



KURT WORKHOLDING

DX6A™ CROSSOVER™ ANGLOCK VISE PNEUMATIC VERSION

**Operating Instruction Manual
DX6A/DX6AR**



ENGLISH

TABLE OF CONTENTS

Introduction	3
Set-Up Instructions	4
Pneumatic Set-Up	5-7
Operating Instructions.....	8-13
DX6A Parts List.....	14
DX6A Mechanical Drawing.....	15
DX6AR Parts List.....	16
DX6AR Mechanical Drawing	17
KAU6 Mechanical Drawing.....	18
Maintenance Schedule.....	19-21
Troubleshooting Tips.....	22
Maintenance Log/Notes.....	23-26
Warranty.....	27

WISE DATA

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

Purchase Date: _____ - _____ - _____

Purchase Order: _____

Purchased From: _____

Delivery Date: _____

Serial No.: _____

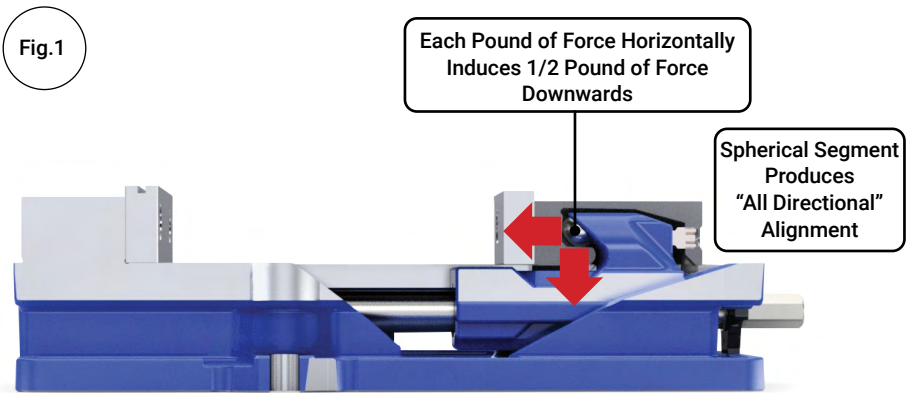
NOTE: MAKE SURE TO REGISTER YOUR WARRANTY ONLINE AT KURTHOLDING.COM

INTRODUCTION

Thank you for purchasing a Kurt DX6A vise. You have just purchased one of the best machine vises in the industry. The outstanding accuracy of this product is second to none. 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 vises are designed for precision clamping on basic machine tools such as knee-type mills, and machining centers. They can be used for, but are not limited to, operations like precision boring, drilling, tapping, & finishing.

The patented AngLock design allows the movable jaw to advance in such a way that each pound of force forward induces a 1/2 pound of force downward which minimizes the jaw lift and increases accuracy. This, combined with the needle bearings, increases jaw clamping pressure. Other features include: 80,000 psi ductile iron body, hardened vise bed & jaw plates, and a semi- hard steel screw.



SET-UP INSTRUCTIONS

Now that you have your new Kurt Vise, it's time to set-up and begin using it. Your Kurt vise comes with a swivel handle in the shipping carton (instruction manual available online at www.kurtworkholding.com). 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 surface and the vise 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.

To minimize vise bed deflection, clamp your Kurt vise to your machine table, pallet, or sub-plate using the built-in clamping slots or through the body holes provided.

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 TABLES

MANUAL	
TORQUE FT-LBS	FORCE IN LBS.
10	500
20	1,450
30	2,450
40	3,450
50	4,400
60	5,400
70	6,350
80	7,350

PNEUMATIC	
PNEUMATIC PSI	FORCE IN LBS.
10	300
20	800
30	1,250
40	1,750
50	2,200
60	2,700
70	3,200
80	3,800
90	4,350
100	5,000

PNEUMATIC OPERATING INSTRUCTIONS

The DX6A can be operated pneumatically by hooking up the Kurt 6" KAU6 pneumatic unit.

The pneumatic unit (KAU6) on the end of the DX6A has a 1/4 inch stroke. The KAU6 is a double acting pneumatic unit that opens and closes with pneumatic pressure. This pneumatic unit can be operated remotely or directly using the level directly on the pneumatic unit. For direct use, hook up one air line to the KAU6 unit and use the level directly on the pneumatic unit to actuate the vise. If remote use/control is desired, both ports on the pneumatic unit will need to be hooked up to an air pressure source (See Fig.2).

