Self-Centering Vises mount to Royal Products Zero-Point Single and Dual Receivers, and also accept standard 52mm Pattern & 96mm Pattern Studs to mount on Royal Products Single Receivers and competitor’s Receivers. See table below.

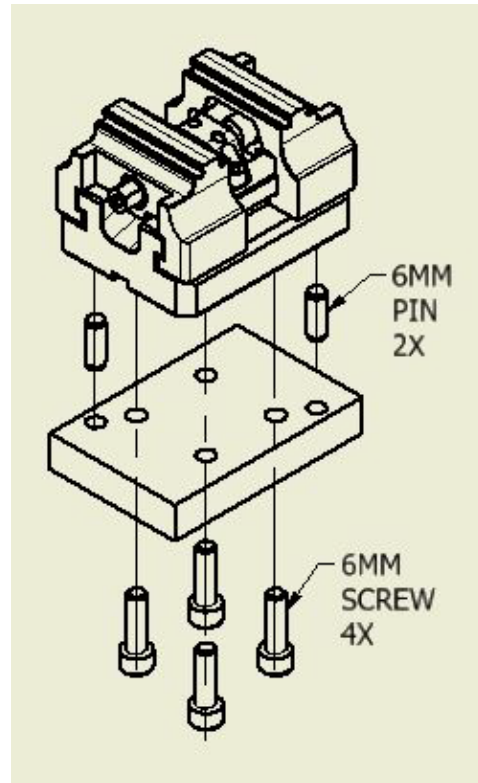
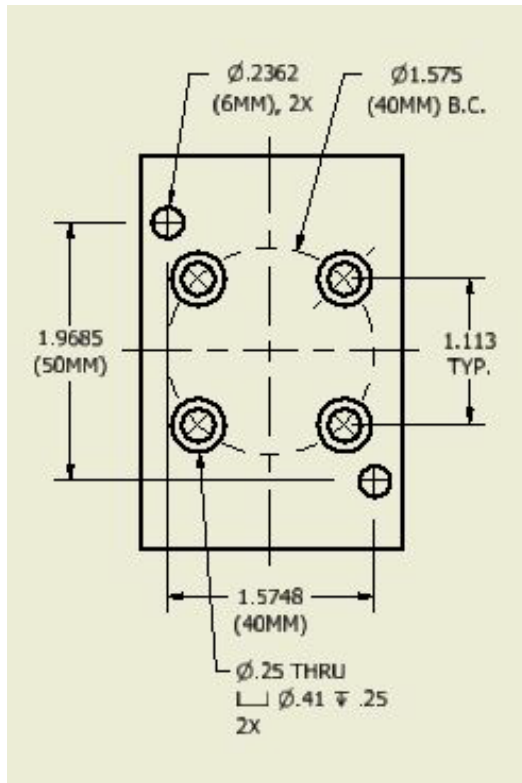
SLV Vise	Royal Stud 65030 + 8mm Pin	Royal Studs 65030 & 65031	52mm Ptrn	96mm Ptrn
54-70*				
75-125	X		X	
75-150	X		X	
125-180	X		X	X
125-230	X	X	X	X

NOTE: SLV 54-70, vises can be pinned & screwed to plates & fixtures. See Mounting Instructions below.

NOTE: Mounting options for 77-125 Automation Vise found on pages 14 and 15

**Custom Mounting of 66000 SLV 54-70 Vises:**

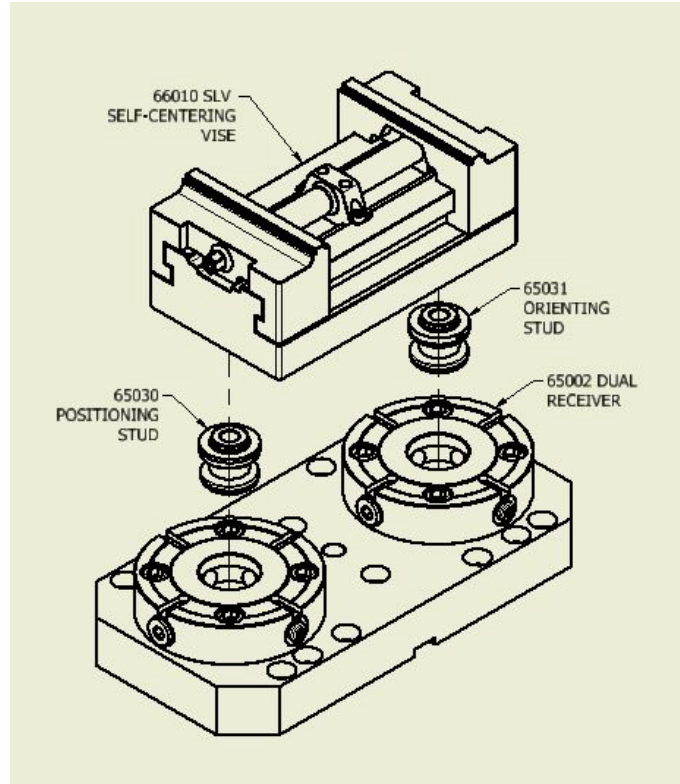
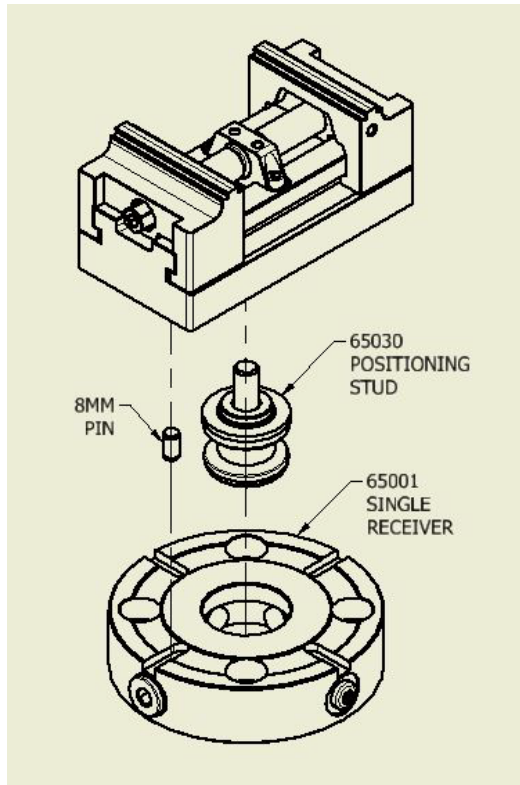
54-70 Vises can be easily mounted to a User's own plates by Drilling, C' Boring & Reaming holes as per dimensions shown below. Then use (2) 6mm dowel pins to locate & (4) 6MM screws to secure.



