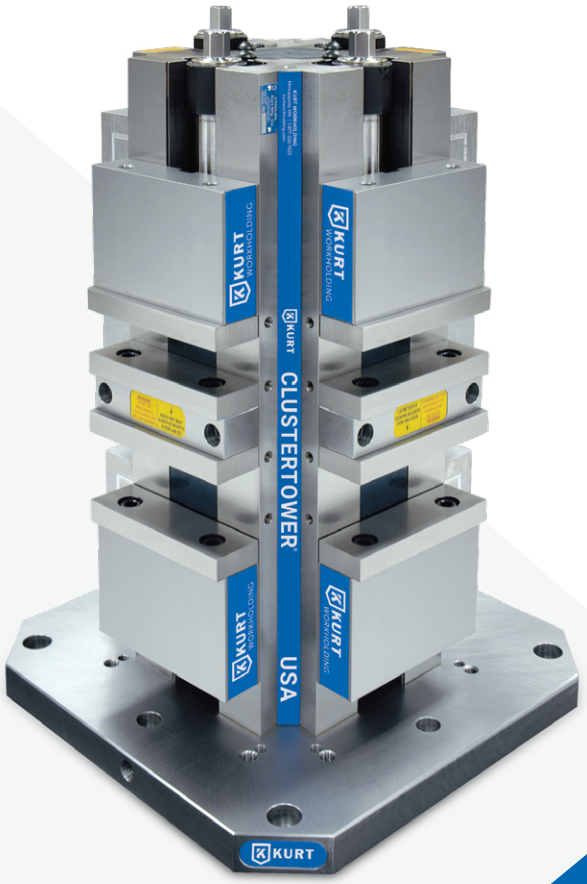
KURT WORKHOLDING

CTHDL4 MANUAL ASSEMBLY

Operating Instruction Manual
CTHDL44(3,4,5) (English) &
CTHDLM44(3,4,5) (Metric)



ENGLISH

TABLE OF CONTENTS

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

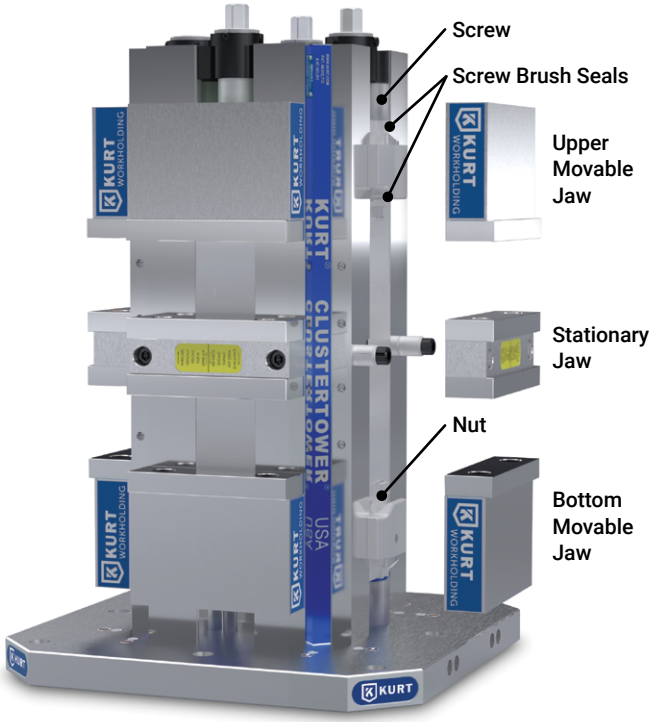
INTRODUCTION

Thank you for purchasing a Kurt CTHDL4 4-inch Cluster Tower. This is one of the best workholding towers in the industry, with outstanding accuracy and repeatability. Backed by a lifetime warranty against workmanship and material defects, this product is built to last when used and maintained properly.

The original Kurt AngLock design is incorporated on each set of jaws for precision clamping in vertical and horizontal machining centers. Kurt Cluster Towers can be used for, but are not limited to, operations like precision boring, drilling, tapping, grinding & finishing.

The patented AngLock design allows the movable jaw to apply a 1⁄2 pound of downward force with every pound of forward force, minimizing jaw lift and increasing accuracy and clamping pressure. Other features include: 80,000 psi ductile iron body, hardened bed & jaw plates, and a semi-hard steel screw.

Fig.1



SET-UP INSTRUCTIONS

Now that you have your new Kurt Vise, it's time to set-up and begin using it. You will see that your new vise comes with a Kurt swivel handle. The handle is specifically designed to provide maximum torque to your vise (clamping force provided below). Your vise should be mounted to a clean, flat surface. The bottom surface of the base must be free of any chips, dirt, or debris of any kind. The mounting surface can be honed if necessary. Clean the bottom of the vise with solvent or another cleaner if needed.

Additional clamping can be used, but may not be necessary. Please be sure to exercise good judgment when securing your vise to the mounting surface. Be sure your vise is secured and will not move when applying the machine pressure.