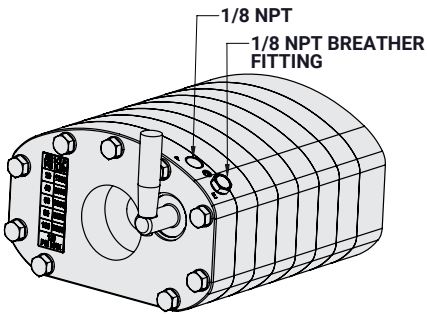


CAUTION

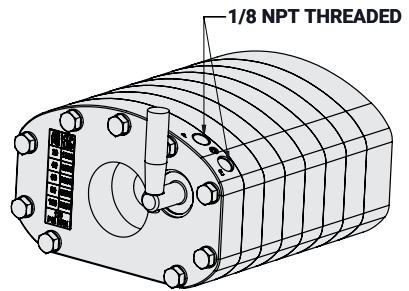
All NPT connections in pneumatic system must utilize pipe dope, not teflon tape. Teflon tape can get dislodged by fluid and end up in pump or unit, possibly voiding warranty.

Fig.2

DIRECT USE SET-UP



REMOTE USE SET-UP



PNEUMATIC OPERATING INSTRUCTIONS

Basic Pneumatic Set-Up:

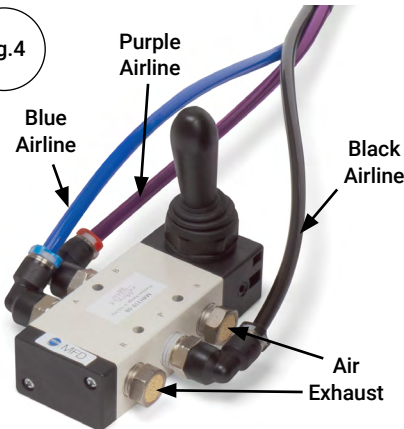
1. Install straight fitting(s) on the Pneumatic Unit (1/8 NPT) of the DX6A vise
2. A filter-lubricator-regulator combination (KURT Part Number 312-06, Fig.3) is recommended to insure clean air coming into the unit. See Clamping Force Table for air pressure required to attain desired clamping force (pg. 4).
3. Connect the pneumatic line to the pneumatic unit on the vise and then to shop air or an air pressure source. For remote use, a hand control valve or foot control valve can be used (See Fig.4).
4. Apply air pressure to the system. Loosen swivel fitting at vise and bleed air. Tighten fitting. Release air pressure.
5. System is now ready for use.

Fig.3



**Filter Regulator Lubricator
Part Number: 312-06**

Fig.4



**Hand Control Air Valve
Part Number: KHV-71**

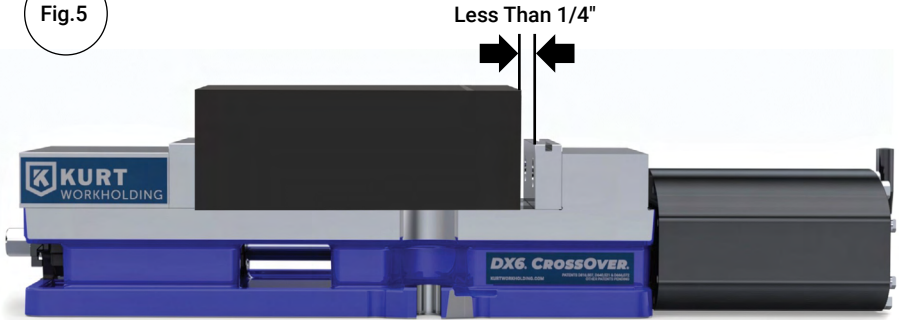


**Foot Control Air Valve
Part Number: KFV-71**

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

PNEUMATIC SET-UP

Fig.5



Jaw Positioning:

Once all plumbing is set up, it's time to position jaws for pneumatic clamping.

1. Position jaws less than 1/4 inch from the part being clamped as is shown in Fig.5 above. This is done manually by putting the handle onto the hex end and turning the screw until the jaws are in position.
2. Make sure the jaws are less than 1/4 inch from the part since the pneumatic unit has only a 1/4 inch stroke.
3. The vise is now ready to have the pneumatics engaged for clamping the part.

MANUAL 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 uses 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. A torque wrench may be used if set within the torque limits shown in the tables on page 4.