**Mount to Royal Z-Lock Single & Dual Receivers:**

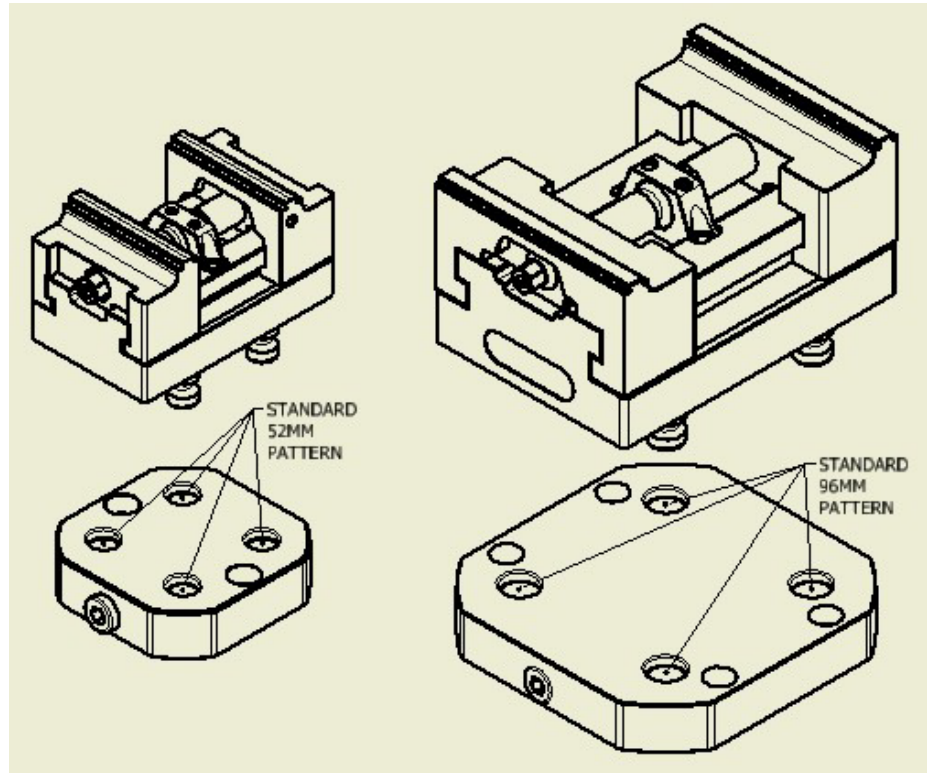
66002, 66004, 66008, and 66010 can mount to a Royal Z-Lock Single Receiver by using a Royal Positioning Stud and an 8mm Orienting Dowel Pin.

66010 can also mount to a Royal Z-Lock Dual Receiver by using a Royal Positioning Stud and a Royal Orienting Stud.



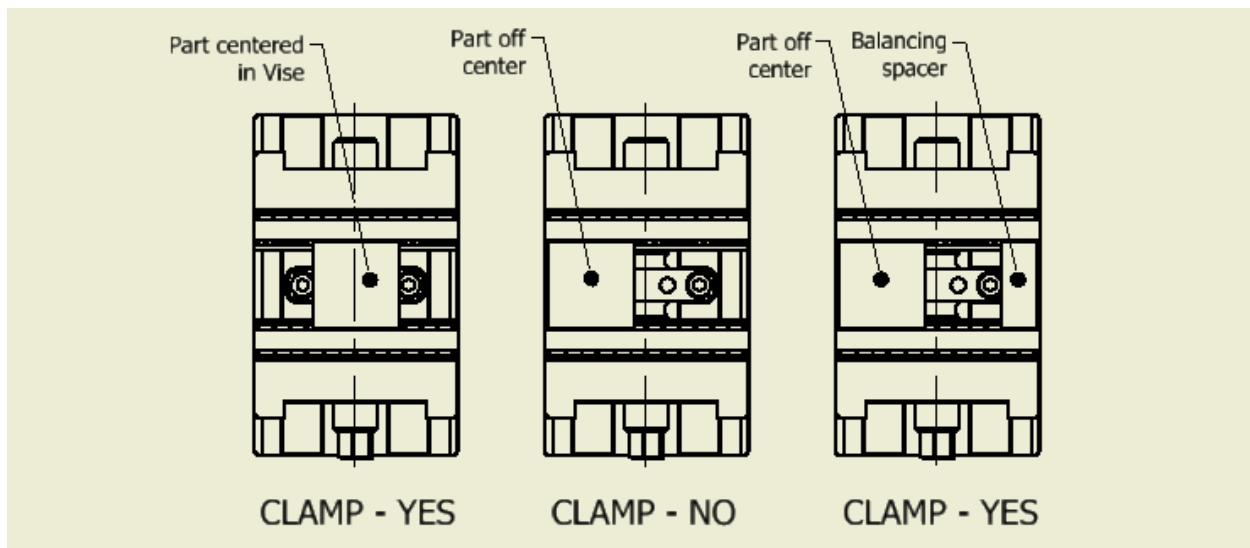
### Mount Vises to Royal 52mm and 96mm Receivers and to competitor's Receivers:

By installing Royal Products Studs or competitor's Studs into our SLV Self-Centering Vises you can then mount Royal Vises onto Royal Products 52mm & 96mm Receivers & competitor's Receivers.

