



HD6 Series Manual & Hydraulic Base Assembly

HDM6 & HDHM6 (SHORT)

HDL(M)6 & HDHL(M)6 (LONG)

(English and Metric)

Operating Instructions Manual



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CAUTION:

Is used when your action or lack of action may cause serious injury.

Vise Data

Use this to fill out information about your vise for quick reference.

Purchase Date: _____ - _____ - _____

Purchase Order: _____

Purchased From: _____

Delivery Date: _____

Serial No.: _____

Note:

Make sure to register your warranty online at kurtworkholding.com

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 877-226-7823 or e-mail workholding@kurt.com.

Clamping Force Lbs.

TORQUE FT.-Lbs	HDL(M)6	Hydraulic PSI	HDHL(M)6
10	1540	500	875
20	2520	1000	1600
30	3350	1500	2330
40	4310	2000	3130
50	5750	2500	3950
60	6860	3000	5475
70	7460	3500	6350
-	-	4000	6350
-	-	4500	7100

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 web site at www.kurtworkholding.com and click on Workholding Products.

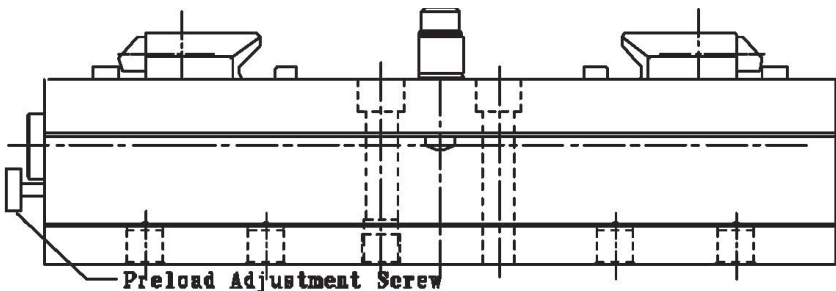
3. After vise is mounted in place, add the vise jaws to the base assembly. See jaw installation instructions that came with the jaw kit. If a hard jaw kit "J style" was installed, tram the stationary jaw for straightness prior to using. If it exceeds .0006" in six inches, remove stationary jaw and disassemble 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 is especially helpful when the vise is used in a vertical position.

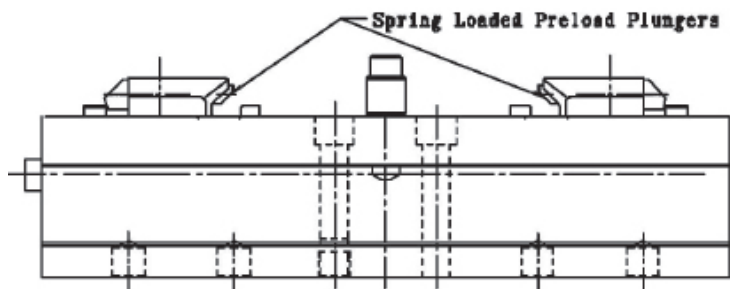
Preload on the HDM6 (manual-short) is best obtained by clamping parts in both stations. Rotate the preload adjustment screw until it makes contact with the front nut and back off until desired distance is achieved. This distance is best determined by opening and closing the jaws visually observing the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

Fig.1



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 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.

Fig.2



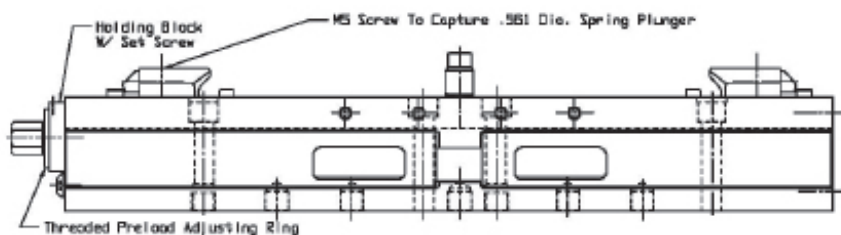
Preload on the HDHLM6 (hydraulic-long) is accomplished in the same fashion except the part width must be added into the .187/ .219 dimension to obtain proper preload.