To properly clamp a part in your Kurt vise, you should place the part 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.6 on page 9)

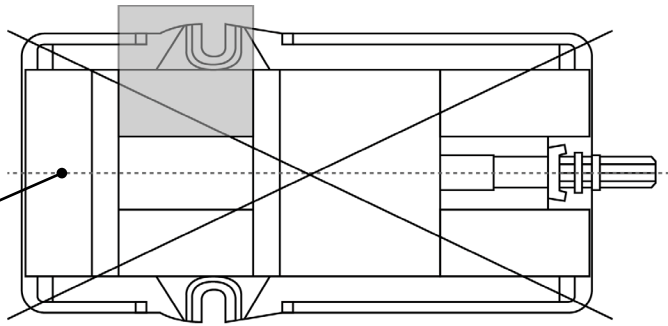
If one-sided clamping is necessary, you **MUST** use a dummy part on the other side. When using parallels or step jaws, you must select a size that keeps the bottom of the clamped part at or below the top of the movable and stationary jaws. Always use jaw plates for clamping. If jaw plates are not used, damage to the mounting surface of the movable and stationary jaw will occur. This will result in reduced clamping accuracy and repeatability.

Fig.6

Sketch #2A

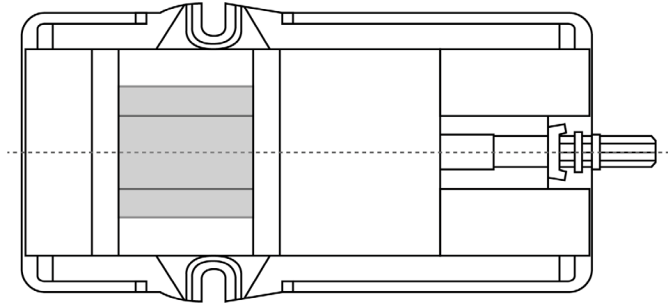
Incorrect part clamping.

Vise width centerline



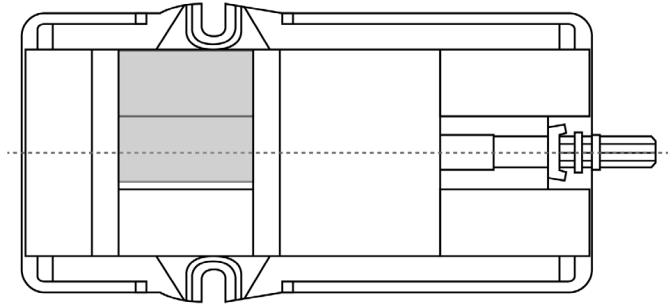
Sketch #2B

Correct part clamping



Sketch #2C

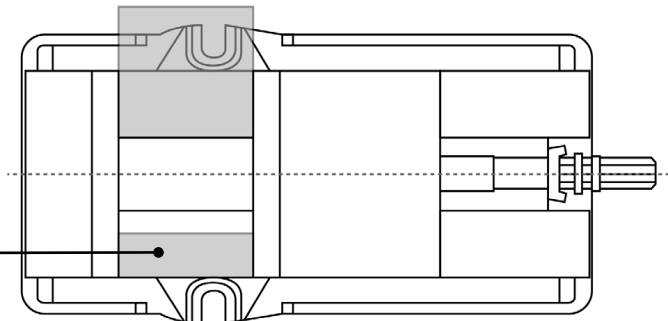
Correct part clamping



Sketch #2D

Correct part clamping

Dummy spacer

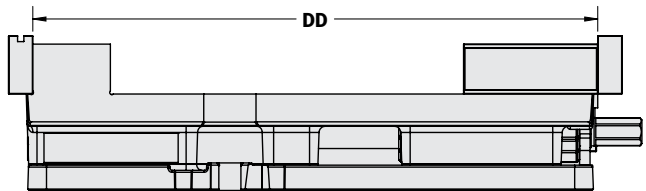
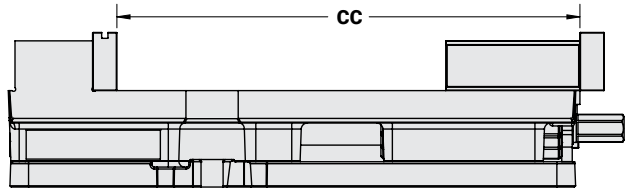
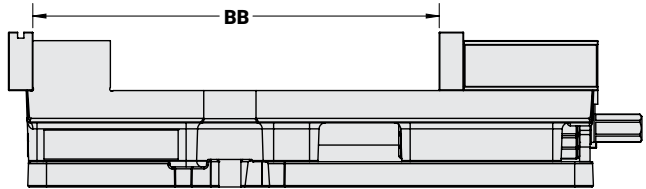
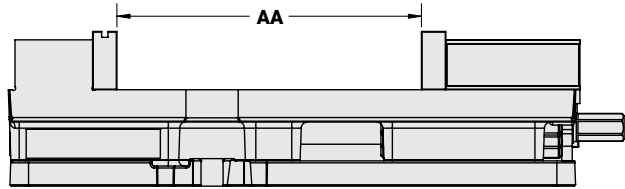


JAW POSITIONING

Fig.7

Note: Dimensions below are in inches unless specified.