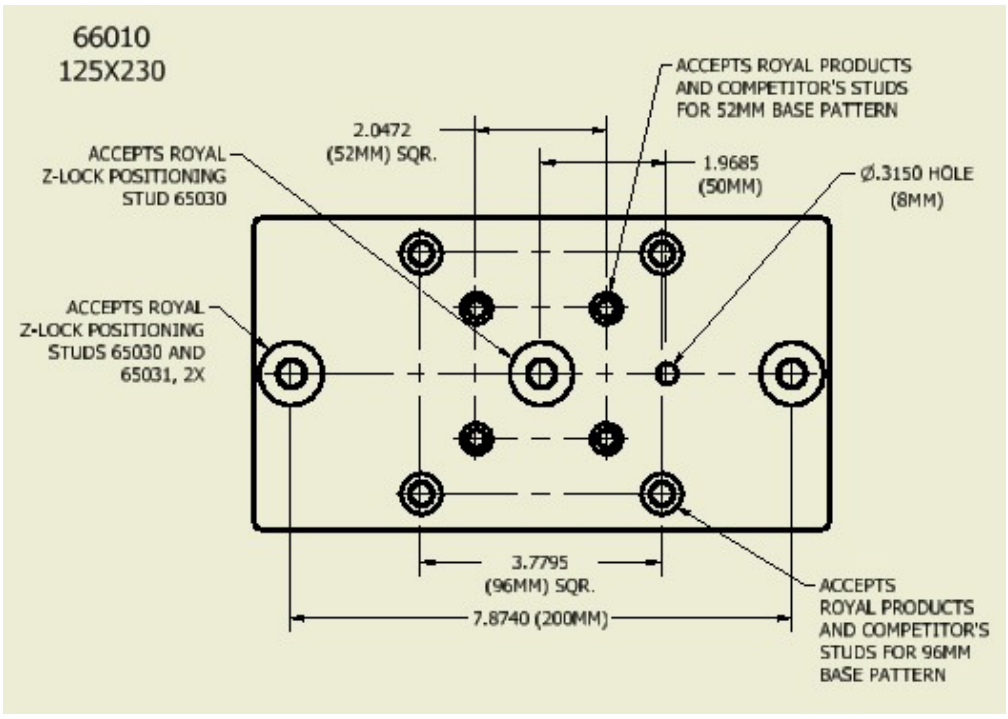
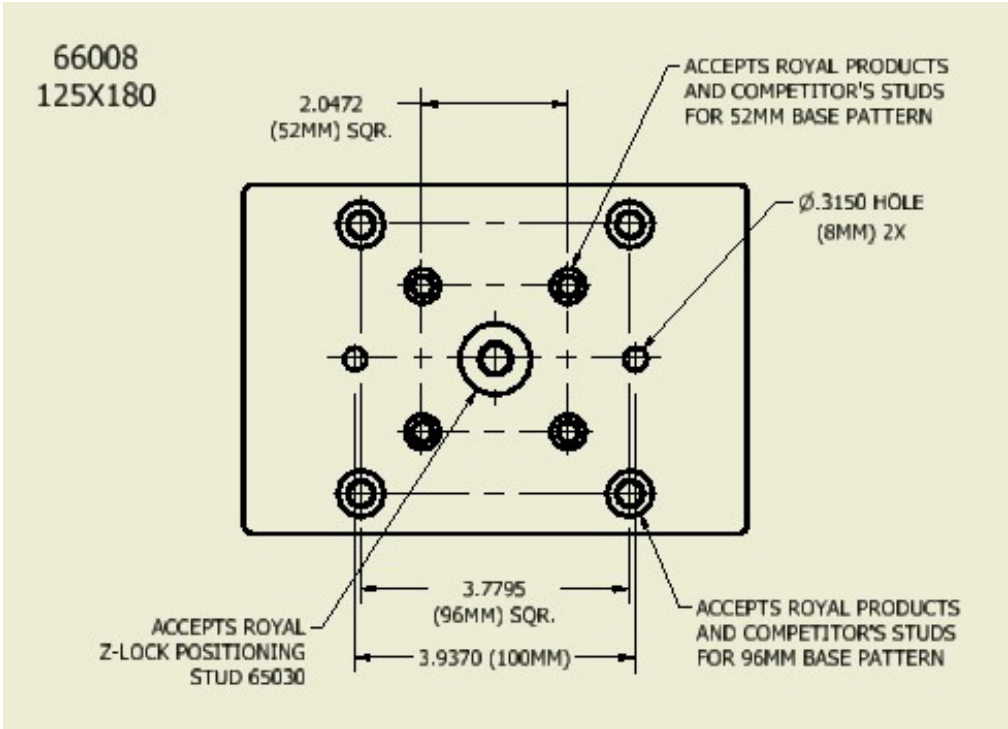


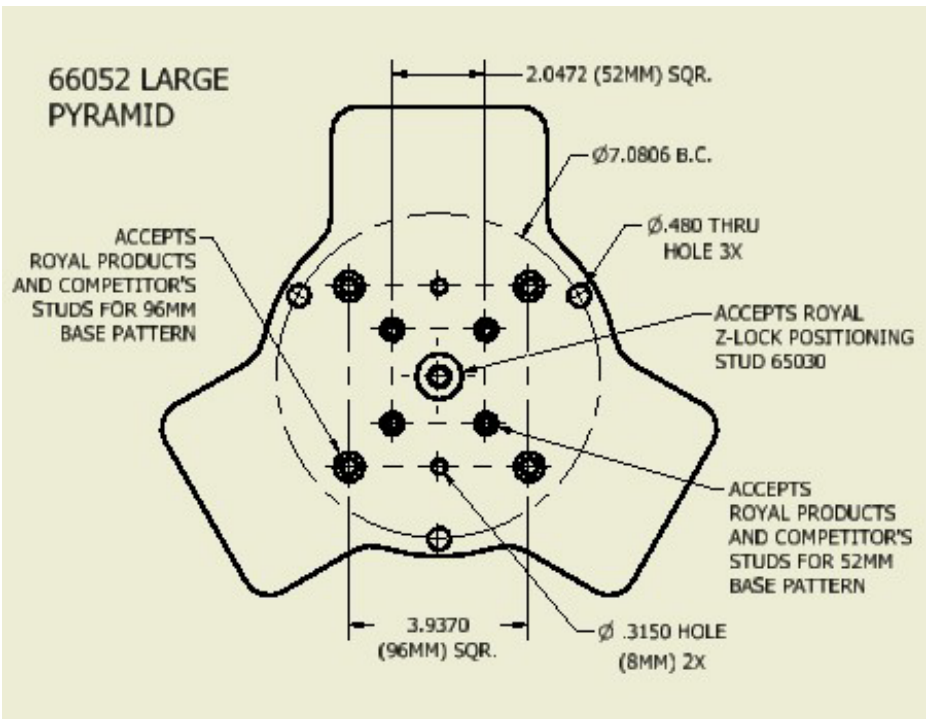
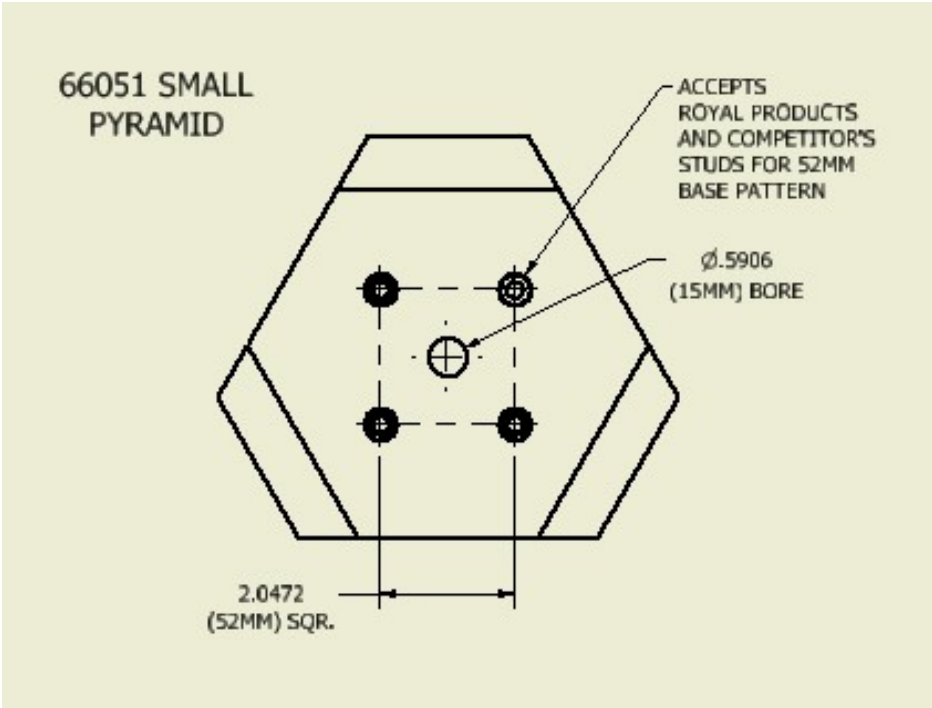
### Part Loading in Jaws:

It is necessary to have balanced clamping when using Royal Products Vises. If a part must be clamped on only one side of Vise, then a Spacer Block is also required. See below.









