



# HD4 Series Manual & Hydraulic Base Assembly

HDL(M)4

HDHL(M)4

Operating Instructions Manual



ENGLISH

ESPAÑOL

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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](http://kurtworkholding.com)

## Introduction

The HD4 series (high density) vise comes in four models, English, metric, manual and hydraulic, Three different jaw kit products are available for use on 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](mailto:workholding@kurt.com).

## Clamping Force Lbs.

Torque Ft-Lbs	HDLM4	Hydraulic PSI	HDHLM4
10	1040	1000	775
20	2145	1500	1450
30	3140	2000	1900
40	4040	2500	2550
50	4980	3000	3100
60	5870	3500	3700
70		4000	4200
-	-		
-	-	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.

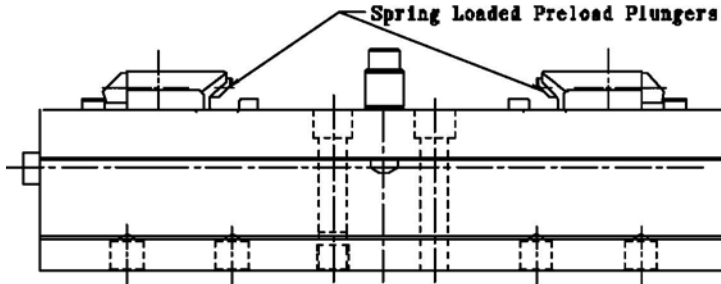
**NOTE:** Some of the clamp holes are at inch locations and some are at metric. For exact hole locations, consult your catalog or go to our web site at [www.kurtworkholding.com](http://www.kurtworkholding.com) and click on Workholding Products.

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 bolt, the tapered top clamp and 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, 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.

Fig.2



Preload on the HDLM4 (manual) 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.

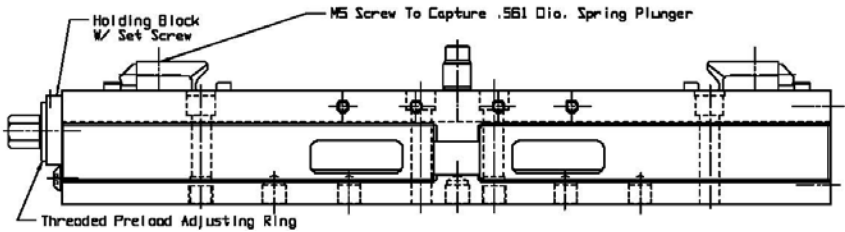
Preload is reversible on the manual model meaning rear station can be preloaded to grasp the part, with spring pressure first. If you wish to reverse the preload from rear station to front station first, place a .500 thick spacer in with the rear part and close the jaws. This process will readjust the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

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

Preload on the HDHLM4 (hydraulic) 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.