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 $\frac{1}{2}$ 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 $\frac{1}{2}$ 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.

Fig.2



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.

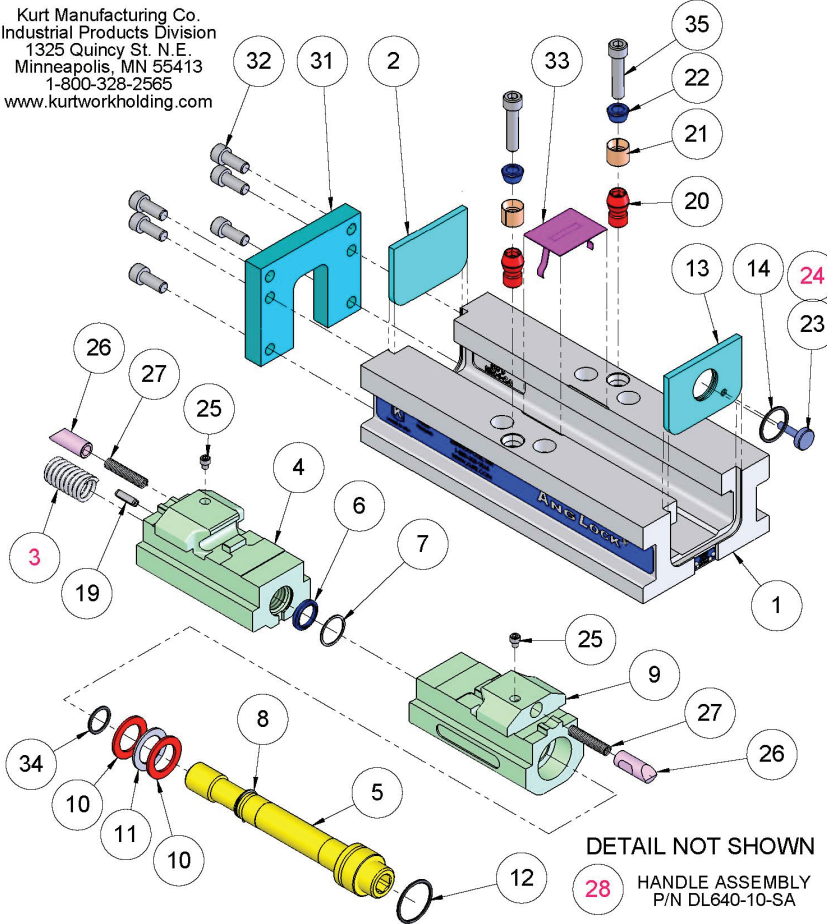
IMPORTANT REMINDER: Preload requires **SPECIAL ATTENTION** when using the vise in a vertical position. Always have the top station preloaded first so the weight of the part is resting on the stationary jaw and not working against the springs. The order of loading the vise should be top station first, 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.

HDM6 Parts List

ITEM#	PART#	DESCRIPTION	QTY.
1	HDM6-1	MACHINED BODY	1
2	HD6-253	END PLATE, REAR	1
3	HD6-327	SPRING, COMPRESSION	1
4	HDM6-3R	REAR NUT	1
5	HD6-5	SCREW	1
6	DL640-97	WIPER SEAL	1
7	DL640-217	SPIRAL RETAINING RING	1
8	HD6-147	RETAINING RING	1
9	HDM6-3F	FRONT NUT	1
10	D60-42	THRUST BEARING	2
11	D60-41	THRUST BEARING WASHER	1
12	HD6-68	O-RING #126	1
13	HDM6-333	END PLATE, FRONT, METRIC	1
14	HD6-96	O-RING, BUNA N #122	1
19	04-4428	ROLL PIN 1/4	1
20	HDM6-277A	STAT. JAW LOCATING PIN	2
21	HD6-209	CLAMP SLEEVE	2
22	HD6-35	CLAMP, STATIONARY JAW	2
23	HDM6-18	SCREW, ADJUSTING	1
24	HDM6-22	PLASTIC THUMB SCREW KNOB	1
25	26-0082	SHCS M5X.8	2
26	HDM6-142	SPRING GUIDE	2
27	HD6-267	COMPRESSION SPRING	2
28	DL640-10-SA	HANDLE, INTERNAL 5/8 HEX	1
33	HD6-248	CHIP GUARD	1
34	3600V-99	O-RING	1
35	26-0232	SHCS M10x1.5 x 45MM LG.	2