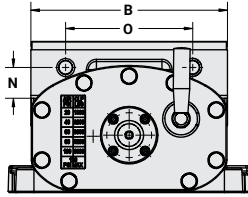
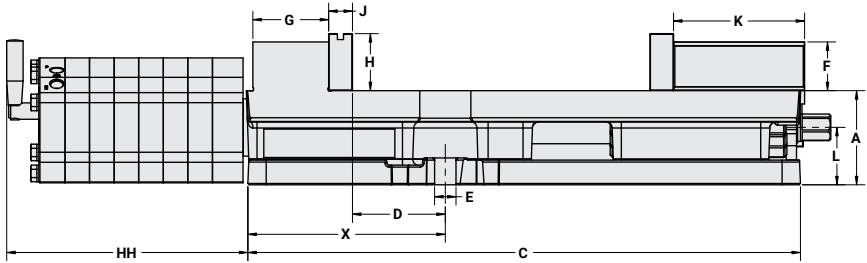
AA	9.080
BB	12.120
CC	13.805
DD	16.842



SIDE & END VIEW

Fig.8

Note: Dimensions below are in inches unless specified.



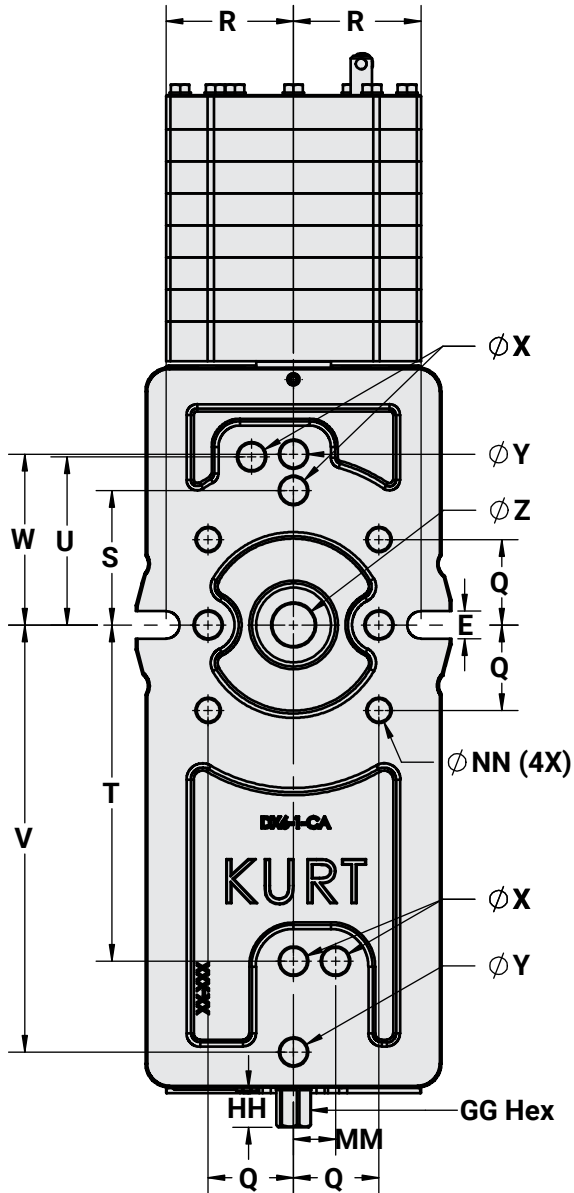
A	2.8750
B	6.000
C	16.81
D	2.837
E	0.656
F	1.485
G	2.312
H	1.735
J	0.725
K	4.000
L	1.750
N	0.940
O	3.875
X	6.03
HH	7.36

MOUNTING LOCATIONS

Note: Dimensions below are in inches unless specified.

Fig.9

M	0.328
Q	2.000
R	2.986
S	80 mm
T	200 mm
U	100 mm
V	10.000
W	4.000
X	16 mm
Y	0.625
Z	0.992
GG	3/4
HH	1.448
MM	25 mm
NN	0.531



SURFACE MOUNT USING SINE KEYS

Mounting the new DX6XA with keys requires the use of sine keys instead of standard keys. They are available in several different sizes that are listed on our website at www.kurtworkholding.com. The keys are sold in sets of 2 per package.