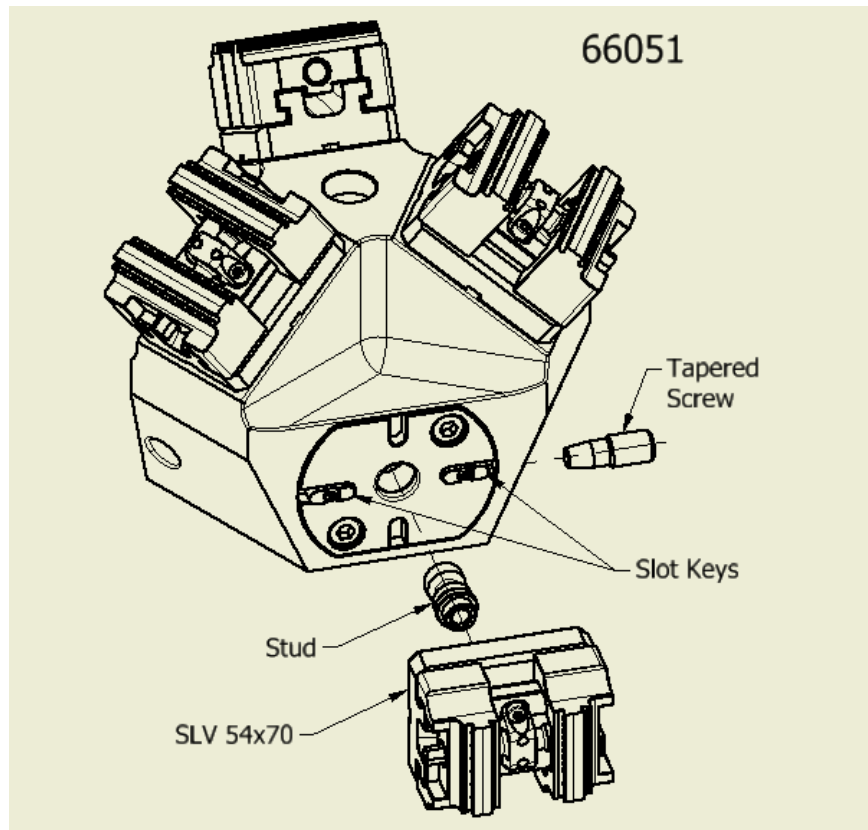
### Proper Vise Clamping:

All SLV Vises ship with a 3/8" Square Drive Socket Adapter to be used with a Torque Wrench to allow users to set the correct torque for their application. Do not exceed the recommended Torque as called out in the table below. Always use a Torque Wrench when clamping parts in SLV Vises.

SLV Vise Model	Max. Tightening Torque (ft-lbs)	Max. Clamping Force (lbs)
SLV 54-70	29	2,250
SLV 75-125	52	3,600
SLV 77-125	52	3,600
SLV 75-150	52	3,600
SLV 125-180	73	5,850
SLV 125-230	73	5,850

### Mounting (3) Additional Vises to Available Lower Positions on 66051 Pyramids:

The 66051 Pyramid comes with (3) SLV 54-70 Vises permanently mounted vertically to the Top (3) Vise positions. Customers have the option to add (3) additional vises which can be mounted to the (3) Lower Pyramid Positions, either vertically or horizontally. The 66051 Pyramid ships with all needed mounting hardware, (Studs, Slot Keys, and Tapered Screws). The customer only needs to purchase the standard SLV 54-70 Vises and mount onto the Pyramid by positioning with the Studs, orienting with the Slot Keys and tightening down with the Tapered Screws.

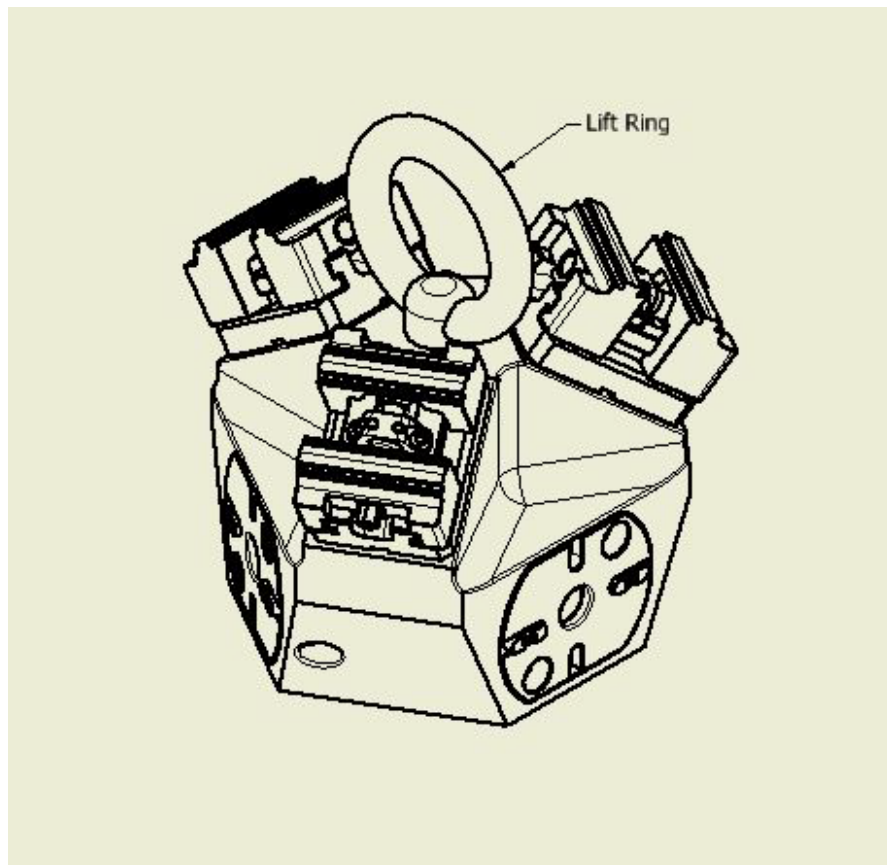


### **How to reposition Vises between Horizontal and Vertical Mounting on 66052 and 66053 Pyramids:**

These (2) Larger Pyramids come with (3) SLV 75-125 Vises mounted vertically. To change the vises to a horizontal orientation you must first remove the Jaws as described in Jaw removal instructions above. Next you need to remove the Pillar Block that has the Lead Screw going through it. This is done with the removal of the (2) 5mm Socket head cap screws. The Pillar Block may be snug in the Vise Base. If unable to lift out by hand then use (2) 6mm Socket head cap screws and by turning them both simultaneously you can safely remove the Pillar Block from the mating pocket in the Vise base. Now the (2) 10mm Socket head cap screws that hold the vise to the pyramid are exposed. Remove these (2) 10mm screws. Note that there are (2) 8mm dowel pins aligning the Vise. If the Vise cannot be removed by hand, then use an M12 Socket head cap screw in the threaded hole in the center of the vise, located directly under the Pillar Block, to gently pull up the Vise from the Pyramid. Then rotate the vise to either Vertical or Horizontal and reassemble.

