Introduction

The HD series (high density) vise comes in two models, manual and hydraulic, and two different lengths, short and long versions. Three different jaw kit products are available for use on all four base models. The aluminum and ductile iron kits come in two different heights and a hard jaw kit, which utilizes Kurt’s standard jaw plates. By having this broad range of options available Kurt hopes to meet many of your working holding needs. All our products are backed by Kurt's “Iron Clad” lifetime warranty against material and workmanship defects giving you the end user peace of mind. However, should the need ever arise contact us at 1 (800) 328-2565 or e-mail workholding@kurt.com.

Vise Installation Instructions

Caution: Do not attempt to lift the vise by attaching to any of the jaws or injury may result. Always attach lifting device to the vise base frame.

1) Position vise on your machine table, pallet or tombstone using the .625 or 16 MM (.6299") locating holes found on the bottom of the vise. We recommend using the holes that are the farthest apart for better accuracy.

2) Bolt in place using strap clamps placed on the clamping ledge as indicated by “Clamp Here” sticker or by bolting directly through the vise body. When bolting through the body, the stationary jaw must be removed to gain access to those holes. On the “Long” versions, the outboard holes have plugs to keep debris out and must be removed if you wish to use those holes as well. Replace plugs after bolts are secured. Note some of the clamp holes are at inch locations and some are at metric. For exact hole locations consult your catalog or go to our website at www.kurtworkholding.com and click on Workholding Products.

3) After vise is mounted in place, add the vise jaws to the base assembly. See jaw installation instructions that came with the jaw kit. If a hard jaw kit “J style” was installed, tram the stationary jaw for straightness prior to using. If it exceeds .0006” in six inches, remove stationary jaw and disassemble the 10mm bolt, the tapered top clamp and .750 dia. split sleeve and clean with solvent and a clean cloth. Do Not apply grease or oil to these components. Re-assemble and retest. This should not be necessary when using the carvable type unless a high degree of accuracy is required and you are not re-cutting the jaw contour.
**Preload Adjustment**

Both the manual and hydraulic, short and long versions have clamping preload features. Preload enables you to close the movable jaw on one station and hold a part in place with spring pressure while the other is loaded and clamped. This especially helpful when the vise is used in a vertical position.

Preload on the **HDM6** (manual-short) is best obtained by clamping parts in both stations. Rotate the preload adjustment screw until it makes contact with the front nut and back off until desired distance is achieved. This distance is best determined by opening and closing the jaws visually observing the distance the front movable jaw travels until stops and the rear jaw starts to move.

![Diagram 1](image1)

Preload on the **HDHM6** (hydraulic-short) is not adjustable but rather has a maximum fixed amount of .125” in each station. To obtain preload on this model the jaws must be carved in such a way as to still have spring pressure on the part when the internal hydraulic cylinder is in the open position. This is best done by placing two .187/.219” thick spacers at the outside edges of both stations and closing the vise hydraulically. This will provide 1/16 to 3/32 spring preload on each station. Mill desired profile into the jaws and open and remove spacers. To load parts into the part profile you must pull back on the movable jaw as each station is loaded.

![Diagram 2](image2)
Caution: Different height/weight jaws require different springs in the front and rear nuts. These springs are accessed by removing the M5 screw located on the top of each nut and pulling out the .561 diameter double angle plunger. For the standard height 1.73” high jaws a 19 lb. spring, item 37, is required and comes standard with the vise base and also works for the 2.4” high aluminum jaws. For the 2.4” high ductile iron jaws a 26.5 lb. spring, item 38, is required and is available upon request.

Preload on the HDHLM6 (hydraulic-long) is accomplished in the same fashion except the part width must be added into the .187/.219 dimension to obtain proper preload.