HDM6 Mechanical Drawing

Kurt Manufacturing Co.
Industrial Products Division
1325 Quincy St. N.E.
Minneapolis, MN 55413
1-800-328-2565
www.kurtworkholding.com



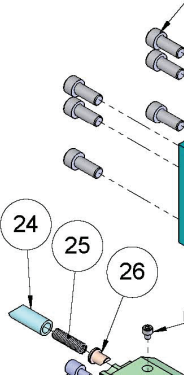
HDM6

6" DOUBLE LOCK HIGH DENSITY METRIC MANUAL VISE
(BASE MODEL)

HDHM6 Parts List

ITEM#	PART#	DESCRIPTION	QTY.
1	HDM6-1	MACHINED BODY	1
2	HD6-253	END PLATE, REAR	1
3	HDHM6-3R	REAR NUT	1
4	HDH6-5	SCREW	1
5	PM43-96	O-RING #125	1
6	HDHM6-3F	FRONT NUT	1
7	360HU-87A	SPRING, COMPRESSION	2
8	HDH6-187	SEAL	2
9	HDH6-68	O-RING #115	2
10	HDH6-96	O-RING #223	2
11	HDH6-188	SEAL	1
12	HDH6-93	PISTON/RETAINING RING	1
13	HDH6-333	END PLATE, FRONT	1
14	MLH35-173A	O-RING #114,	1
19	04-4428	ROLL PIN 1/4X7/8	1
20	HDM6-277A	STAT. JAW LOCATING PIN	2
21	HD6-209	CLAMP SLEEVE	2
22	HD6-35	CLAMP, STATIONARY JAW	2
23	26-0082	SHCS M5X.8	2
24	HDHM6-142	SPRING GUIDE	2
25	HD6-267	SPRING COMPRESSION	2
26	HDH6-334	PRE-LOAD PLUNGER	2
32	HD6-248	CHIP GUARD	1
33	26-0232	SHCS M10x1.5 x 45MM LG	2
34	HDHM6-312	CARR-LANE REST BUTTON	1
34	3600V-99	O-RING	1