Fig.2



**CAUTION:**

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

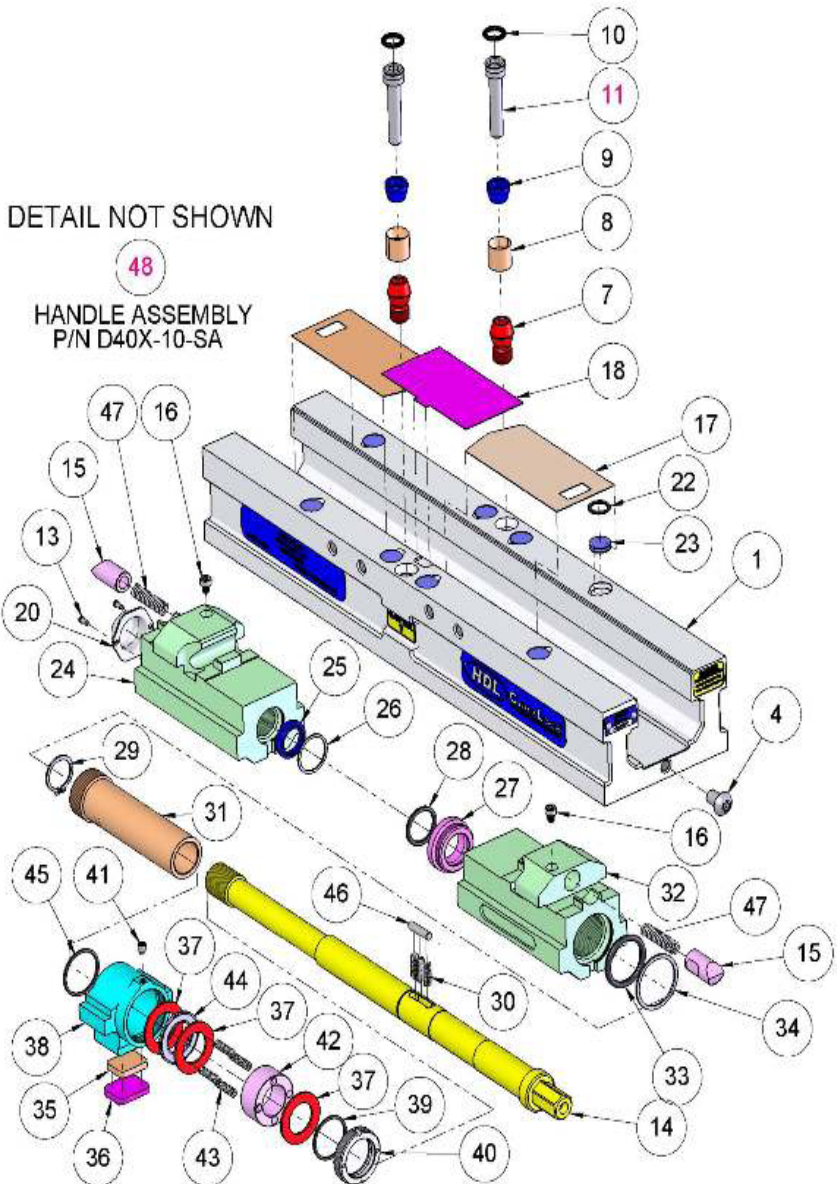
**IMPORTANT REMINDER:** Preload requires **SPECIAL ATTENTION** when using the vise in a vertical position. Always have the top station preloaded first so the weight of the part is resting on the stationary jaw and not working against the springs. The order of loading the vise should be top station first,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

# HDL4 Parts List

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	HDL4-1	BODY, MACHINED	1
4	03-0141	BHCS 5/16-18 X .50LG	1
7	HDL4-277	STAT. JAW LOCATING PIN	2
8	HDL4-209	CLAMP SLEEVE	2
9	HDL4-35	CLAMP, STATIONARY JAW	2
10	360AU-99B	O-RING, BUNA N, #110	2
11	HDL4-18	SHCS 5/16 18 X 1.5 LG (altered)	2
14	HDL4-5	SCREW	1
15	HDL4-142	SPRING GUIDE	2
16	00-0188	SHCS #8-32 X .188 LG	2
17	HDL4-249	CHIP GUARD, MOVABLE	2
18	HDL4-248	CHIP GUARD, STATIONARY	1
20	DL400-218	END CAP	1
22	MT4-96	O-RING, BUNA N, #013	8
23	HDL4-191	PLUG, PROTECTIVE	8
24	HDL4-3R	NUT, REAR	1
25	DL430-97	WIPER RING	1
26	DL430-217	SPIRAL RETAINING RING	1
27	HDL4-61	SPACER	1
28	DL430-127	O-RING	1
29	DL430-147A	RETAINING RING	1
30	DL640-215	SPRING COMPRESSION	3
31	DL430-273A	CLUTCH	1
32	HDL4-3F	NUT, FRONT	1
33	DL430-129	O-RING	1
34	DL430-231	RETAINING RING	1
35	HDL4-311	SPRING, PRE-LOAD	1
36	HDL4-225	CLAMP, FRICTION	1
37	DL400-42A	THRUST WASHER	3
38	HDL4-212	HOLDING BLOCK	1
39	DL430-128	O-RING	1
40	DL430-91	THREADED COLLAR	1
41	01-1851	SOC.SET SC(half dog) #8-32 X .25LG	1
42	DL430-8A	COLLAR	1
43	DL430-197	SPRING, COMPRESSION	4
44	D40-41	THRUST BEARING	1
45	DL430-68	O-RING	1
46	04-0030	DOWEL PIN, 3/16X3/4	1
47	HDL4-267	SPRING, COMPRESSION	2
48	D40X-10-SA	EXT HANDLE ASSY.	1
	HDL4-3-SA	MANUAL NUT/SCREW ASS'Y	1
	HDL4-KIT1	REPAIR KIT	1



