

Forget the Cap Screws

This article with video highlights the advantage of a dovetail vise jaw interface.

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The dovetail interface has been used in numerous applications that require mating components to accurately join together. Bellatex Industries, Prior Lake, Minn., has applied this concept to vise jaws, developing its Carvesmart quick-change vise jaw system to speed and simplify set-ups for production and tool-room vises.

With conventional vises, vise jaws attach to the face of master jaws via cap screws. Instead, the Carvesmart system uses master jaws with a female dovetail profile that accept vise jaws with a male dovetail profile. With this system, the jaws can be front-loaded or slid into the side of the master jaws, and are secured via clamping elements accessible at the top of the

master jaws that provide downward pressure to keep the jaws in place.

The video above demonstrates the front- and side-loading jaw change-over processes. To remove existing jaws, an operator uses a T-wrench to loosen (not remove) three channeled clamping elements in the top of each master jaw. Because the clamping elements are located at the top of the master jaws, it is not necessary to open the vise as might be required to access cap screws in a conventional vise configuration. The operator then removes the jaws from the front of the master jaws or slides them out of the side, reversing the process to install new jaws.

The company offers dovetailed aluminum soft-jaw extrusions that shops can saw to whatever length an application requires, and says this can be half the price of a commercially made jaw or one a shop would make in-house. It says this lower cost means jaws can now be perishable/recyclable items. Shops will no longer need to store jaws when a job is complete and then take time to find, assemble, indicate and offset the machine control if the job returns. Instead, they can simply install fresh jaw blanks and cut the female workpiece form prior to a new production run. Because the Carvesmart system uses no traditional cap screws, the jaws offer a larger machinable clamping area so bigger parts can be held more deeply within the jaws, and therefore more securely in the vise.

Dovetailed jaw blanks are available in a few different sizes. Extruded aluminum jaw blanks are available in widths of 0.75 by 2, 1 by 2.25 and 2 by 3 inches, and lengths of 6, 31 and 94 inches. In addition, 6-inch-long hardened jaws are available as are 6-inch- and 31-inch-long 1018 steel jaws and knife-edge jaws.

The company's aluminum 20000 master jaw set is machined flat and perpendicular to ± 0.002 inch, is hard-coat anodized, and uses pressed, stainless steel clamp screw inserts. This set is well-suited for carved jaw production and knife-edged jaw workholding. The 10000 steel set is ground flat and perpendicular to ± 0.0002 inch and is well-suited for tool-room work using hard jaws or working above the top of the vise.

Click Image to Enlarge



The video above at short.mmsonline.com/carves demonstrates the front- and side-loading jaw change-over processes for this quick-change dovetail vise jaw system.



Aluminum dovetailed extrusions enable shops to create long or short soft jaws to best match the application.



Bellatex Industries says the cost of the short jaws shown here is only \$0.62.



CARVESMART™

Quick Change Vise Jaw System by Bellatex Industries

"From Large to Small we Hold Them All"

The Pro and Cons of **CARVESMART™** vs. Cap Screwed Vise Jaws

CARVESMART™ dovetailed jaws are changed from the top. Differential screws and three channeled clamping elements permit front or side jaw loading.

CARVESMART™ soft jaws are fully machineable. This allows a narrower jaw to hold the same part deeper in a vise for better performance and less jaw lift. Or small jaws holding two parts in each opening.

CARVESMART™ jaws locate on a fixed easy to clean dovetail. Locating features can be added for reuse.

CARVESMART™ differential screws and channeled clamps pull the jaw downward onto the dovetail.

CARVESMART™ extruded aluminum soft jaws require only a saw cut for a jaw of any length 1" to 94".

Carving new jaws each setup, makes the jaw's features exactly like the original setup. **CARVESMART™** is less expensive, much faster and more accurate than used jaws, indicators and offsets.

Vises must be cranked opened to access face mounted cap screwed jaws. Then cranked closed. This is more complicated on many hydraulic vises.

Face mounting cap screws are located in the middle of a vise's sweet spot. They reduce the best machinable clamping zone in many carved jaw applications. Often forcing workholding above the centerline inducing lift.

Cap screwed jaws locate and ride on the inconsistent way's of a vise.

Cap Screw held jaws can lift the jaw when tightened and often requires a hammer blow to seat.

Cap screw held soft jaws are often made in house.
"Make parts not jaws."

Reusing carved jaws often takes a shop's best setup person to find, install, locate and offset the control for each jaw, getting inconsistent results setup to setup.