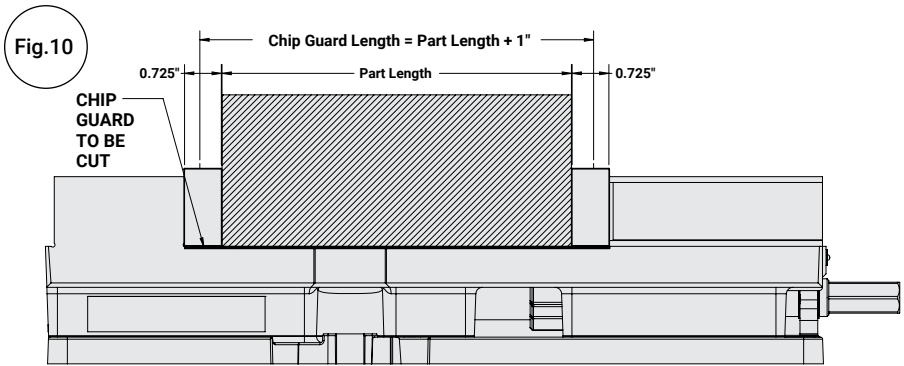
English Mounting:

The DX6A can be properly located using the four English sine key holes indicated by the Y's in Fig.9 on page 12. The DX6A vise can also be mounted using both bolt slots on the sides of the vise.

Metric Mounting:

The DX6A can be properly located using the two Metric sine key holes indicated by the X's in Fig.9.

PROPER CHIP GUARD* INSTALLATION AND USAGE



CAUTION

Chip Guard* stock shown above keep chips from the nut and screw assembly and must be cut and deburred to meet your application and safety needs.

Example: Part plus 1 inch = Length of Chip Guard.

NOTE: Remove Chip Guard stock. If left uncut, the excess material could cause injury.

*Chip guard not included – available as an accessory at www.kurtworkholding.com.