# HDL4 Mechanical Drawing



## HDL4 BASE MODEL

4" DOUBLE-LOCK HIGH DENSITY LONG ENGLISH MANUAL VISE

# HDLM4 Parts List

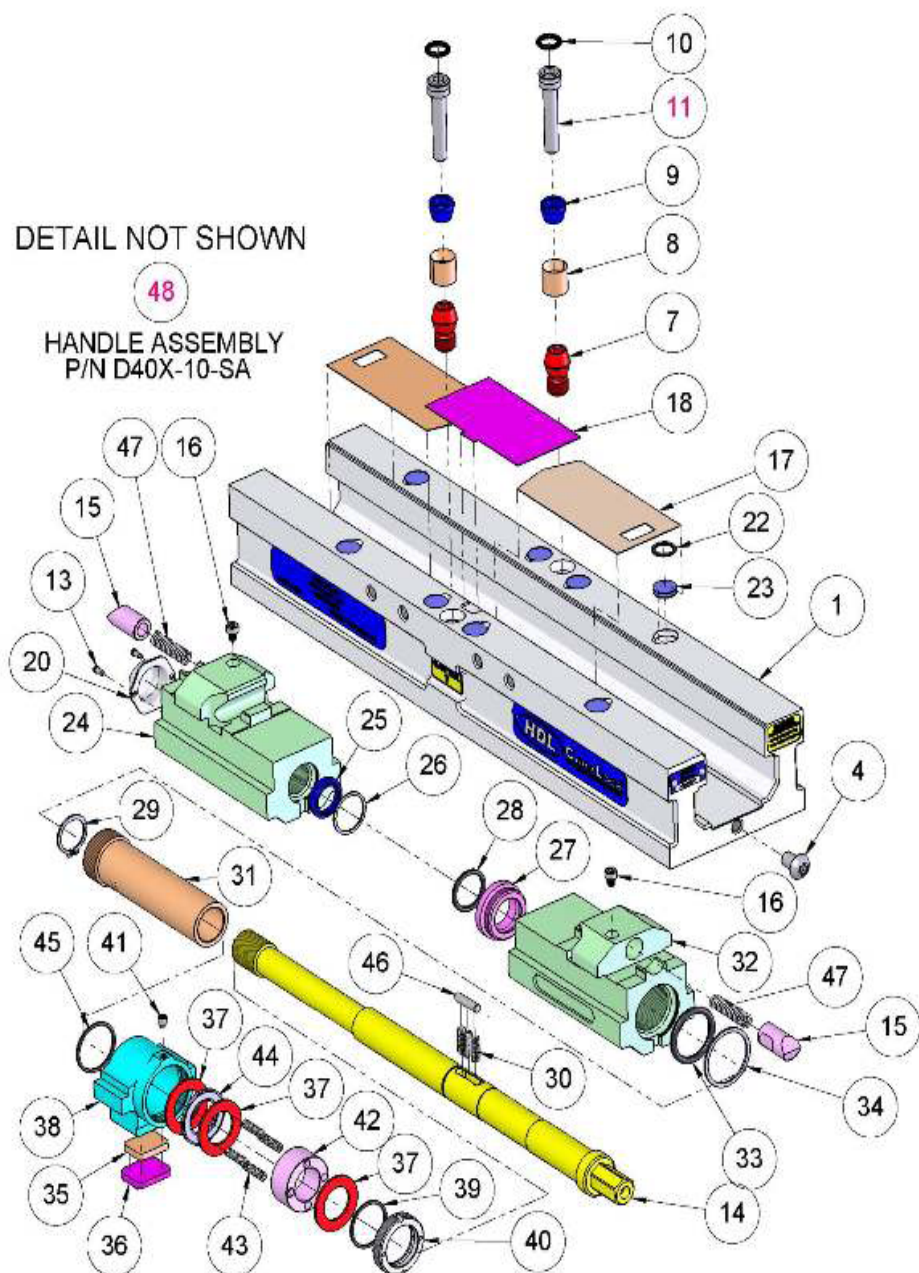
ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	HDLM4-1	BODY, MACHINED	1
4	29-0168	BHCS M8 X 1.25 X 12MM LG	1
7	HDLM4-277	STAT. JAW LOCATING PIN	2
8	HDLM4-209	CLAMP SLEEVE	2
9	HDLM4-35	CLAMP, STATIONARY JAW	2
10	360AU-99B	O-RING, BUNA N, #110	2
11	HDLM4-18	SCREW, ALT. M8x1.25 SHCS	2
14	HDLM4-5	SCREW	1
15	HDLM4-142	SPRING GUIDE	2
16	26-0050	M4X7 SHCS	2
17	HDLM4-249	CHIP GUARD, MOVABLE	2
18	HDLM4-248	CHIP GUARD, STATIONARY	1
20	DL400-218	END CAP	1
22	MT4-96	O-RING, BUNA N, #013	8
23	HDLM4-191	PLUG, PROTECTIVE	8
24	HDLM4-3R	NUT, REAR	1
25	DL430-97	WIPER RING	1