Preload on the HDHLM6 (hydraulic-long) with the “J” style, factory hard jaw set, is accomplished by placing parts in the front and rear station. Begin to close the vise, rear jaw is only one moving, until it clamps the rear part. Front jaw will now begin closing and close until front jaw is approximately .030 from the part. Lift the part out and slowly continue closing until part will no longer slip between the stationary and movable jaw. Pull front movable jaw back, spring loaded, with one hand and drop the part in with the other. It should now be held in place by spring pressure. Rotate handle ½ turn counter clockwise to allow rear movable to move away from part to allow the spring preload feature to operate. If more or less preload is desired, increase or decrease on the ½ turn amount.

Note: There will always be spring pressure preload on the front station and the movable jaw will have to be pulled back by hand to get parts in and out. The rear station is optional it can be set with preload or without if desired.

Preload on the HDLM6 (manual-long) is accomplished by adjusting the threaded preload ring found in the holding block. The preload amount is equal to .156 at its maximum to nearly zero if you wish. The threaded ring can be rotated in 180 degree increments to obtain desired amount. First loosen the set screw found on top of the holding block and then rotate the threaded ring, using a two prong spanner wrench, until one of the two notches on the ring align with the set screw. The farther the threaded ring is inside the holding block the less preload amount will be in play when the jaws are opened.

Preload is reversible on the manual long model meaning rear station can be preloaded to grasp the part, with spring pressure, first. If you wish to reverse the preload from rear station to front station first, place a .500 thick spacer in with the rear part and close the jaws. This process will readjust the holding block to a new location. Remove the spacer and the vise should be ready to go.
Diagram 3

Caution: Remember when using the preload feature on any of these vises that parts are held by spring pressure only until the vise is closed tight with the handle or by activating the hydraulic cylinder.

Important Reminder: Preload requires special attention when using the vise in a vertical position. Always have the top station preloaded first so the weight of the part is resting on the stationary jaw and not working against the springs. The order of loading the vise should be top station first, bottom second. Unloading should be bottom first and then the top. Do not have the preload set so small that only a small amount of rotation of the handle will release the bottom part then the top. Injury may result from a part dropping from the top station unexpectedly. Remember that as an end user you are responsible for safety issues.

Disassembly

Occasionally it may be necessary to disassemble the Nut/Screw assembly from the vise body to perform routine maintenance.

1) On the HDM6 (manual-short) model, start by removing the stationary jaw first and then the movable jaws.
2) Using the vise handle, rotate vise screw to close/ move nuts toward each other until they touch. Remove preload adjustment screw out of the front plate, see diagram 1.
3) By placing one hand on top of the rear nut, push toward the rear to compress the spring in that nut. When the internal hex end diameter on the screw has cleared the front plate, lift that plate out of the vise body slot. The nut/ screw assembly can now be removed from the body.

1) On the HDHM6 (hydraulic-short) model, start by removing the jaws as well and the hydraulic port fitting from the end of the vice screw.
2) Lift the rear end plate, one without a hole, from the vise body and slide nut/ screw assembly toward the rear until the screw shaft clears the front plate.
3) Remove the front plate and slide the assembly by pulling on the front nut and supporting the rear with the other hand. The rear nut is attached to the front only by a hook device so beware it can drop off once the assembly clears the body.
1) On the **HDLM6** (manual-long) model, start by removing the M10 button head cap screw located under the holding block and threaded into the vise body. See diagram 3.

2) Remove rear station movable jaw. Place a 3.25 thick spacer in the front station and start closing the vise and this will drive the holding block out of the vise body.

3) Once the holding block is clear of the body, reverse the screw rotation so the spacer can be removed. Remove the stationary and front movable jaws and the nut/ screw assembly can now be slid out of the vise.

1) On the **HDHLM6** (hydraulic-long) model, start by removing the rear movable jaw and rotating the screw clockwise to close the vise. Remove the button head cap screw and “L” shaped bracket located by the internal hex of the screw.