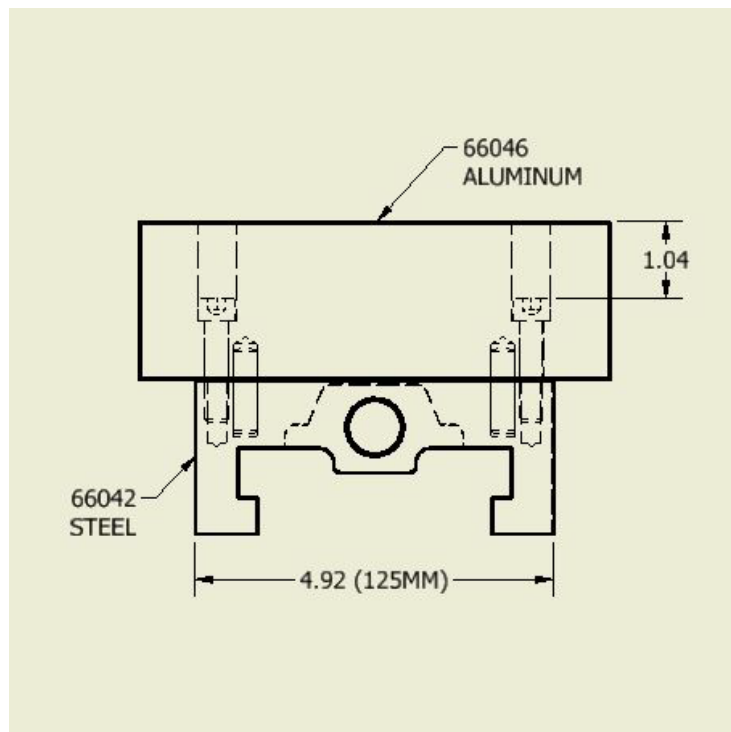
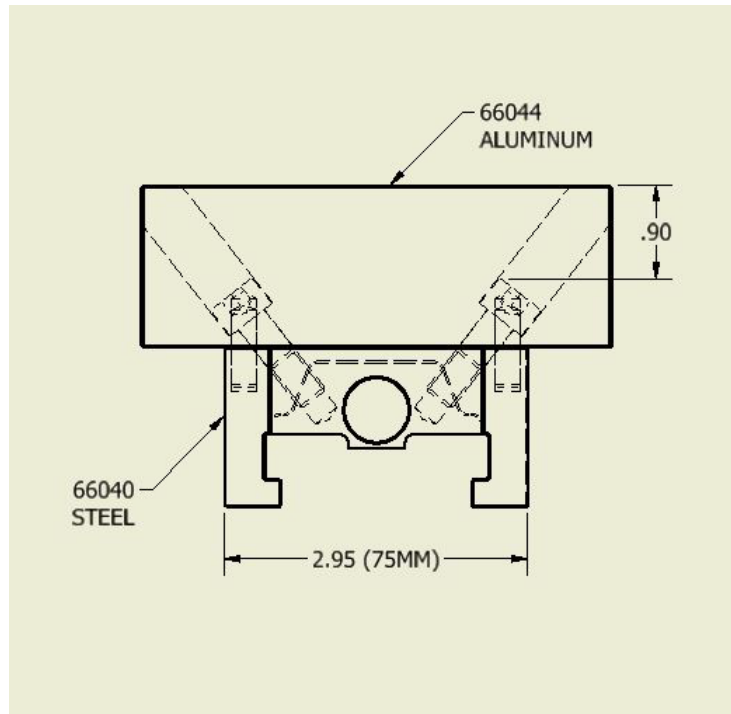
### **Lifting Rings:**

All Pyramids, 66051, 66052 and 66053 come with convenient Lifting Rings which must be used when lifting the Pyramids for placement or maintenance.



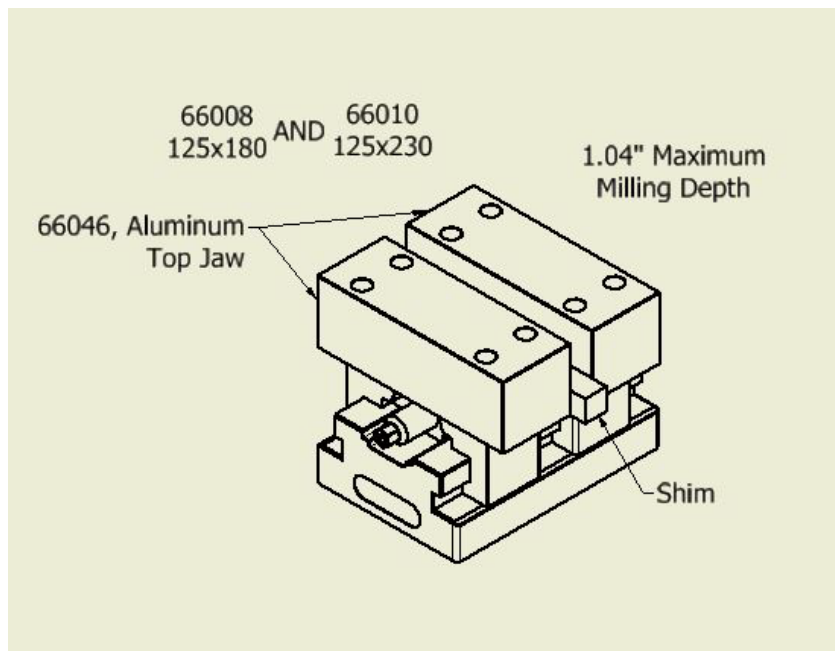
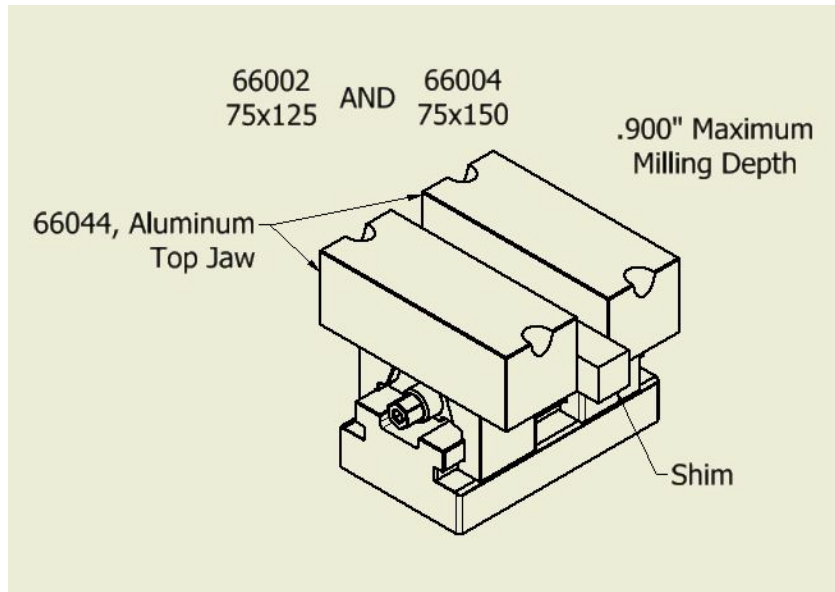
**Soft Jaw Accessories:**

Soft Jaws come in (2) sizes for the SLV 75mm and SLV 125mm wide series of vises. SLV 75mm Soft Jaws require the use of a set of 66040 Base Jaws, matched with a set of 66044 Top Jaws. SLV 125mm Soft Jaws require the use of a set of 66042 Base Jaws, matched with a set of 66046 Top Jaws. All required pins and screws are supplied with Top Jaws.