26	DL430-217	SPIRAL RETAINING RING	1
27	HDLM4-61	SPACER	1
28	DL430-127	O-RING	1
29	DL430-147A	RETAINING RING	1
30	DL640-215	SPRING COMPRESSION	3
31	DL430-273A	CLUTCH	1
32	HDLM4-3F	NUT, FRONT	1
33	DL430-129	O-RING	1
34	DL430-231	RETAINING RING	1
35	HDLM4-311	SPRING, PRE-LOAD	1
36	HDLM4-225	CLAMP, FRICTION	1
37	DL400-42A	THRUST WASHER	3
38	HDLM4-212	HOLDING BLOCK	1
39	DL430-128	O-RING	1
40	DL430-91	THREADED COLLAR	1
41	28-1094	M4X7 SOC. SET SC	1
42	DL430-8A	COLLAR	1
43	DL430-197	SPRING, COMPRESSION	4
44	D40-41	THRUST BEARING	1
45	DL430-68	O-RING	1
46	04-0030	DOWEL PIN, 3/16X3/4	1
47	HDLM4-267	SPRING, COMPRESSION	2
48	D40X-10-SA	EXT HANDLE ASSY.	1
	HDLM4-3-SA	MANUAL NUT/SCREW ASS'Y	1
	HDLM4-KIT1	REPAIR KIT	1