TORQUE/CLAMPING FORCE TABLE

CTHDL4/CTHDLM4	
TORQUE FT-LBS	**CLAMPING FORCE - LBS**
10	640
20	1,230
30	1,710
40	2,350
50	3,080
60	3,750
70	4,470
80	4,980
90	5,550

TOWER 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 two eyelet screws that are included with the assembly

1. Locate tower on machine pallet using edge locators or a center locator. Contact Kurt for optional center locators.
2. Bolt in place using English 1/2" or 5/8" English bolts or metric 12 mm/16 mm bolts (See page 16-17 for more details).
   NOTE: Some of the clamp holes are at inch locations and some are at metric. For exact hole locations, go to pages 13-17 in this manual.
3. After the tower 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 0.0006" in six inches, remove stationary jaw and disassemble the 10mm bolt, the tapered top clamp and 0.750" 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 machinable type unless a high degree of accuracy is required and you are not re-cutting the jaw contour.

OPERATING INSTRUCTIONS

For proper vise operation, insert the handle on to the hex end of the vise. Rotate clockwise to clamp and counterclockwise to unclamp your vise. This handle, combined with the correct amount of torque, will provide you with all the clamping force you will need to machine your parts.

DO NOT use any other type of pressure to open or close your vise.

The use of handle extensions, air impact wrenches, breaker bars, or hammer strikes are not recommended and will void the warranty if used. This will also cause damage to the thrust bearing and screw threads. If you need more clamping force you may require a larger vise.

One-Sided Clamping:

To properly clamp a part in your Kurt double-station vise, you should place the parts in the center of the jaws resting on the ways of the vise. Clamping only on one side or above the movable and stationary jaws can result in jaw lift or loss of accuracy. (See Fig.2 on next page)

If one-sided clamping is necessary, you MUST use a dummy part on the other side. When using parallels or step jaws, you must select a size that keeps the bottom of the clamped part at or below the top of the movable and stationary jaws.

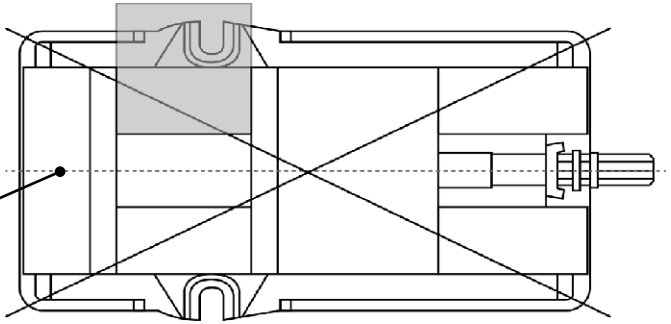
Always use jaw plates for clamping. If jaw plates are not used, damage to the mounting surface of the movable and stationary jaw will occur. This will result in reduced clamping accuracy and repeatability.

Fig.2

Sketch #2A

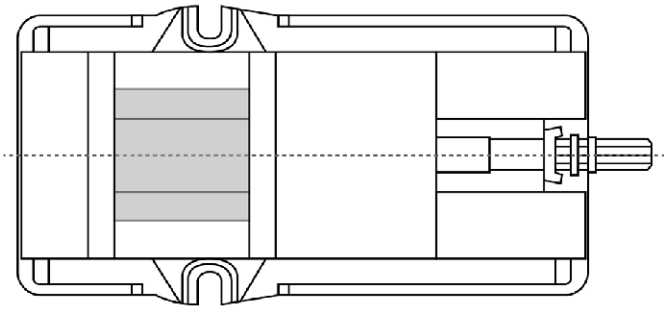
Incorrect part clamping.