**Soft Jaw Machining:**

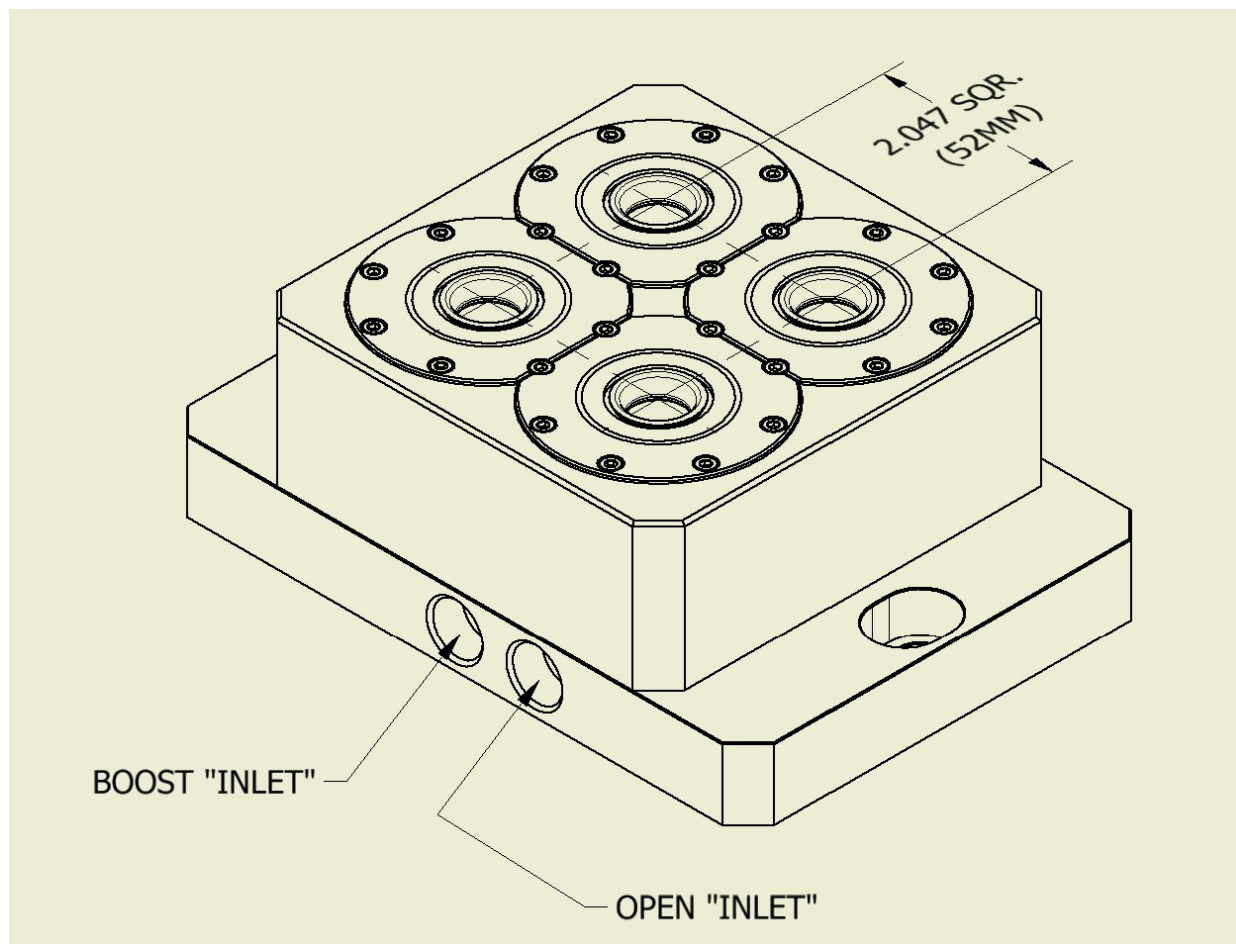
The SLV 75mm wide and SLV 125mm wide series of vises have a soft jaw option for machining custom jaws to suit your part clamping requirements. Insert a shim between the jaws and clamp shim to the same torque that you will use when clamping parts for machining. Next, machine the profile of your part. Then, remove shim and clamp parts at the proper operating torque.