# HDLM4 Mechanical Drawing

DETAIL NOT SHOWN

48

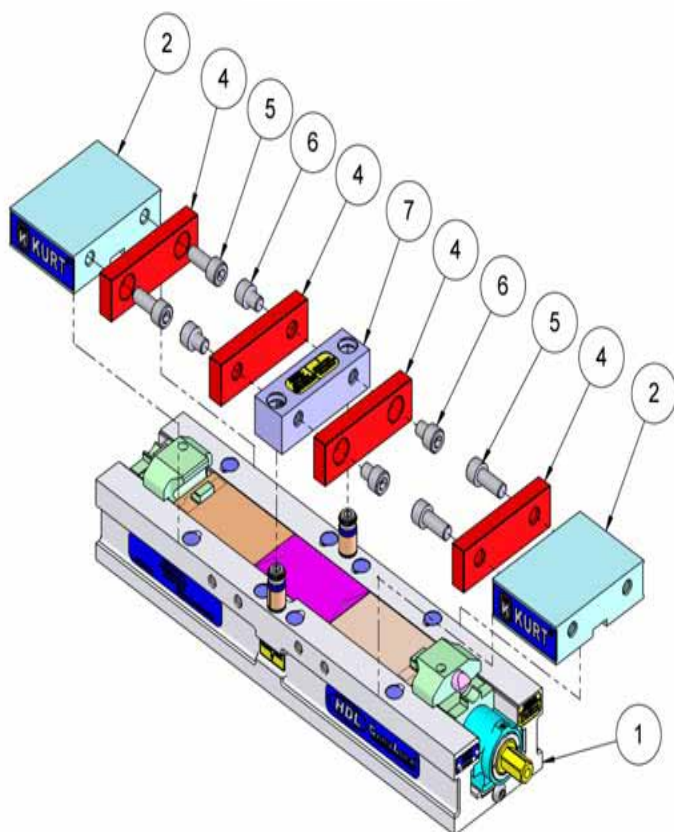
HANDLE ASSEMBLY  
P/N D40X-10-SA



## HDLM4 BASE MODEL

4" DOUBLE-LOCK HIGH DENSITY LONG METRIC MANUAL VISE

# HDL(M)4 Hard Jaw Kit



**HDLM4J**  
MANUAL VISE ASSEMBLY  
WITH  
HARD JAWS

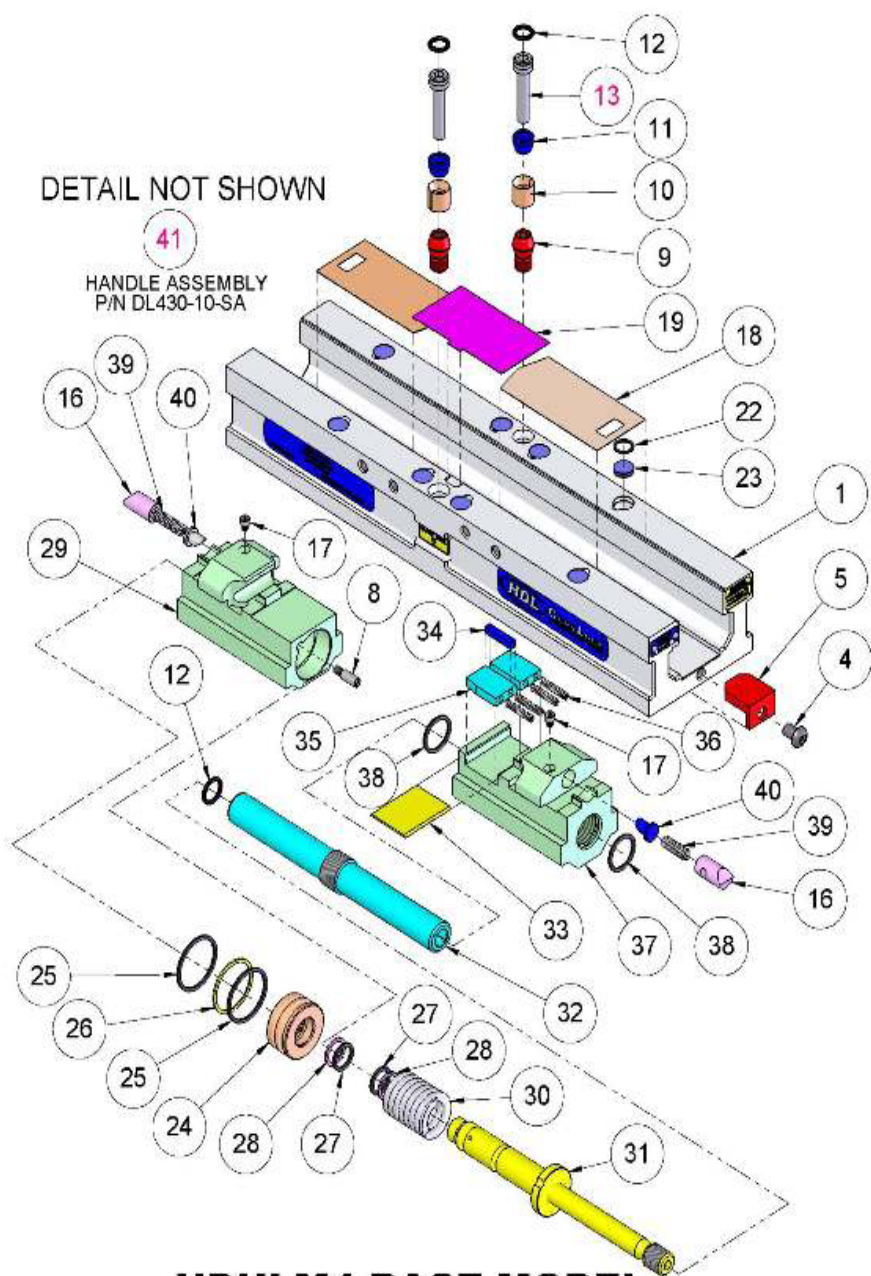


## HDHLM4 Parts List

ITEM NUMBER	PART NUMBER	DESCRIPTION	QTY.
1	HDLM4-1	BODY, MACHINED	1
4	29-0168	BHCS M8 X 1.25 X 12MM LG	1
5	HDHLM4-61	SPACER, "L" SHAPED	1
9	HDLM4-277	STAT. JAW LOCATING PIN	2
10	HDLM4-209	CLAMP SLEEVE	2
11	HDLM4-35	CLAMP, STATIONARY JAW	2
12	360AU-99B	O-RING, BUNA N, #110	3
13	HDLM4-18	SCREW, ALT. M8x1.25 SHCS	2
15	07-0230	SCREW,DRIVE,#2 X .25	2
16	HDHLM4-142	SPRING GUIDE	2
17	26-0050	M4X7	2
18	HDLM4-249	CHIP GUARD, MOVABLE	2
19	HDLM4-248	CHIP GUARD, STATIONARY	1
22	MT4-96	O-RING, BUNA N, #013	8