HDHM6 Mechanical Drawing

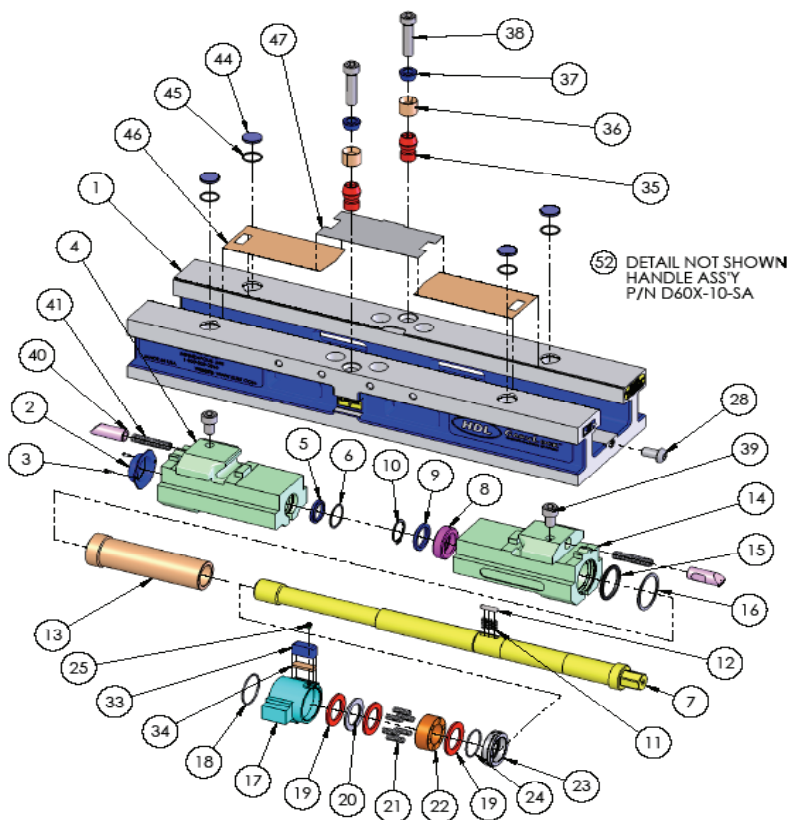


HDL(M)6 Parts List

ITEM#	PART#	DESCRIPTION	QTY.
1	HDLM6-1	BODY, MACHINED LONG	1
2	DL600-218	END CAP,	1
3	07-0230	SCREW,DRIVE,#2 X .25	2
5	DL640-97	WIPER RING SEAL	1
6	DL640-217	RETAINING RING	1
7	DL640-5B-CP	SCREW, MACHINED	1
8	DL640-61A	SPACER, THREADED	1
9	DL430-331	WIPER RING	1
10	DL640-147B	TRUARC EXT. SNAP RING	1
11	DL640-215	CLUTCH SPRING, STAINLESS	3
12	04-0030	DOWEL PIN, 3/16 DIA.	1
13	DL640-273B	CLUTCH, DL640	1
14	HDLM6-3F-CP	NUT, MACHINED FRONT	1
15	DL640-129	METRIC "O" RING	1
16	DL640-231	RETAINING RING	1
17	DLM640-212	HOLDING BLOCK, METRIC	1
18	DL640-68	O-RING,1-3/8 X 1-1/2	1
19	D60-42	WASHER, THRUST BEARING,	3
20	D60-41	THRUST BEARING,	1
21	DL640-197	SPRING,COMPRESSION	6
22	DL640-8A	COLLAR, DL640 VISE	1
23	DL640-91-P	COLLAR, THREADED,	1
24	DL640-128	O-RING,1-3/16 ID, 1-5/16	1
25	28-1122	SOCKET SET SCREW, M5 X.8	1
28	29-0218 Metric	SCREW, BHCS M10X1.5 X 12.	1
28	03-0148 English	SCREW, BHCS 3/8-16 x 1/2	1
33	DL640-225A-P	FRICTION CLAMP	1
34	DL640-311A	SPRING,PRE-LOAD	1
35	HDM6-277A	STAT. JAW LOCATING PIN (METRIC)	2
35	HD6-277A	STAT. JAW LOCATING PIN (ENGLISH)	2
36	HD6-209	CLAMP SLEEVE	2
37	HD6-35	CLAMP, STATIONARY JAW	2

38	26-0232 Metric	SHCS M10x1.5 x 45MM LG.	2
38	00-1360 English	SHCS 3/8-16 x 1-3/4 LG.	2
39	26-0082	SCREW,SHCS M5x.8 x 6MM LG	2
40	HDM6-142	SPRING GUIDE, METRIC	2
41	HD6-197	SPRING, (RED) MANUAL	2
44	3600V-191	PROTECTIVE PLUG,	2
45	DLU4-96	O-RING,#016	4
46	HDLM6-249	CHIP GUARD, MOVABLE	2
47	HDLM6-248	CHIP GUARD, STATIONARY	1
52	D60XI-10-SA	HANDLE ASSY.,LONG SOCKET	1