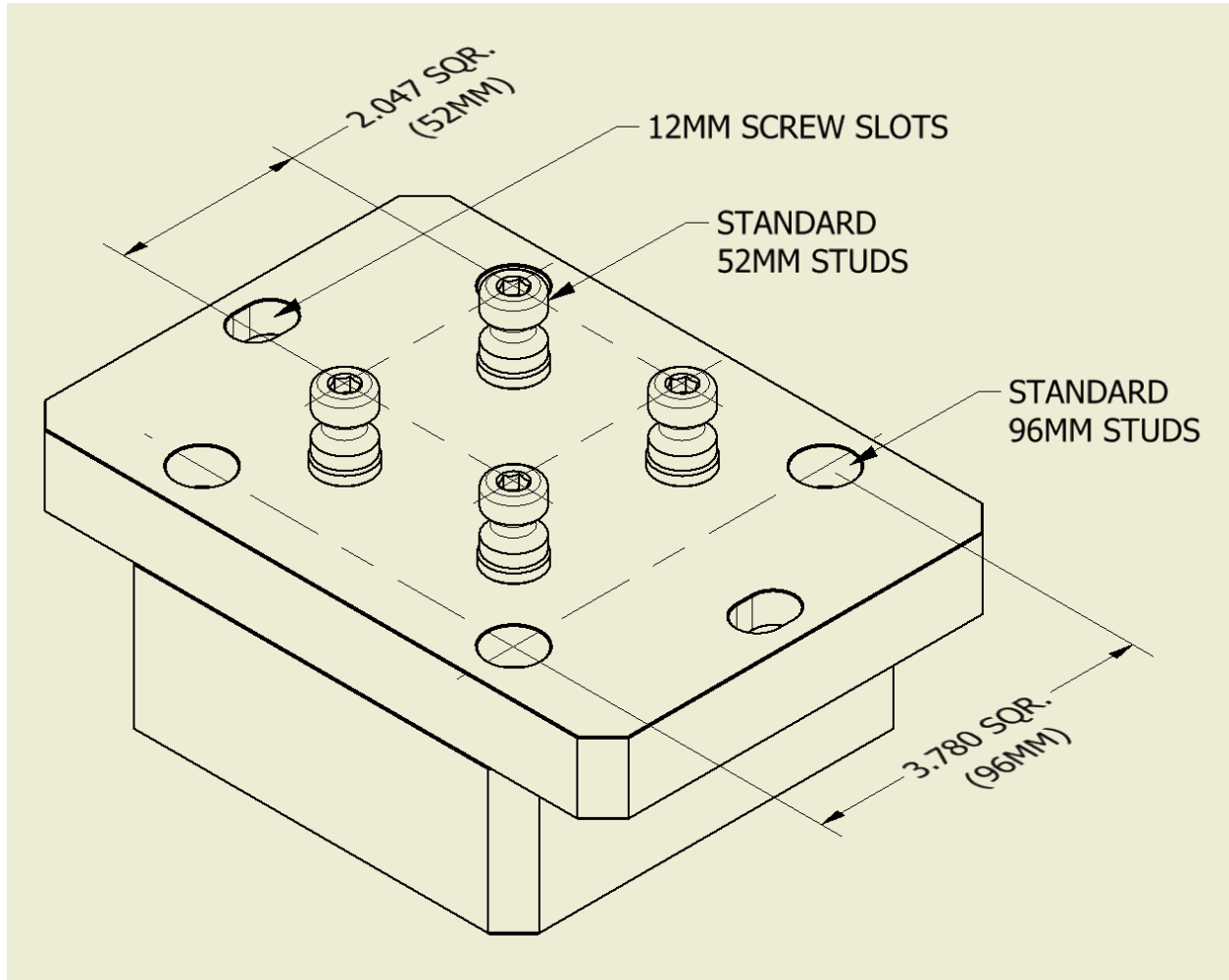
**Boost Receiver, 66070, (pneumatic):**

The Royal SLV Zero-Point Automation Receiver has a standard 52mm square stud pattern on top for receiving vises, but uses custom studs designed to increase vise hold-down strength. The pneumatic clamping feature runs on Shop Air and is always in the locked position. When approximately 72 psi is applied to the "open" inlet valve, the Vise releases. (NOTE: Any competitors Vises with a 52mm square stud pattern will also mount to the Boost Receiver, you just need to remove their (4) standard studs and replace them with our custom Boost Receiver Studs. See instructions further below.) The pneumatic lines are standard 8mm tubing.

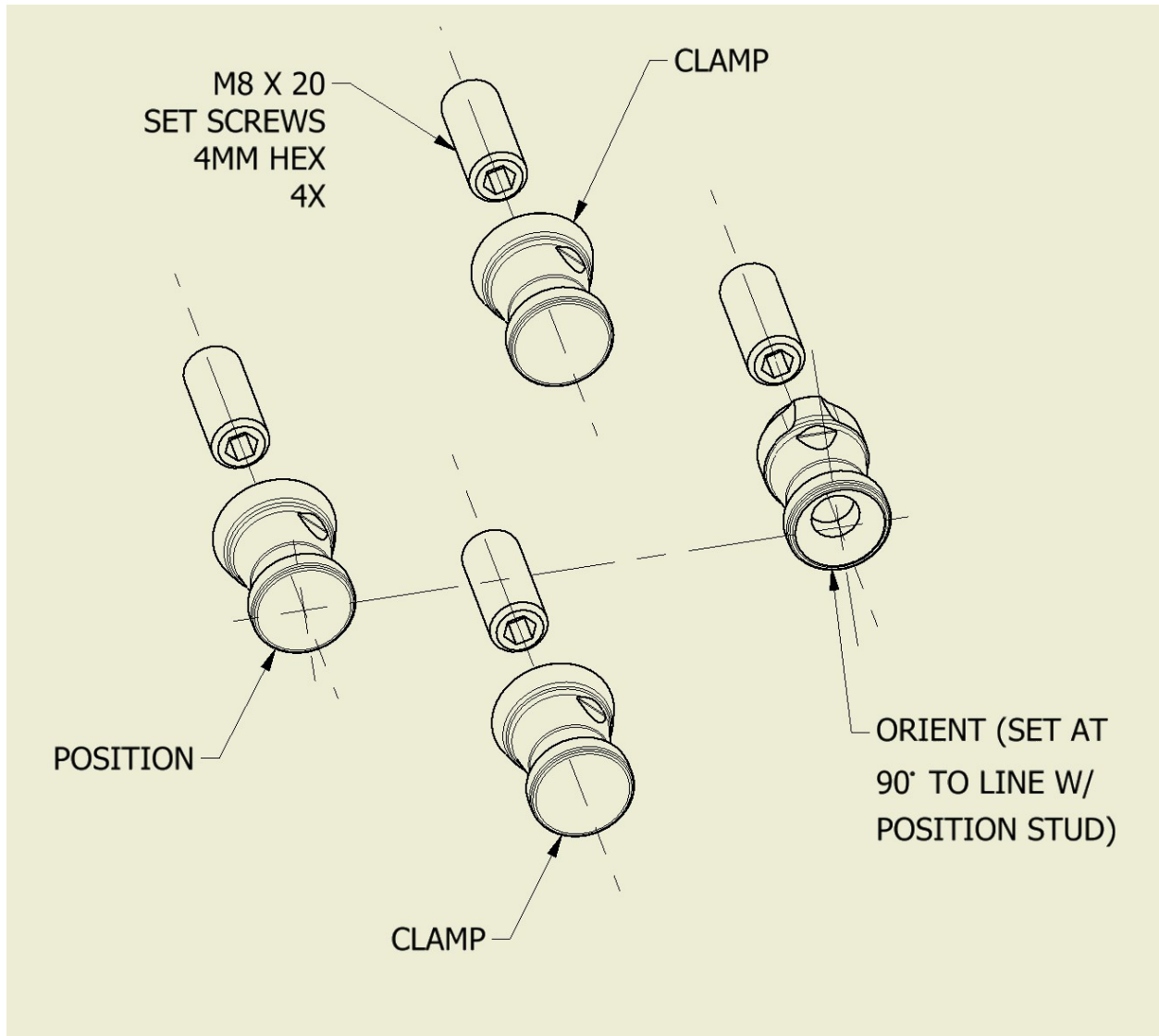
By applying Shop air to the "Boost" inlet you get 5X increased hold-down force. (NOTE: This increased force is only maintained while Shop air is applied. Once stopped the Receiver returns to standard hold-down force.)



