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My Vises

by Hardie Swage (aka Ike Bay, President of The Fort Vancouver Trades Guild)

As my skills and knowledge grow there seems to be a compelling desire to revisit old projects and do them again in a better manner. So adding a new leg vise to my shop gave reason to revisit the others for an upgrade.

My vises are mounted to benches and the benches are nailed to the wall. The two main vises are elbow-high for general cold work, like filing, but I have done a fair amount of hot work on them as well. The problem with hot work is that I often work from an uncomfortable position; with my elbows up and out, I take on the demeanor of a large awkward bird trying to take flight. For years I have wanted to add a *low* vise to my setup.

For hot work and other applications, the *low* vise is 3" or 4" higher than my anvil and lets me get on top of anything I am trying to do. The bench it is mounted on is also lower. Planishing ladle bowls with the planishing stake in the low vise is a vast improvement. How do I know? My arms, back and shoulders tell me so! I cleaned up several old vises as I considered candidates for the *low* vise. Once a selection was made, it was time to correct as many faults as possible before installation. These tips are a culmination of my study and reconditioning of post vises over the last few months, with advice from others.

My leg vises have a bracket that is bolted to the bench that holds the end of the long leg. In a standard installation I position the vise and then build the foot bracket to meet the needs of the installation. I move the end of the long leg in and out until the jaw face is vertical (90°) to the bench. Clamp a straight bar section vertically in the vise for a sighting aid. The leg end is moved left/right until the jaw top is parallel to the bench. These two *settings* tell me where the hole should go on my leg bracket. The *low* vise has a half-round bracket that pinches the vise leg to the bench leg. Some day one of your grandkids will buy this vise and wonder how it got all bent up, they may never understand that it was done deliberately. I buried the leg in my gravel floor. Cutting the leg shorter limits the vise's use in the future.

The vise must be solid. The long leg can be *boxed* into the bench for added support. Two-by material on both sides, butted up close and tight, does wonders. It also widens your bench by 1.5". Benches have even been notched to give the same effect. A vise that moves or wobbles is a deterrent to good work.

Suggested Reading

The Blacksmith's Cookbook, by Whitaker, pages 19, 20, 39.

Restoration of Leg Vises, a four part series by Melchor and Ross, *Anvil Magazine*, Jul, Aug, Sep, Oct, 2001.

Ike sent us this article which appeared in ABANA's Fall 2006 Hammer's Blow. It was good of him to write all this down. For membership information, go to www.abana.org. ~ Ed.

PROBLEM	SOLUTIONS
One jaw lower (A)	Small joint bolt has been substituted and needs to be replaced. Joint bolt needs to be a snug fit and screwed down fairly tight.
One jaw lower (B)	Leg between the jaw and joint is bent. Multi-ton press works wonders and does not take the temper from the hard jaws. Definitely a cold work job. Consider both legs as potential candidates for this treatment. Hot adjustment may add more problems than it solves. ***Adjustment by grinder*** is to be avoided if at all possible.
Jaws misaligned left to right	Take a dull red heat on short leg just above joint area. Bolt in place and manually pull to the side until everything is aligned properly. You will be amazed at the light amount of force that is needed moves the jaws.

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Retention clamp (collar) not a snug fit (A) * View from the side at eye level and check the slots for matching alignment. * View from the end with one wedge in place to check alignment on that plane. **Note:** One of mine had each slot dropping in the opposite direction when viewed from the side. This had caused a prior owner to use very thin wedges as compensation.	Remember that most of these are wrought iron and subject to breakage. Sharp inside corners are a danger. Using the long leg of the vise for a form and mashing everything down has to be done with care and caution. If the vise leg has sharp square corners, round them with a file. If slots for the wedges are not aligned on the same plane, adjust clamp while hot using hammer and anvil. This may lead you to making new wedges. When everything fits well, mark the collar and wedges with a center punch so pieces come together the same way every time. The collar needs to be placed with same side up each time, and the reference mark tells you how.
Poor clamp wedges (B)	They need to fill most of the slot. Often you will find them too thin as an accommodation to another problem that was not really addressed. Remember that the rear wedge has ears and pulls the clamp into a snug fit to the mounting bracket. The inside edges of the ears have a slight taper. The clamp slot edges are relieved to accommodate this pulling-in action.
Bar on turn screw bent	Again these may be wrought iron and it is not hard to bend them. Straighten in a vise rather than beating with a hammer. Also a reason to have more than one vise in your shop. Place hot handle horizontally in vise and tighten. Rotate handle and squeeze again, repeat until straight. Reheat and work from other side to get whole handle straight. Best done with a buddy to help! Suggestion: avoid *hammer tightening* when vise is in use.
Leg below joint bent	Straighten in vise as above. We bent the *low* vise leg 90° in the vise; a two-person job but very easily done. One person held the work and the other did the vise tightening.
Screw box not smooth or sticks	Clean thoroughly and apply very light oil. Work back and forth to locate any tight spots. Work over screw threads with file to do a *light* dressing, if necessary.
Poor spring pressure on short leg	If there is no binding in the joint, you may need to bend the spring to give greater tension. Work above red and air cool. No heat-treating necessary. Spring end should have a "foot" with wings on both sides to keep the spring centered on the vise leg. If you need to make a new spring, start with a section of car/ light truck spring and forge as necessary.
Mounting plate is warped, more of a problem with the three-hole cast variety.	Some are cast and adjustment while hot is a risk. We used washers between the plate and bench top as adjustments to fill the gaps and this helped everything sit snug when the bolts were tightened and left the vise level and true.
Vise does not grip tightly.	Vises of this type grip best in the center of the jaws. Jaws tend to grip in a taper when the object is gripped on the outer jaw. Take a dull red heat on short leg just above joint area; closing of jaws with screw box will bring jaws into parallel. Frances Whitaker talks about accessory vise jaws and spacers in his *Blacksmith's Cookbook,* (pages 19 and 20). Grinding is a last resort, to be avoided whenever possible.
Everything works smoothly and well. It's time to mount on the bench.	Take your time and consider options before you act. To mount a leg vise, I like to use long boards or bars clamped in the vise to let me sight things out. Are the vise jaws parallel to the bench? Is the top line of the jaws level? Is a straight bar clamped vertically in the vise tipping to the front or back? Use a level or eyeball to check. Adjust your installation to correct these problems. Your jaw tops are probably not perfectly flat so this is not a dead on accurate presentation. Just get it as close as possible. If you use a vise stand, most of this still applies. ♣