HDL(M)6 Mechanical Drawing

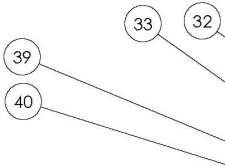


HDHL(M)6 Parts List

ITEM#	PART#	DESCRIPTION	QTY.
1	HDLM6-1	BODY, MACHINED LONG	1
2	HDH6-93	PISTON/RETAINING RING	1
3	HDH6-96	O-RING #223	2
4	HDH6-188	PARKER PARBACK	1
5	HDH6-68	O-RING #115	2
6	HDH6-187	PARKER PARBACK	2
7	360HU-87A	SPRING (COMPRESSION)	2
8	HDHLM6-3R	REAR NUT	1
9	HDHLM6-25	TIMING PIN	1
10	HDHLM6-89	PISTON SCREW	1
11	DL430-217	SPIRAL RETAINING RING	1
12	DL430-97	WIPER RING SEAL	1
13	HDHLM6-5	SCREW EXTENSION	1
14	DL430-231	SPIRAL RETAINING RING	1
15	DL430-331	WIPER RING SEAL	2
16	HDHLM6-169	SPRING	4
17	HDHLM6-3FA	FRONT NUT	1
18	HDHLM6-61	SPACER,	1
19	29-0218 Metric	SCREW, BHCS M10X1.5 X 12.	1
19	03-0148 English	SCREW, BHCS 3/8-16 X 1/2	
22	HDHLM6-225A	FRICTON CLAMP	1
23	HDHLM6-53A	COVER	1
24	HDHLM6-311A	SPRING (PRE-LOAD)	1
30	26-0232 Metric	SHCS M10x1.5 x 45MM LG.	2
30	00-1360 English	SHCS 3/8-16 X 1-3/4	2
31	HD6-35	CLAMP, STATIONARY JAW	2
32	HD6-209	CLAMP SLEEVE	2
33	HDM6-277A	STAT. JAW LOCATING PIN (METRIC)	1
33	HD6-277A	STAT. JAW LOCATING PIN (ENGLISH)	1
34	26-0082	M5X.8 SHCS	2
35	HDHM6-142	SPRING GUIDE	2
36	HD6-267	SPRING (COMPRESSION) (RATE 7.8#)	2

39	3600V-191	PROTECTIVE PLUG,	2
40	DLU4-96	O-RING,#016	4
41	HDLM6-249	CHIP GUARD, MOVABLE	2
42	HDLM6-248	CHIP GUARD, STATIONARY	1
43	HDH6-334	PRE-LOAD PLUNGER	2
48	DL640X-10-SA	EXT. HANDLE ASSY.	1
50	HDHLM6-168	PLUG	1

HDHL(M)6 Mechanical Drawing



Disassembly

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

HDM6

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.

HDHM6

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.

HDL(M)6

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.

HDHL(M)6

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:

HDM6

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.

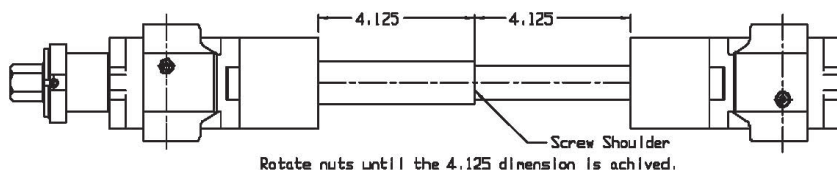
HDHM6

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.

HDL(M)6

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 Fig. 3)

Fig.2

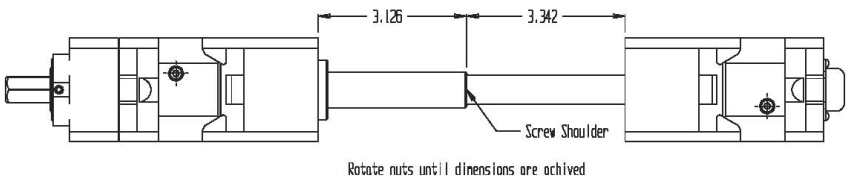


2. Slide nut/ screw assembly, rear nut first, into the vise body up to the holding block. See diagram 3 for holding block identification. Install stationary and rear movable jaws. Place a 3.25 spacer in the rear station and start closing, clockwise rotation, the vise. You may have to help get the friction 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.