23	HDLM4-191	PLUG, PROTECTIVE	8
24	HDHLM4-93	PISTON, RETAINING RING	1
25	HDHLM4-96	O-RING	2
26	HDHLM4-188	PARKER PARBAK RING	1
27	HDHLM4-68	O-RING	2
28	HDHLM4-187	PARKER PARBAK RING	2
29	HDHLM4-3R	NUT, REAR	1
30	4THU-87	SPRING, COMPRESSION	1
31	HDHLM4-89	PISTON SCREW	1
32	HDHLM4-5	SCREW EXTENSION	1
33	HDHLM4-53	COVER	1
34	HDHLM4-311	SPRING,(PRELOAD) RECTANGULAR	1
35	HDHLM4-225	FRICTON CLAMP	2
36	HDHLM4-169	SPRING, COMPRESSION	4
37	HDHLM4-3F	NUT, FRONT	1
38	3600V-99	O-RING	2
39	HDHLM4-267	SPRING, COMPRESSION	2
40	HDHLM4-334	PRE-LOAD PLUNGER	2
41	DL430X-10-SA	HANDLE, EXTENDED NOSE	1
42	HDHLM4-147	RETAINING RING	1

HDHLM4-3-SA	ASSEMBLY, HYD. NUT/SCREW	1
HDHLM4-KIT1	REPAIR KIT	1

# HDHLM4 Mechanical Drawing



## HDHLM4 BASE MODEL

4" DOUBLE FLANK LOCK HIGH DENSITY LONG METRIC HYDRAULIC VISE

## Disassembly

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

1.