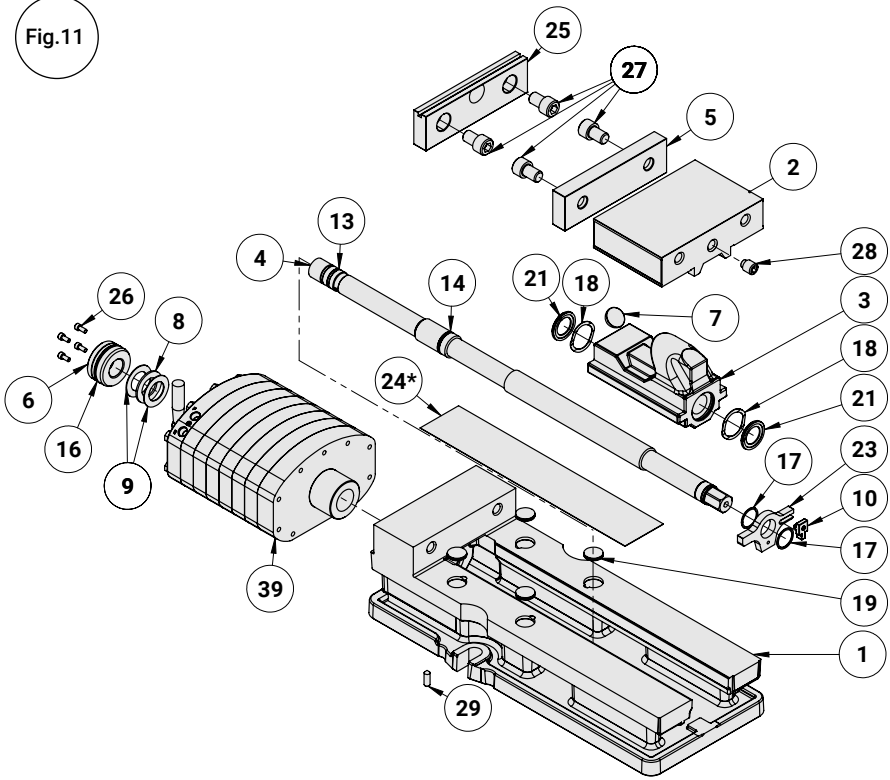
DX6A PARTS LIST

ITEM#	PART#	DESCRIPTION	QTY.
1	DX6-1	BODY, MACHINED	1
2	DX6-2	MOVABLE, MACHINED	1
3	DX6-3	NUT, MACHINED	1
4	DX6A-5	SCREW, AIR UNIT	1
5	D60-7	JAW PLATE	1
6	3600V-8	2 PIECE RETAINING NUT	1
7	D60-9	SEGMENT TAB	1
8	D50-41	THRUST BEARING	1
9	360AU-42	THRUST BEARING WASHER	2
10	WSRL46	WORKSTOP ASSEMBLY	1
13	3600AA-68	O-RING (11/16 I.D. X 7/8 O.D. X 3/32 C.S. 70 DURO)	1
14	3600V-99	O-RING	1
15	DX6-111	KURT LOGO TAG	2
16	3600V-128	O-RING	1
17	3600V-147	RETAINING RING, SPIRAL	2
18	DX6-169	WAVE SPRING	2
19	3600V-191-SA	PROTECTIVE PLUG ASSEMBLY	4
21	D688-211	INTERNAL BRUSH SEAL	2
22	DX6-223	MODEL TAG	2
23	DX6-224	SCREW SUPPORT	1
24*	DL600-249	CHIP GUARD, 12 X 2.25 X 0.015	1
25	D60-315	GROOVED JAW PLATE	1
26	00-1191	SHCS 8-32 X 0.375 LG	4
27	00-1414	SHCS 1/2-13 X 0.75 LG	4
28	01-3134	SET SCREW, 0.5-13 X 0.625	1
29	01-3278	SET SCREW, 1/4-20 X 0.75 LG	1
39	KAU6	KURT AIR UNIT	1

*Chip guard not included – available as an accessory at www.kurtworkholding.com.

DX6A MECHANICAL DRAWING

Fig.11



*Chip guard not included – available as an accessory at www.kurtworkholding.com.

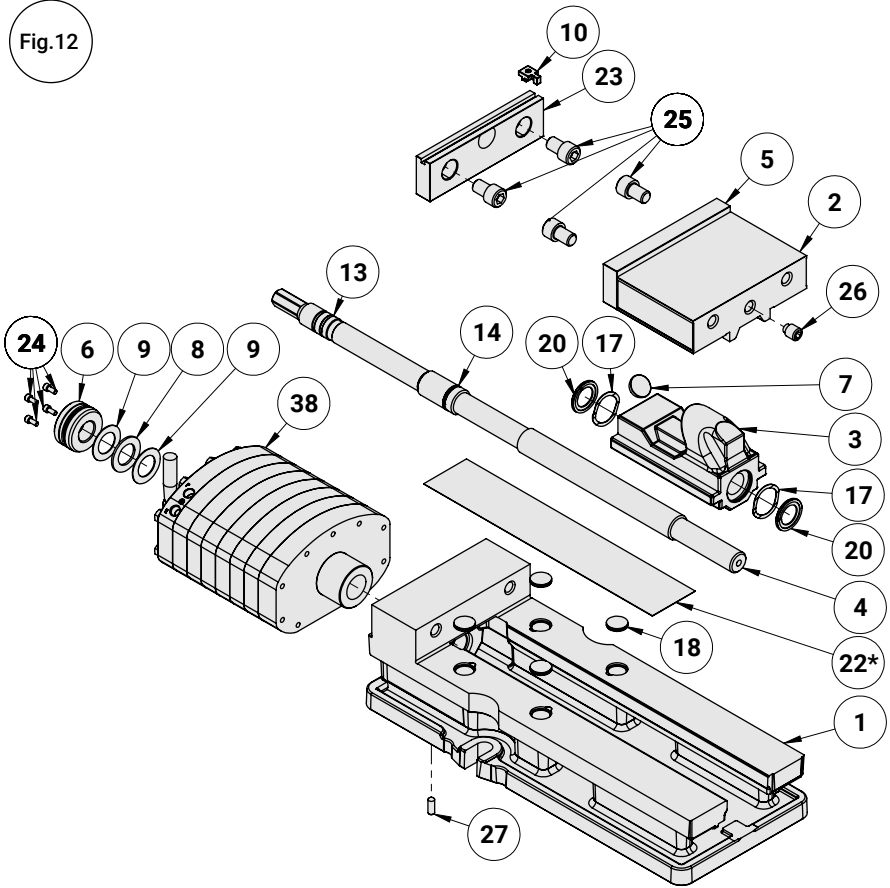
DX6AR PARTS LIST

ITEM#	PART#	DESCRIPTION	QTY.
1	DX6-1	BODY, MACHINED	1
2	DX6-2	MOVABLE, MACHINED	1
3	DX6R-3	NUT, MACHINED REVERSED	1
4	DX6AR-5	SCREW, AIR UNIT REVERSE	1
5	D60-7	JAW PLATE	1
6	3600V-8	2 PIECE RETAINING NUT	1
7	D60-9	SEGMENT TAB	1
8	D50-41	THRUST BEARING	1
9	360AU-42	THRUST BEARING WASHER	2
10	WSRL46	WORKSTOP ASSEMBLY	1
13	3600AA-68	O-RING (11/16 I.D. X 7/8 O.D. X 3/32 C.S.)	1
14	3600V-99	O-RING	1
16	3600V-128	O-RING	1
17	DX6-169	WAVE SPRING	2
18	3600V-191-SA	PROTECTIVE PLUG ASSEMBLY	4
20	D688-211	INTERNAL BRUSH SEAL	2
22*	DL600-249	CHIP GUARD, 12 X 2.25 X 0.015	1
23	D60-315	GROOVED JAW PLATE	1
24	00-1191	SHCS 8-32 X 0.375 LG	4
25	00-1414	SHCS 1/2-13 X 0.75 LG	4
26	01-3134	SET SCREW, 0.5-13 X 0.625-HX-N	1
27	01-3278	SOCKET HEAD SET SCREW, 1/4-20 X 0.75 LG	1
38	KAU6	KURT PNEUMATIC UNIT	1

*Chip guard not included – available as an accessory at www.kurtworkholding.com.