HDHL(M)6

1. On the HDHLM6 (hydraulic-long) model, start by double checking the nut timing position before installing the nut/ screw assembly into the vise body. See diagram 6.

Fig.2



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 8 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. bill of materials items 18 & 19.
4. Open vise to free up pull bar and remove it. Remount jaws and vise is now ready to for use.

Hydraulic Set-up

The HDH6 Series Hydraulic vises use the KHP5000PF or KHP5000PH Hydraulic Pump.

1. Remove plastic caps from pressure and release ports on Hydraulic pump. 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 port found on one end of the vise screw.
4. A filter-regulator-lubricator (KHP5000PF-KIT see fig. 3) combination is recommended to insure clean air coming into the unit. See Clamping Force Chart for air pressure required to attain desired clamping force.
5. Connect the FRL to the input air port on the rear of the KHP5000PF/PH hydraulic pump. See fig.4 & 6.
6. Connect the hydraulic line to the hydraulic unit on the HDH6 or HDHL6 vise and then to the output side of the hydraulic pump fig.4
7. If using a hand valve connect the 3-line cluster fig.5 & 6.
8. Apply air pressure (80 PSI maximum) to system. Loosen swivel fitting at vise and bleed air. Tighten fitting. Release air pressure.
9. Repeat previous step until all air is purged
10. The KHP5000PF/PH hydraulic will come pre-filled with oil (use #13 or DTE lite if needed)
11. System is now ready for use.

NOTE: For multiple vise hook-ups, call factory for recommendations.

Fig.2

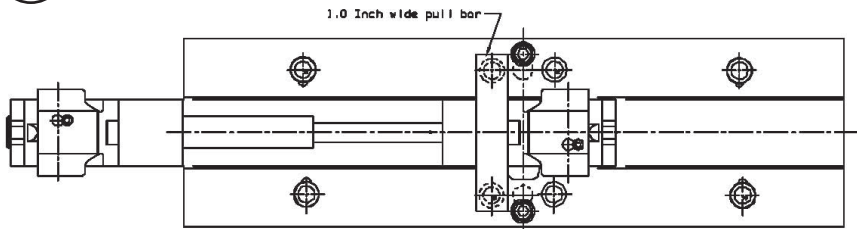


Fig.2

Typical Hydraulic vise connection

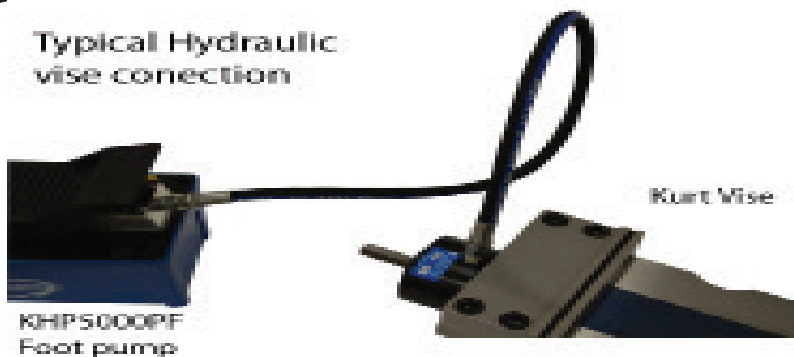
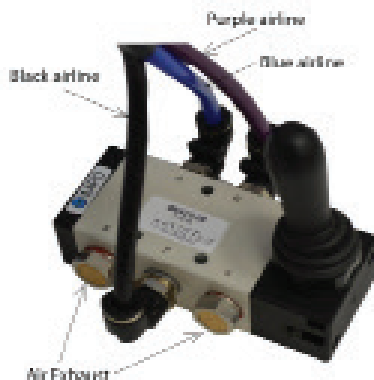


Fig.3



Main air input. Use KHP5000PF-KIT
or equivalent.

Fig.4



Hard & Soft Jaw Kits

The HD series vise has two styles of jaws available, hard and soft/carvable jaw sets.