### **HDLM4**

1. On the HDLM4 (manual) model, start by removing the button head cap screw located under the holding block and threaded into the vise body.
2. Remove rear station movable jaw. Place a 2.875 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.

### **HDHLM4**

1. On the HDHLM4 (hydraulic) 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 3" 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



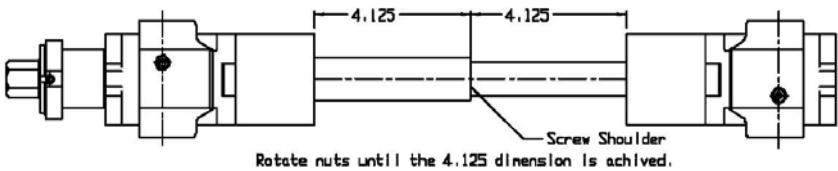
## Reassembly

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

### HDLM4

1. On the HDLM4 (manual) model, start by double checking the nut timing position before installing the nut/ screw assembly into the body. (See figure 2)

Fig.2

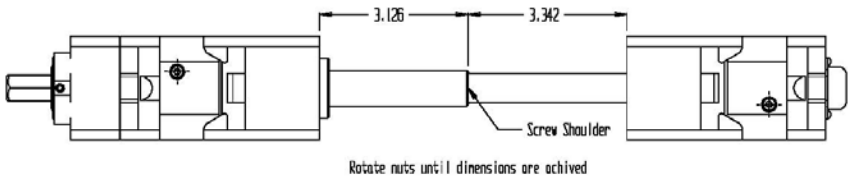


2. Slide nut/ screw assembly, rear nut first, into the vise body up to the holding block (See pg. 9 or 11) for holding block identification. Install stationary and rear movable jaws. Place a 2.875 spacer in the rear station and start closing, clockwise rotation, the vise. You may have to help get the 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.

## HDHLM4

1. On the HDHLM4 (hydraulic) model, start by double checking the nut timing position before installing the nut/ screw assembly into the vise body.

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 4 & 5.
4. Open vise to free up pull bar and remove it. Remount jaws and vise is now ready for use.



# Hydraulic Set-up

The HDH4 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 HDH4 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

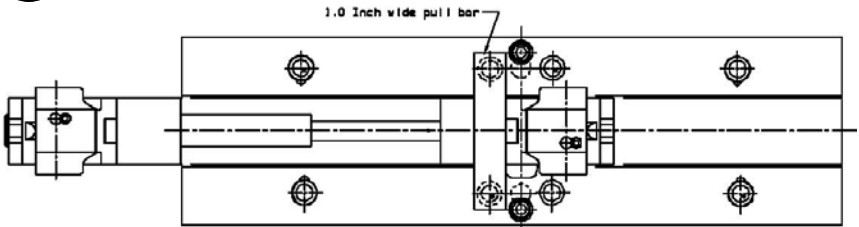


Fig.2

### Typical Hydraulic vise connection



Fig.3



Main air input. Use KHP5000PF KIT  
or equivalent.

Fig.4







## On All Kurt® AngLock® Workholding Products

All Kurt Manufacturing Company industrial workholding products and parts with the exceptions noted below, are warranted against defects in material and workmanship for the life of the product or part. (The life of the product is defined as that point in time when such item no longer functions due to normal wear and tear.) Failure to properly maintain and/or properly operate the product or part that has been worn out, abused heated ground or otherwise altered, used for a purpose other than that for which it was intended, or used in a manner inconsistent with any instructions regarding its use. The sole obligation of Kurt Manufacturing Company, Inc. (Kurt) and the purchaser's SOLE AND EXCLUSIVE REMEDY hereunder, shall be limited to the replacement or repair of any Kurt product or part (by an authorized Kurt technician) which are returned to Kurt Manufacturing Company's place of business, transportation, shipping and postal charges prepaid, and there determined by Kurt Manufacturing Company to be covered by the warranty contained herein.

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If you have any feedback or questions.**

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