DX6AR MECHANICAL DRAWING

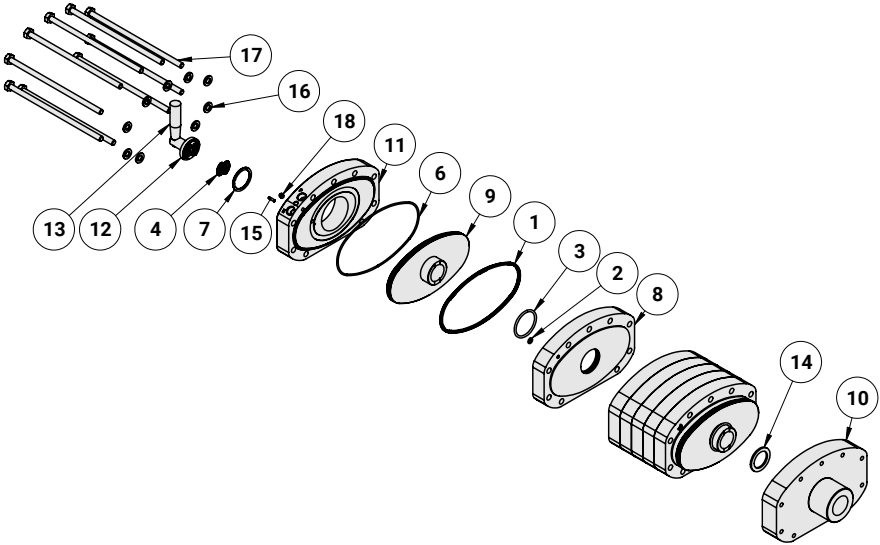
Fig.12



*Chip guard not included – available as an accessory at www.kurtworkholding.com.

KAU6 MECHANICAL DRAWING

Fig.13



ITEM#	PART#	DESCRIPTION	QTY.
1	KAU6-96	QUAD RING, 4.00 ID X 0.103 CS	7
2	360AU-97	O-RING	7
3	360AU-98	O-RING, 1.25 ID X 3/32 C.S.	7
4	360AU-99B	O-RING, 0.375 I.D. X 0.563 O.D. X 0.031 CS	2
6	KAU6-128	O-RING, 4.25 ID X 0.070 CS	1
7	KAU6-232	RETAINING RING	1
8	KAU6-250	BODY SEGMENT	6
9	KAU6-251	PISTON	7
10	KAU6-252	BODY RETAINER	1
11	KAU6-253	END PLATE	1
12	KAU6-254	4-WAY VALVE	1
13	360AU-266A	REID SOLID STEEL HANDLE, Ø1/2 X 2.00 LG	1
14	360AU-230	WASHER	1
15	04-0010	DOWEL PIN, 3/32 X 3/8	1
16	06-1331	FLAT WASHER, 0.281 ID X 0.500 OD X 0.063 THK	9
17	02-3310	HEX HEAD CAP SCREW, 1/4-20 UNC X 6 LG	9
18	01-0060	CP SET SCREW 10-32 X 0.188 LG	1

MAINTENANCE SCHEDULE

It is very important to perform regular maintenance on your Kurt vise 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