The hard jaw "J" style utilizes ductile iron movable jaws and steel stationary jaw with hardened and ground jaw plates bolted to them

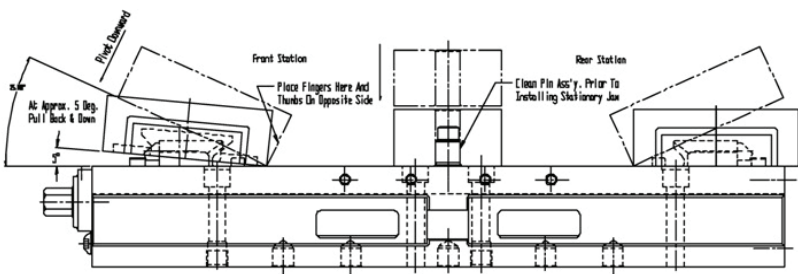
The carvable aluminum and ductile iron style come in two different heights and have two indexes available meaning features can be machined at two faces.

Mounting movable jaws to vise body.

Grasp the front movable jaw with both hands, fingers to the front and thumbs to the back, and with the jaw carve limit features pointing towards the side of the vise keeping fingers clear of the bottom surface.

Position the jaw over the front nut, handle end, on the inboard area of the vise. Position it such that the forward edge of the jaw is down on the vise bed and pivot the jaw back over the nut to approx. 5 degrees from vise bed, see diagram below. Now pull it towards you until clearing the top portion of the nut and begin a downward motion until the jaw compresses the spring loaded plunger at the rear of the nut and snaps into place.

Follow the same procedure for the rear station only instead of pulling the movable jaw toward you, you push and tip it over the rear nut until it snaps into place



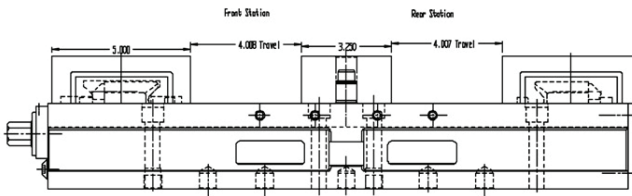
Removing movable jaws from vise body:

Grasp the front movable jaw with both hands, fingers to the front and thumbs to the back, and pivot the jaw upwards by pulling up with your thumbs. Once the jaw has cleared the spring loaded plunger it can be slid in a forward until it clears the nut.

Carving jaws on the HDM6 short version vise:

1. Back off the pre-load adjusting screw to ensure that it is not making contact with the front nut.
2. Position (2) spacers in each station locating them near the outside edges of the vise jaws. Spacer size should be approx. 1" long x ¼" high x 1/8" thick.
3. Clamp spacers in place.
4. Machine required contour into the jaws. **Caution:** Do not machine beyond the carve limit lines machined onto the movable jaws. Going beyond them may result in damage to internal components and will void the warranty.
5. Unclamp and remove spacers.
6. Reset preload adjustment screw to desired position.

Carving jaws on the HDLM6 and HDLM4 long version vise:



1. Position (2) spacers in each station locating them near the outside edges of the vise jaws. Spacer size should be approx. 1" long x ¼" high x required length to accommodate the part length.
2. Clamp spacers in place.
3. Machine required contour into the jaws. **Caution:** Do not machine beyond the carve limit lines machined onto the movable jaws. Going beyond them may result in damage to internal components and will void the warranty.
4. Unclamp and remove spacers.

Preload on the **HDHLM6** and **HDHLM4** (hydraulic-long) with the "J" style, factory hard jaw set, is accomplished by placing parts in the front and rear station. Begin closing 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.

Note:

Optional spring rates for the HD4 are not available. The standard spring that comes with the nut/screw assembly will handle the various jaw weights.

Maintenance Log/Notes:

This image shows a full page of blank handwriting practice paper. It features approximately 28 evenly spaced horizontal blue lines across the entire page, providing a guide for letter height and placement. The lines are consistent in color and thickness throughout.

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