Vise width centerline



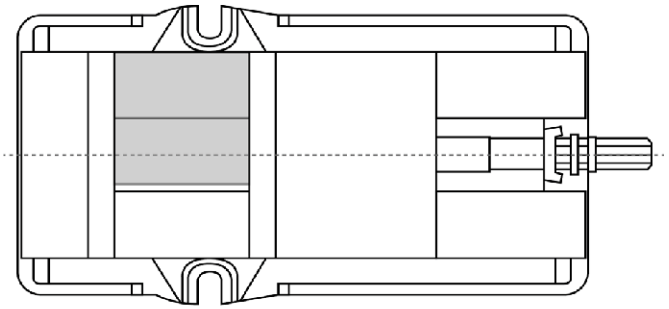
Sketch #2B

Correct part clamping



Sketch #2C

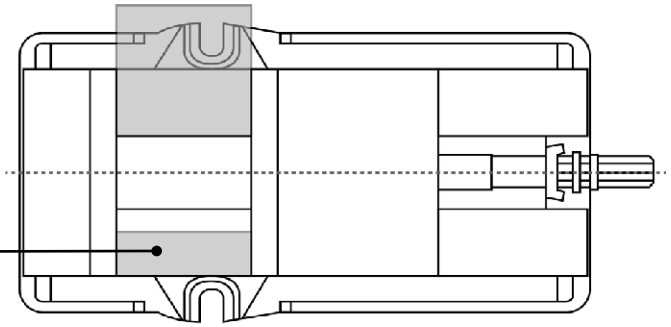
Correct part clamping



Sketch #2D

Correct part clamping

Dummy spacer

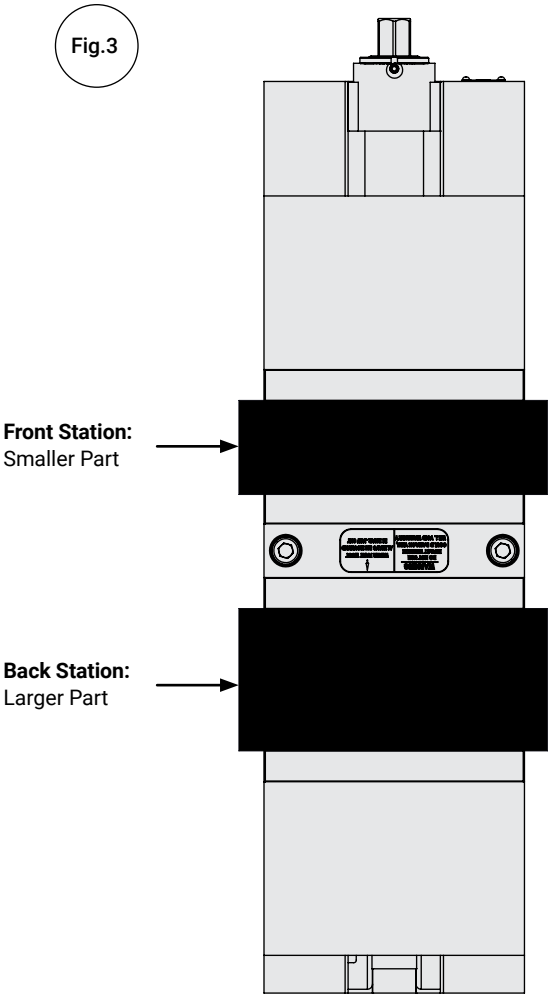


OPERATING INSTRUCTIONS

Clamping with Different Sized Parts:

If clamping parts of different sizes, place the smaller part in the front station and the larger part in the back station as shown in Fig.3 below. This will ensure the clutch system in your vise operates properly.

Fig.3

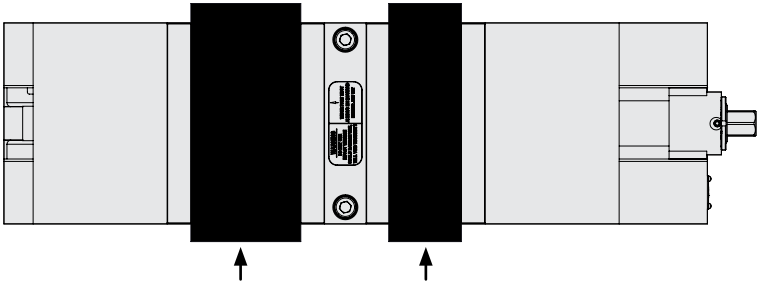


OPERATING INSTRUCTIONS

Clamping Using Only 1 Station:

If desiring to use only one side of the double-station vise, you must use a dummy block in the other station as shown in Fig.4 below.

Fig.4



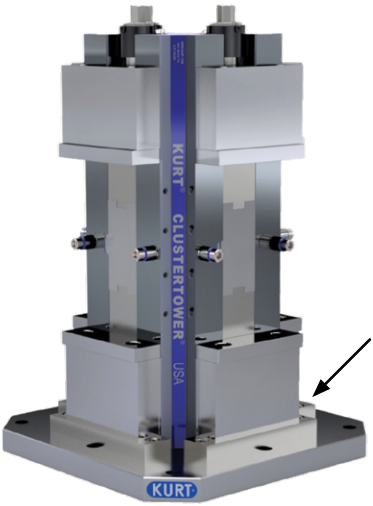
Larger Dummy Part in Back Station

Part in Front Station

Converting to a Single Station Vise:

If desiring to convert your double station vise to a single station, you will need to get a Kurt conversion kit through our website, kurtworkholding.com. This kit includes a mounting plate that bolts to the rear of the vise and holds the back jaw in place. The center stationary jaws, locating pins, and chip guards will need to be removed.

Fig.5



CTHDLM4-CONVKIT Single Station Conversion Kit compatible with CTHCL(M)4(3,4,5)J Towers

STANDARD JAW OPTIONS

Standard J-Style Hard Jaws:

The standard J-style hard jaws are made of ductile iron and are paired with Kurt standard jaw plates. For dimensional information and jaw positioning, see Fig.7 and Fig.8 on pages 11-12.