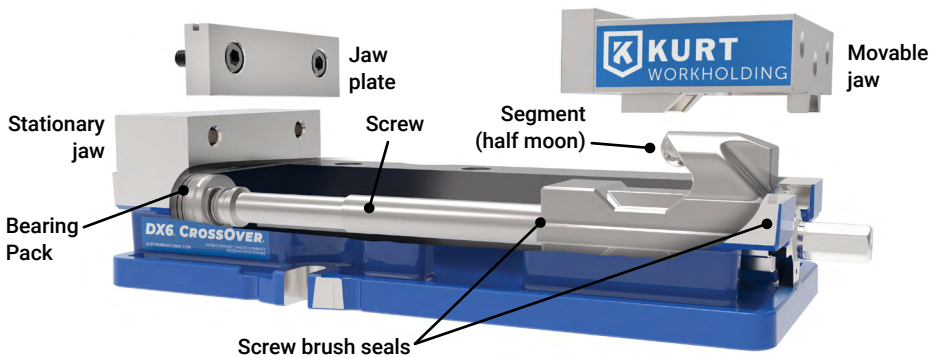
1. Open the vise to the maximum opening.
2. In the back of the movable jaw (handle end, center hole) loosen the socket head set screw (approx. 6 turns). With the hex key (Allen wrench) in the set-screw socket, lift up and forward to pivot the Jaw off of the vise bed.
3. Slide the Jaw slightly toward the stationary jaw and lift up to remove the jaw from the “beak” of the nut.
Note: A spherical segment (shaped as 1/2 of a steel ball) is inside the cavity of the movable jaw and may fall out as the jaw is removed. Take care not to lose or misplace the spherical segment.
4. Turn the movable jaw over and clean the inside cavity. Also clean the spherical segment.
5. 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.
6. To re-assemble the movable jaw, apply a “glob” of grease to the under side of the movable jaw in the pocket. Place the spherical segment in the mating pocket and push into the grease. The grease will hold the segment in place when the jaw is turned over to replace.

7. Tip the jaw so the front of the jaw (the side with the jaw plate) is on the vise bed. Lower the jaw on to the bed so that the segment contacts the hook part of the nut and rest the jaw on to the vise bed.
8. Tighten the setscrew to firmly contact the nut. Back off the setscrew 1/4 turn (approx.).

Note: DO NOT leave the setscrew tightened firmly to the nut as this may cause improper operation. The movable jaw is designed to move slightly (pivot side to side) so maximum jaw plate contact is maintained when clamping out-of-parallel, sawed, or cast parts.

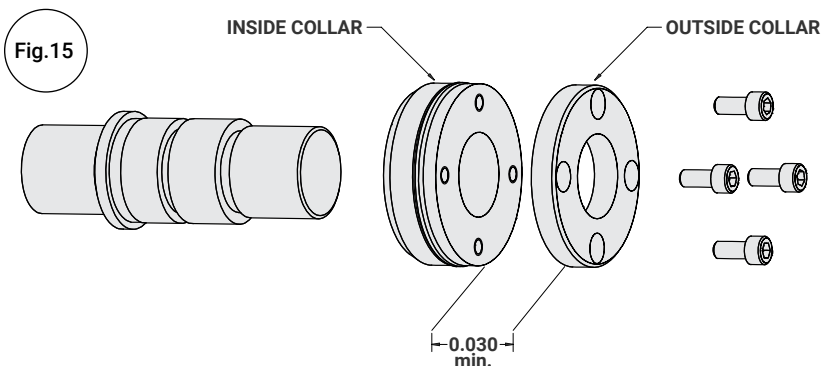
9. Your vise is now ready for use. Open and close your vise to check for proper operation. Center the part to be clamped in the vise and close. Your parts should be centered from side to side to ensure proper clamping.

Fig.14



3 to 6 Months

1. Open vise to maximum opening.
2. Loosen the set-screw and remove the movable jaw.
3. Remove spiral-retaining ring from handle end of the vise screw.
4. Remove the screw support from the vise body.
5. Remove the two-piece locking collar by removing the four SHCS.
6. With one screw still half-way out spin off the first collar.
7. Using a pin or screw reach into the second collar and spin it off to expose the bearings.
8. Remove the bearing pack assembly consisting of (2) thrust washers and thrust bearing from the counter bore in the end of the body.
9. Clean and inspect the counter bore, thrust washers and thrust bearing.
10. Apply water resistant grease to the bearing pack (i.e. marine grade grease)
11. Install bearing pack assembly on the screw in the reverse manner.
12. Install the first collar by threading onto the screw until it stops. (See Fig.15)
13. Install the second collar behind the first and thread on until it stops. At this point the screw holes may or may not be lined up.
14. Turn the second collar counterclockwise until a hole lines up.
15. Then turn the collar back TWO (2) more screw holes. This will allow proper separation for the collar sections to lock on the threads and keep the bearings firmly in place. (See Fig.15)
16. Install the four SHCS and tighten in a star pattern.
17. Install the screw support in the body on the screw (Hex end) and secure using the spiral retaining ring.
18. Your vise is now ready to use.



TROUBLESHOOTING TIPS

If properly maintained, the Kurt DX6A Series vise 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 stiff when clamping on a part or is difficult to back off a part.

Tip: The vise's thrust bearing pack may need to be replaced.

Problem: My vise is not clamping at a high clamping force.

Tip: The vise's thrust bearing pack may need to be replaced.

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 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:
05.10.2024