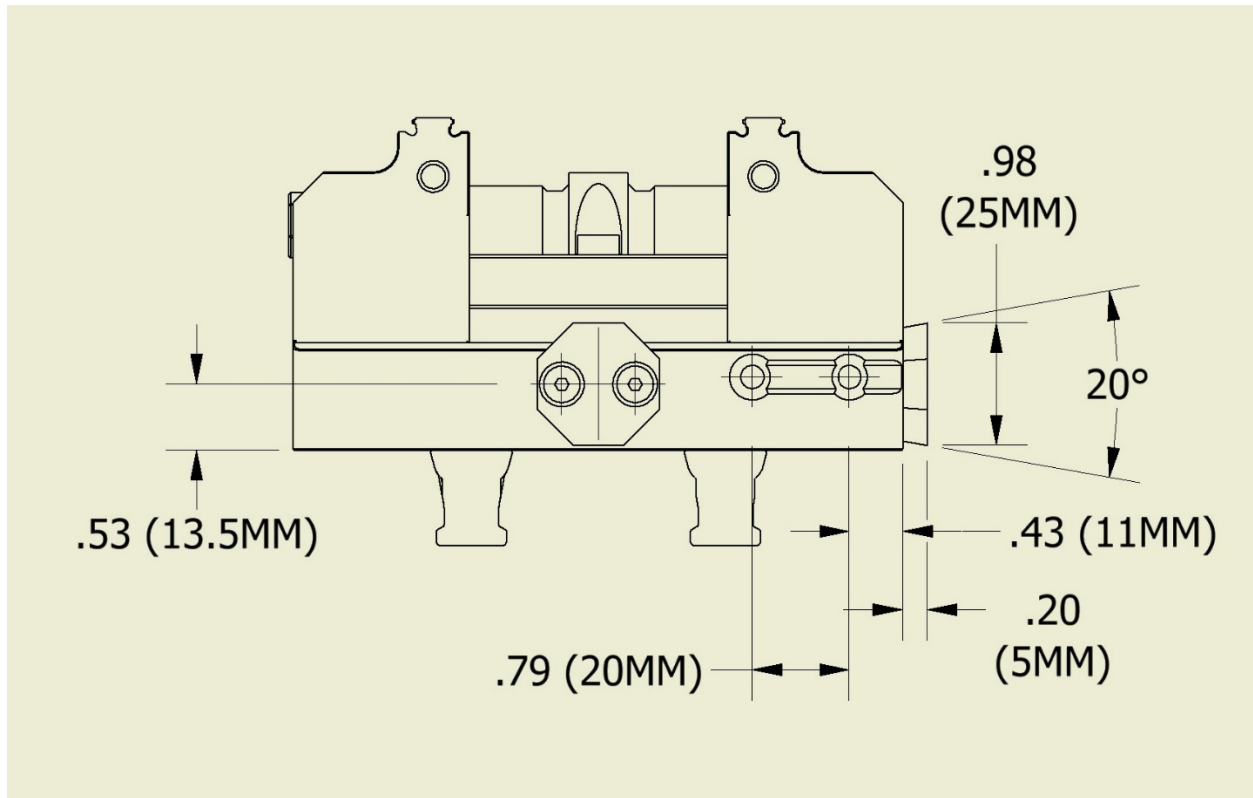
The Boost Receiver itself can mount to any 52mm or 96mm square stud pattern Receiver using standard Studs. There are also slots available to allow the Boost Receiver to be mounted directly to a Machine T-Slot Table using 12mm SHCS.



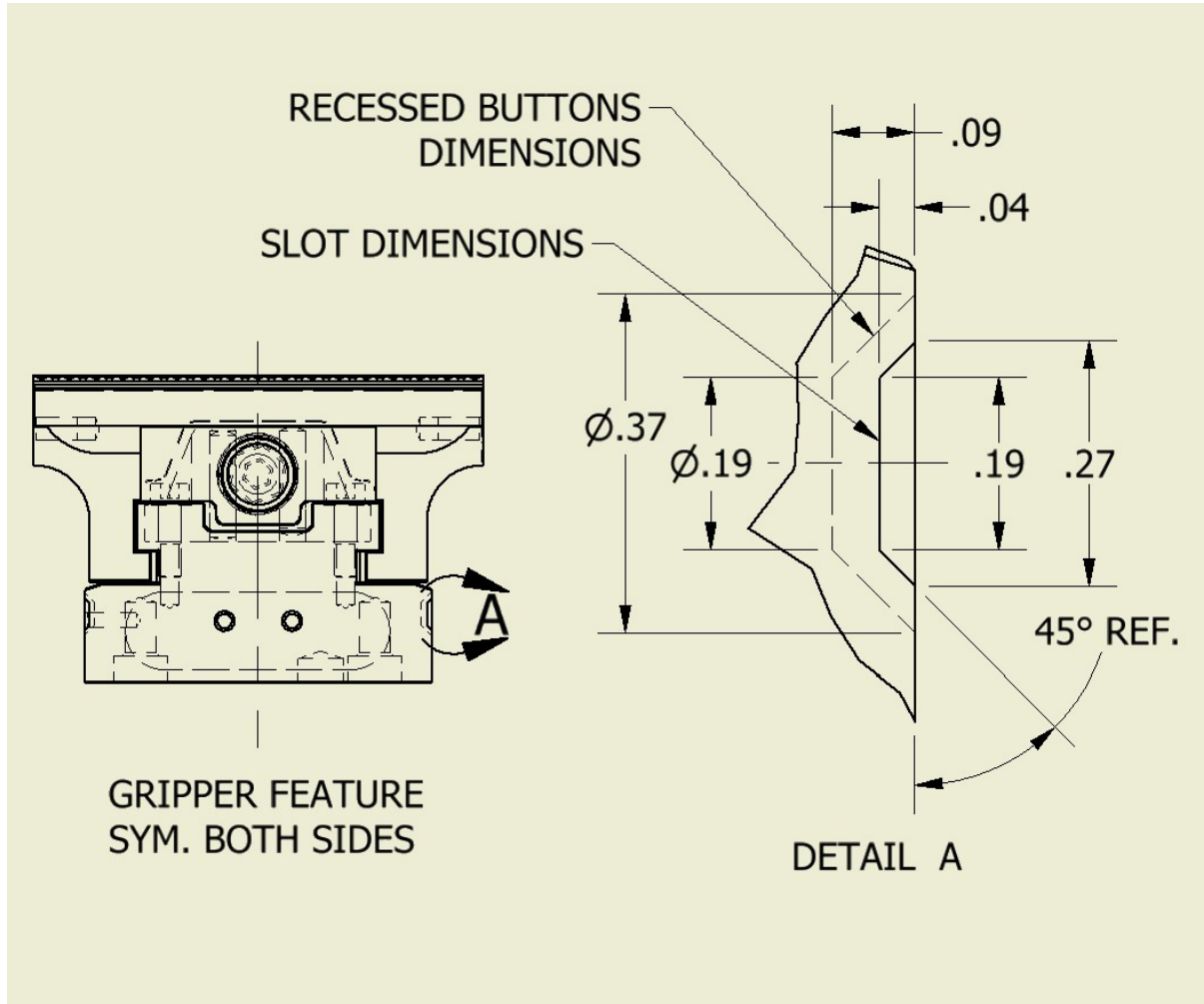
**Custom Boost Studs, 66063, Installation into Vises with 52mm Square Mounting Patterns:** The add-on Stud Set comes with (4) Studs in (3) styles. (1) Stud is to set position, (1) Stud is to orient the vise, (2) Studs are for additional clamping.



**Automation Vise, 66014, Cleats:** The 77 x 125 automation vise come mounted with (2) cleats to allow for automated/robotic placement of the vise in a receiver and also for vise movement between robot arms.



**Automation Vise, 66014, Grippers Feature:** There are 2 slots with recessed button pockets symmetrically located at one end of the vise. In addition to the cleats, Robotic Grippers can use these recessed areas to grasp and move the vise.



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