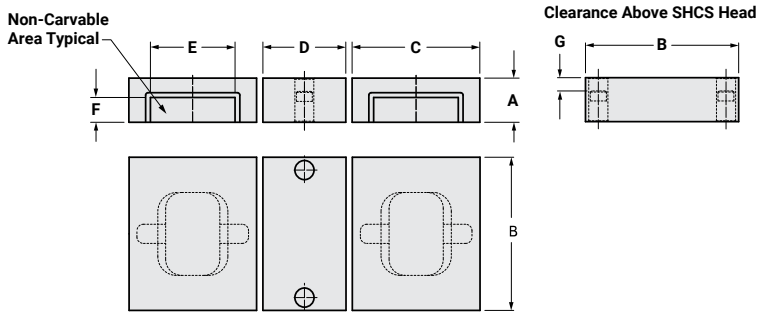
Aluminum Carvable/Machinable Jaws:

The Aluminum Carvable jaws come in two different jaw heights - 1.4" and 1.90". These jaws can be can be machined in the carvable regions of the jaw (See carvable region in Fig.6) to hold curved and contoured shaped parts. **DO NOT** cut into the non-carvable region.

Cast Carvable/Machinable Jaws:

The cast ductile iron carvable jaws have a jaw height of 1.40".

Fig.6



ALUMINUM AND CAST IRON MACHINABLE JAW KIT
DIMENSIONAL DATA FOR 6" HD & HDL VISES

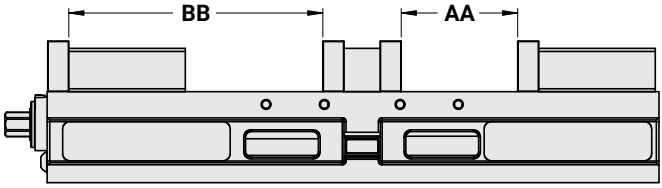
MODEL	HD4AL JAW KIT		HD4AL1.9 JAW KIT		HD4C JAW KIT	
UNITS	MM	INCH	MM	INCH	MM	INCH
A	35.560	1.400	48.260	1.900	35.560	1.400
B	101.600	4.000	101.600	4.000	101.600	4.000
C	101.600	4.000	101.600	4.000	101.600	4.000
D	63.500	2.500	63.500	2.500	63.500	2.500
E	65.075	2.562	65.075	2.562	65.075	2.562
F	20.625	0.812	20.625	0.812	20.625	0.812
G	7.722	0.304	20.422	0.804	7.722	0.304

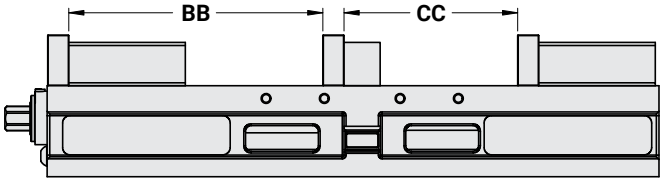
JAW POSITIONING

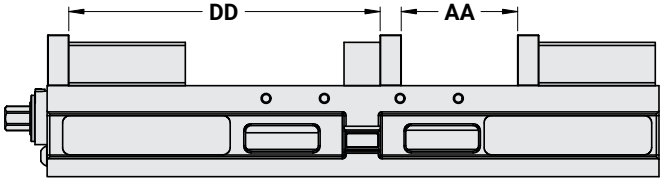
Fig.7

Note: Dimensions below are in inches unless specified.

AA	2.984
BB	6.437
CC	4.781
DD	7.687



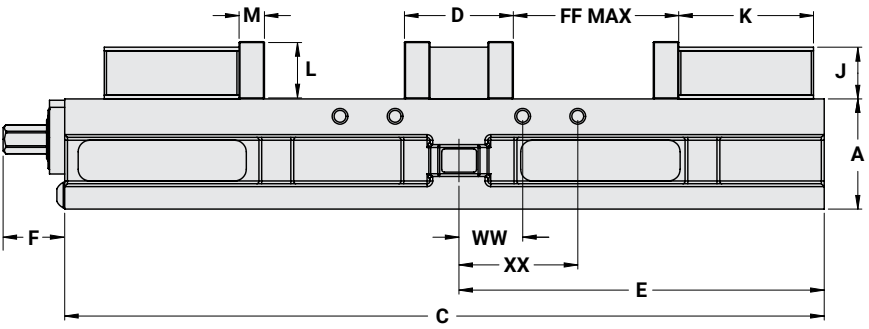




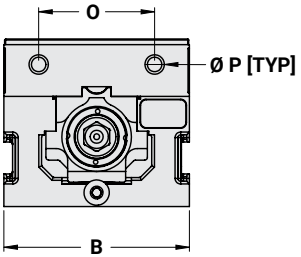
SIDE & END VIEW

Fig.8

Note: Dimensions below are in inches unless specified.



A	2.375
B	4.000
C	16.375
D	2.344
E	7.875
F	1.326
J	1.115
K	2.906
L	1.235
M	0.547
O	2.500
P	M8 x 1.25
FF Max	3.00
WW	1.375
XX	2.563



TOWER DIMENSIONS

Note: Dimensions below go with Fig.9 (page 15) and Fig.10 (page 16).