2) At this point, remove the stationary and front movable jaws. Place a 4 3/4” long x 3/4” wide x 3/16” thick piece of stock between the rear nut and the positive stop on the machined nut rail support surface found on the inside floor of the body.

3) Rotate the screw counter clockwise of open the vise and this will push the front nut out of the vise body.

**Reassembly**

To reassemble nut/ screw assembly back into the body follow the instructions below:

1) On the **HDM6** (manual-short) model, using the vise handle, rotate the screw until the nuts touch one another. Place the .970 dia. spring into the rear nut.

2) Slip the rear end plate, has no hole, into the body. Slide the nut/ screw assembly into the body with rear nut going first.

3) By placing one hand on top of the rear nut, push toward the rear to compress the spring. With the other hand slip the front end plate into the vise body and allow the screw hex end to come thru the plate. Install the preload screw, see diagram 1, and return the nuts to full open position and reinstall jaws.

1) On the **HDHM6** (hydraulic-short) model, hook the rear nut onto the front nut and with both hands supporting the nuts, slide the assembly into the vise body.

2) Install the front end plate, one with hole in it for screw shaft, and slide the nut/ screw assembly back toward you so screw shaft comes thru the end plate. Install the rear plate.

3) Install the movable jaws onto the nuts followed by the stationary jaw.

1) On the **HDLM6** (manual-long) model, start by double checking the nut timing position before installing the nut/ screw assembly into the body. See diagram 4.

2) Slide nut/ screw assembly, rear nut first, into the vise body up to the holding block. See diagram 3 for holding block identification. Install stationary and rear movable jaws. Place a 3.25 spacer in the rear station and start closing, clockwise rotation, the vise. You may have to help get the friction clamp, rectangle piece with tapered ends, started into the body by using a pair of pliers to help compress the spring material.
3) Once the holding block is inside the body, reinstall the M10 button head cap screw in the end of the body. Install front movable jaw and vise is now ready to go.

Diagram 4
1) On the HDHL M6 (hydraulic-long) model, start by double checking the nut timing position before installing the nut/screw assembly into the vise body. See diagram 4.
2) Slide the nut/screw assembly into the vise body up to the friction shoes on the front nut. Place the pull bar that came with the vise into the counter bored holes as shown in diagram 5 and start closing, rotate screw clockwise, the vise.
3) Once the friction shoes are inside the vise body continue closing until there is room to replace the front nut stop and button head cap screw. Ref. item 18 & 19.
4) Open vise to free up pull bar and remove it. Remount jaws and vise is now ready to for use.

Diagram 5

Kurt APD50-112 Hydraulic Intensifier Supply Line Connection Instructions
1) Remove plastic caps from pressure and release ports on Hydraulic Intensifier. Install 90 fittings.
2) Remove plastic caps from pressure and release ports on hand or foot valve. Install straight fitting.
3) Install a SAE 4 straight fitting into the 7/16-20 thread found on one end of vise screw.
4) Connect air hose from Hydraulic Intensifier pressure port to Hand or Foot Valve pressure port. See diagram 6.
5) Connect air hose from Hydraulic Intensifier release port to Hand or Foot Valve release port. See diagram 6.
6) Connect high-pressure hydraulic hose (shiny black hose) to nose of Hydraulic Intensifier and to fitting in end on the vise screw.
7) Add hydraulic oil to reservoir (8 ounce bottle supplied).
8) Connect shop air to inlet port of Hand or Foot Valve.
9) A filter-lubricator-regulator (FLR) combination is recommended to insure clear air coming into the unit. See clamping force chart for air pressure required to attain desired clamping force.
10) Apply air pressure (80 psi max.) to system. Loosen fitting on vise screw end and bleed air out of the line. Tighten fitting and release air pressure.
11) Repeat step 10 until all air is purged from the system. Add oil to reservoir as needed. Note: Always mount the intensifier higher than the vise to ensure the hydraulic system stays purged of air during operation. System is now ready for use.

Diagram 6