	300 MM BASE		400 MM BASE		500 MM BASE	
	MM	INCH	MM	INCH	MM	INCH
A	300	11.811	400	15.748	500	19.685
B	25.4	1	31.75	1.25	31.75	1.25
C	20	0.79	50	1.97	60	2.36
D	158.75	6.25	158.75	6.25	158.75	6.25
E	101.6	4	101.6	4	101.6	4
F	–	–	158.75	6.25	203.2	8
G	–	–	317.5	12.5	406.4	16
H	127	5	160	6.299	200	7.874
J	254	10	320	12.598	400	15.748
K	M12 SHCS	–	M16 SHCS	–	M16 SHCS	–
L	–	1/2 SHCS		1/2 SHCS	–	1/2 SHCS
M	15	0.59	18	0.709	18	0.709
N	40	1.575	–	–	–	–
O	80	3.15	–	–	–	–
P	M12 x 1.75	–	M16 x 2.0	–	M16 x 2.0	–
Q	–	–	55	2.165	55	2.165
R	–	–	110	4.33	110	4.33
S	–	–	75	2.953	75	2.953
T	–	–	150	5.906	150	5.906
U	–	–	25	0.984	25	0.984

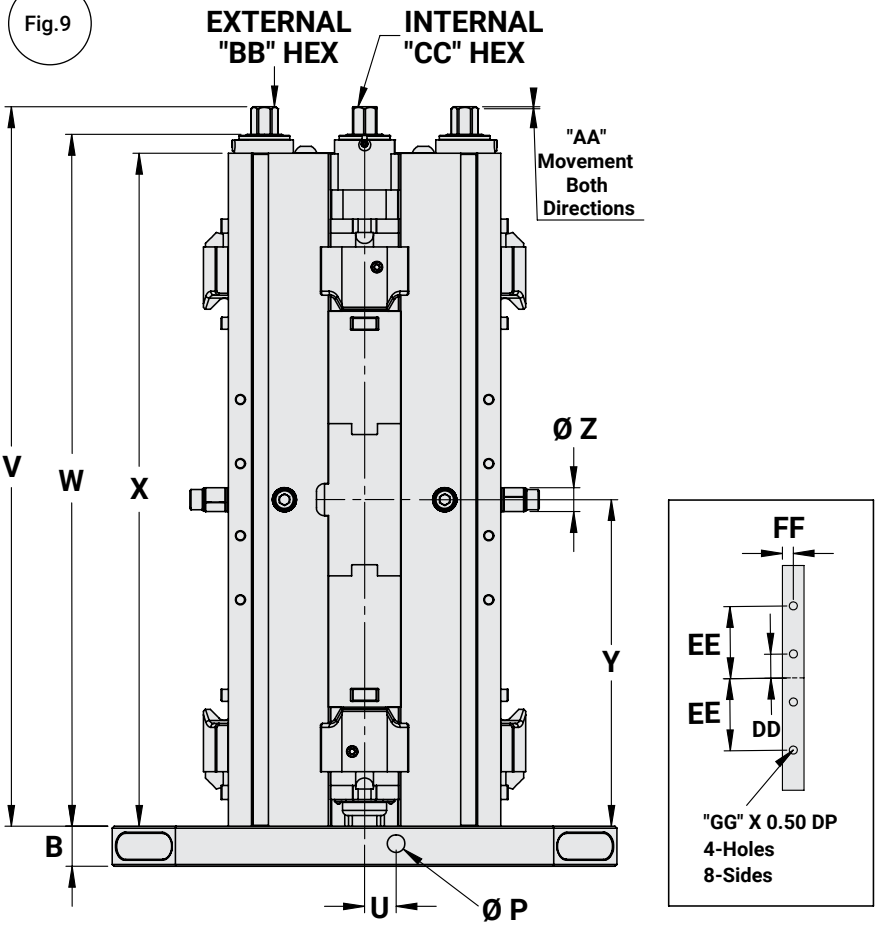
TOWER DIMENSIONS

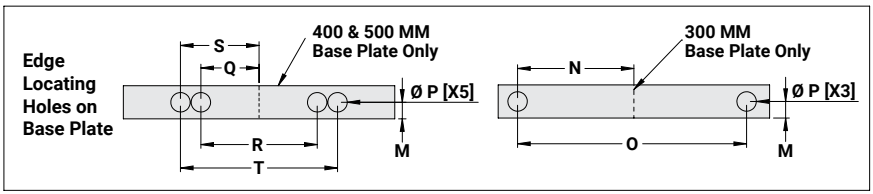
Note: Dimensions below go with Fig.9 (page 15) and Fig.10 (page 16).

	CTHDL(M)44	
	MM	**INCH**
V	449.6	17.701
W	425.78	16.763
X	415.92	16.375
Y	200.03	7.875
Z	15	0.59
AA	3.05	0.12
BB	14.28	0.562
CC	11.1	0.437
DD	34.92	1.375
EE	65.1	2.563
FF	9.53	0.375
GG	M8 x 1.25	M8 x 1.25
Base Weight		119 Lbs

SIDE PROFILE

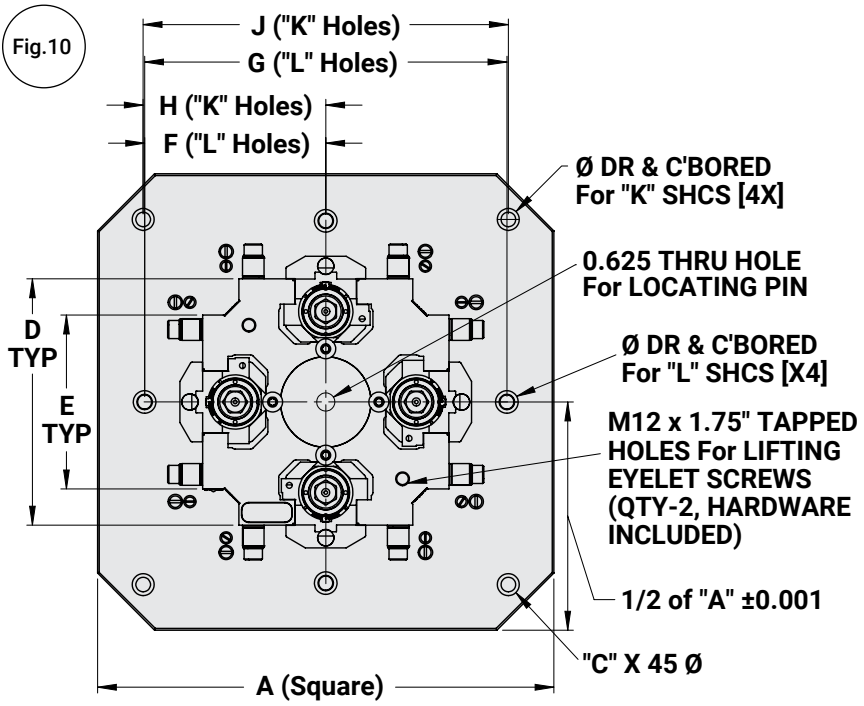
Fig.9





MOUNTING LOCATIONS

Fig.10



	300 MM BASE		400 MM BASE		500 MM BASE	
	MM	INCH	MM	INCH	MM	INCH
A	300	11.811	400	15.748	500	19.685
B	25.4	1	31.75	1.25	31.75	1.25
C	20	0.79	50	1.97	60	2.36
D	158.75	6.25	158.75	6.25	158.75	6.25
E	101.6	4	101.6	4	101.6	4
F	–	–	158.75	6.25	203.2	8
G	–	–	317.5	12.5	406.4	16
H	127	5	160	6.299	200	7.874
J	254	10	320	12.598	400	15.748
K	M12 SHCS	–	M16 SHCS	–	M16 SHCS	–
L	–	1/2 SHCS		1/2 SHCS	–	1/2 SHCS

MOUNTING THE CHTHDL4

Locating the CTHDL4 can be located using edge locators or by using a center locating pin. Contact Kurt for optional center locators.

English Mounting:

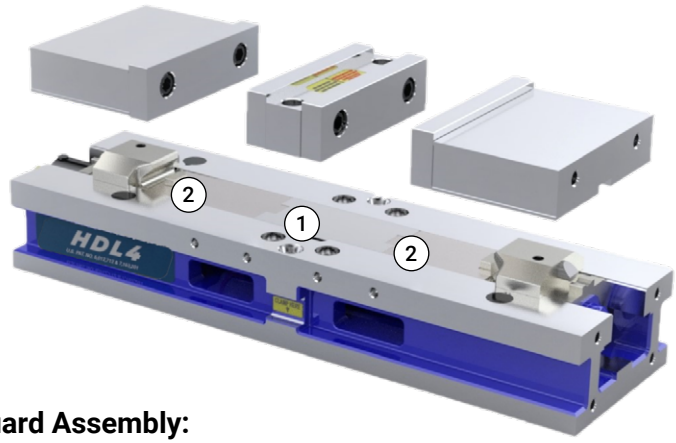
The CTHDL4 can be bolted down using the four English 1/2" or 5/8" bolt holes indicated in Fig.10 (page 16) by dimensions F and L.

Metric Mounting:

The CTHDL4 can be properly bolted down using the four Metric 12 mm or 16 mm bolt holes indicated in Fig.10 by dimensions H and K.

PROPER CHIP GUARD INSTALLATION AND USAGE

Fig.11



Chip Guard Assembly:

The Chip Guard shown above is provided to keep chips from the nut and screw assembly.

The two side chip guards (#2 Fig.11) should be placed so that the rectangular hole in the chip guards is placed over the rectangular peg on the nut.

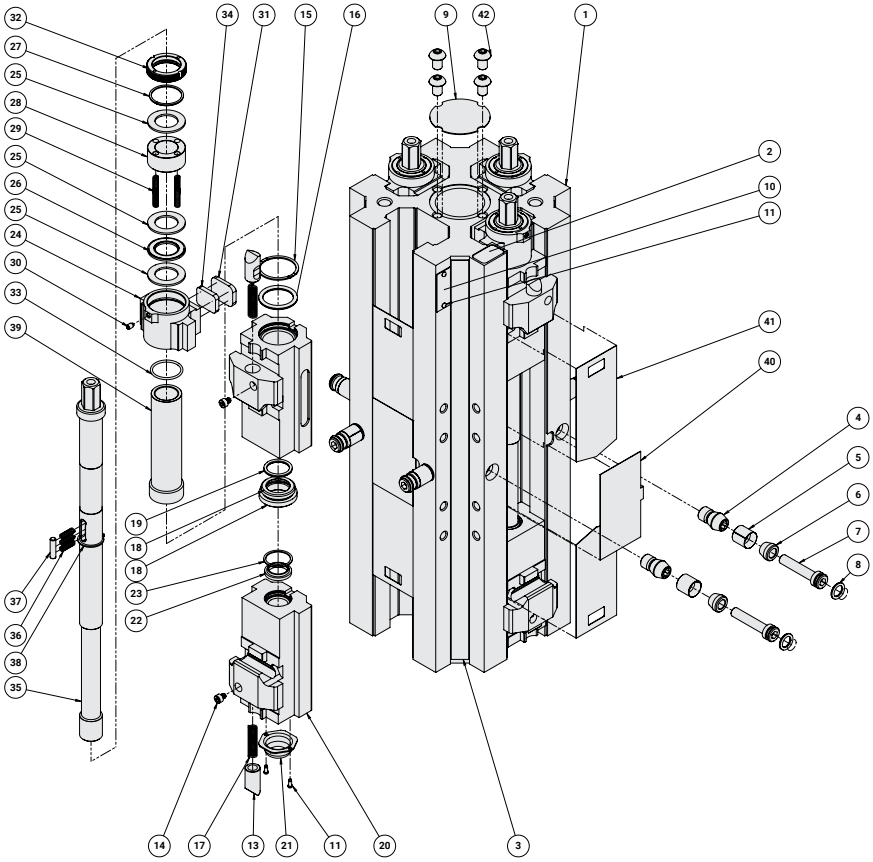
The center chip guard (#1 Fig.11) can be inserted so the key part of the chip guard is inserted into the notched area of the vise bed. This top chip guard will ride on top of the two side chip guards during clamping.

CTHDL(M)4 PARTS LIST

ITEM#	PART#	DESCRIPTION	QTY.
1	CTHDLM44-1	COLUMN MACHINED	1
2	HDLM4-223	CAUTION STICKER	1
3	CT430-111	LOGO STICKER	4
4	HDLM4-277	LOCATING PIN	8
5	HDLM4-209	CLAMP SLEEVE	8
6	HDLM4-35	CLAMP	8
7	HDLM4-18	SHCS M8x1.25 X 40MM LG	8
8	360AU-99B	O-RING #110 , 70 DURO	8
9	CTHDLM44-118	COVER PLATE	1
10	CTHDLM44-102	MODEL/SERIAL NUMBER TAG	1
11	07-0230	U-TYPE DRIVE SCREW #2 X 1/4 LG	10
12	HDLM4-3F	FRONT NUT	4
13	HDLM4-142	SPRING GUIDE	8
14	26-0050	SHCS M4x.7 X 5MM LG	8
15	DL430-231	RETAINING RING	4
16	DL430-129	O-RING #214, 70 DURO	4
17	HDLM4-267	COMPRESSION SPRING (STAINLESS)	8
18	HDLM4-61	O-RING THREADED SPACER	4
19	DL430-127	O-RING #116, 70 DURO	4
20	HDLM4-3R	REAR NUT	4
21	DL400-218	END CAP	4
22	DL430-97	WIPER RING	4
23	DL430-217	SPIRAL RETAINING RING	4
24	HDLM4-212	HOLDING BLOCK	4
25	DL400-42A	THRUST WASHER	12
26	D40-41	THRUST BEARING	4
27	DL430-68	O RING, #022 BUNA N	4
28	DL430-8A	COLLAR	4
29	DL430-197	COMPRESSION SPRING(STAINLESS)	16
30	28-1094	SHSS, HDOG, M4 x 7X 6MM LG	4
31	HDLM4-225	FRICTION CLAMP	4
32	DL430-91	TREADED COLLAR	4
33	DL430-128	O-RING #021, 70 DURO	4
34	HDLM4-311	SPRING (PRE-LOAD)	4
35	HDLM4-5	SCREW	4
36	DL640-215	COMPRESSION SPRING (STAINLESS)	12
37	KURT #04-0030	DOWEL PIN, .1875 X .750 LG	4
38	DL430-147A	RETAINING RING	4
39	DL430-273A	CLUTCH	4
40	HDLM4-248	STATIONARY CHIP GUARD	4
41	HDLM4-249	MOVABLE CHIP GUARD	8
42	29-0168	SBHCS M8 X 1.25 X 12 LG.	4

CTHDL(M)4 MECHANICAL DRAWING

Fig.12



MAINTENANCE SCHEDULE

It is very important to perform regular maintenance on your Kurt tower to ensure proper operation. Improper maintenance will result in poor vise performance and may void your warranty.

Daily/ Weekly

1. Remove chips from surface of vise.
2. Visually inspect seals for damage and cleanliness.
3. Visually inspect for chip entrapments and remove when necessary.
4. Air-dry and apply rust inhibiting oil to the machined surface of the vise.

Monthly

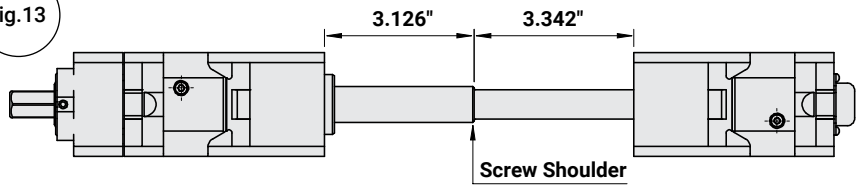
1. Open the vise assembly to the maximum opening.
2. Slide the Jaw slightly toward the stationary jaw and lift up to remove the jaw from the “beak” of the nut.
3. Turn the movable jaw over and clean the inside cavity.
4. Remove chips, clean and apply a light coat of machine oil to the machined surface of the following item:
    a. Nut & Screw assembly (clean exposed threads on the screw)
    b. Bed of vise (top of “rails”)
    c. Inside of the vise between the center ways.
5. To re-assemble the movable jaw, press down on each of the quick jaws to lock into place
6. Your vise is now ready for use. Open and close your vise to check for proper operation. Center the part to be clamped in the vise and close. Your parts should be centered from side to side to ensure proper clamping.

MAINTENANCE SCHEDULE

3 to 6 Months

1. On the CTHDLM4 model, start by removing the M10 button head cap screw (#41-Fig.12) located under the holding block and threaded into the vise body. (See Fig.12 for parts breakdown)
2. Remove rear station movable jaw.
3. Place a 3.25" thick spacer in the front station, and start closing the vise and this will drive the holding block (#19 in Fig.12) out of the vise body.
4. Once the holding block is clear of the body, reverse the screw rotation, so the spacer can be removed.
5. Remove the stationary and front movable jaws from the vise.
6. Remove the chip guards
7. The nut and screw assembly can now be slid out freely from the vise.
8. Thoroughly clean and oil the nut and screw assembly, vise body, and jaws so there are no chips or debris left.
9. Now it's time to reset the timing. Turn the rear nut counter clockwise until you can feel resistance. Turn the nut back the other way until the front and rear front are in line with one another. This sets the timing of the front and rear nut. (See Fig.13 below)
10. Slide the nut and screw assembly, rear nut first, into the vise body up to the holding block. See Fig.12 for holding block identification.
11. 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.
12. 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.
13. Your vise is now ready to use.

Fig.13



Rotate Nuts until dimensions are achieved

TROUBLESHOOTING TIPS

If properly maintained, the Kurt CTHDL(M)4 Series tower will operate trouble free for many years. In some cases it will be necessary to troubleshoot. Use the information below to help in the process.

Problem: My vise turns hard.

Tip: As a new vise the brush seal could be stiff. Allow for break-in of vise.

Tip: As a used vise, it could be filled with chips and threads could be jammed. Properly clean and grease vise.

Problem: My vise will not turn in either direction.

Tip: The vise is jammed with debris. Disassemble and clean as needed.

Problem: My vise won't hold tolerance.

Tip: You may be experiencing jaw lift from clamping too high or on one side of the jaw. Lower the part in the vise jaw and clamp more material.

Problem: My vise is clamping at a low clamp force or it comes to a stop when clamping on a part.

Tip: The vise's clutch pin could be in what is called the over travel position

Tip: To get your vise out of over travel, open your vise to it's most open position. This will reset the clutch pin and you may hear a click.

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 in consistent 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 or any authorized service center, transportation, shipping and postal charges prepaid, and there determined by Kurt Manufacturing Company to be covered by the warranty contained herein.

THE LIMITED WARRANTY DESCRIBED HEREIN IS MADE EXPRESSLY IN LIEU OF ANY OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. KURT MANUFACTURING COMPANY IS NOT RESPONSIBLE FOR THE IMPROPER USE OF ITS PRODUCTS. KURT SHALL NOT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL SPECIAL OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO, LOSS OF USE, REVENUE OR PROFIT.

KURT ASSUMES NO LIABILITY FOR, AND MAKES NO WARRANTY REGARDING ANY PURCHASE ITEMS WHERE THE MANUFACTURER OF SUCH ITEM EXTENDS A SEPARATE WARRANTY.

KURT WORKHOLDING

Thank you for your purchase! If you have any feedback or questions please contact us:

Kurt Industrial Products // A Division Of Kurt Manufacturing

9445 East River Road NW | Mpls, MN 55433
Phone 763-574-8309 | Toll Free 877-226-7823
Fax 763-574-8318 | Toll Free Fax 877-226-7823

kurtworkholding.com | workholding@kurt.com

Manual Revision:
2026-03-10