



3400H-Series Vise “Hydraulic” Base Assembly

3400H-Forward

3410H- Reverse

Operating Instructions Manual



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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

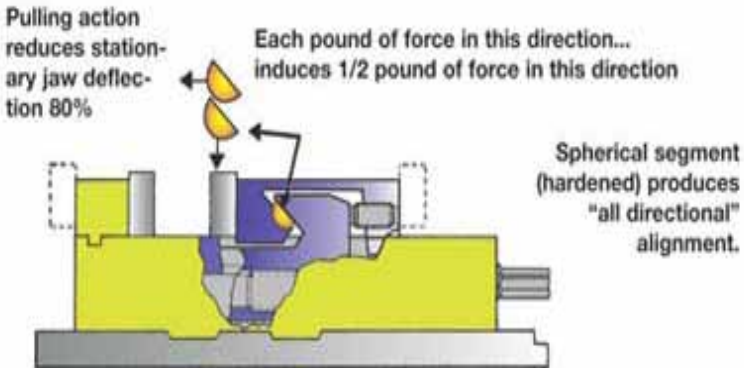
Introduction

Thank you for purchasing a Kurt vise. The Versatile Lock 3400-Series AngLock vise has a time proven design and the outstanding accuracy of this product is second to none. Backed by a lifetime warranty, this product will last many years when used and maintained properly.

The original Kurt Anglock vises are designed for precision clamping. The "Pull-type" action of the 3400 Versatile Lock design reduces stationary jaw deflection by at least 80%. This vise has a one-piece body and stationary jaw design which reduce weight and increases strength while providing .0005 clamping repeatability. It offers ultra-high precision through many important features. Features include: Ground sides that allow side mounting, upright and back to back mounting, using the body through holes allows side by side mounting.

With four different models including standard and reverse in both manual and hydraulic configuration these vises are truly versatile.

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 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 & case hardened jaw plates, semi-hard steel screw.



Installation & Assembly Guide

Now that you have your new Kurt 3400-Series vise, it's time to set-up and begin using it. You will see that your new vise comes with a Kurt swivel handle, two chip guards (short & long) supplied in the shipping carton. The chip guard rests between the ways of the vise and can be trimmed to size to help keep chips out of the screw. The handle is specifically designed to provide maximum torque to your vise. 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 other cleaner if needed.

Hydraulic activated vises require power. This could be done with a single acting hydraulic pump (air over oil). You can purchase one through Kurt or through another supplier. (See Hydraulic Set-up in the back of this manual)

To minimize vise bed deflection, clamp your Kurt vise to your machine table, pallet, or sub-plate using the built-in clamping slots provided. To access the through holes, simply pick the edge of the protective cap up and expose the counter bored hole. Replace the cap after you have mounted the vise to keep debris out of the holes. If you are mounting the vise on it's side or back to back, other clamping methods may be required.

Hydraulic Vise Clamping Force

Hydraulic Press	Clamping Force (LBS)
500	350
1000	1600
1500	3000
2000	4300
2500	5700
3000	7200
3200	7800

Hydraulic displacement cu. In. 1.47

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.

Operating Instructions

For proper vise operation place the handle on to the hex end of the vise. Rotate clockwise to clamp and counterclockwise to un-clamp 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. A high quality calibrated torque wrench can be used if needed.

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

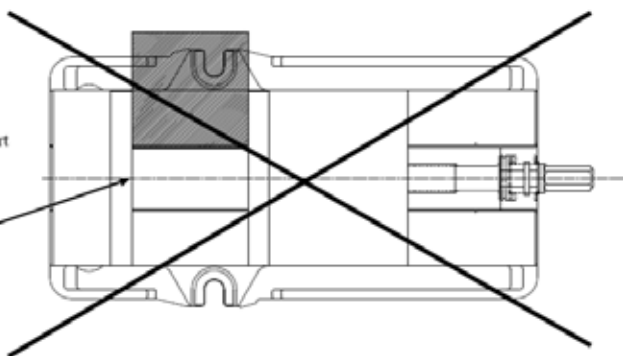
The uses of handle extensions, air impact wrenches, breaker bars or hammer strikes are not recommended and will void the warranty if used. This will also cause damage to the thrust bearing and screw threads. If you need more clamping force you may need to upgrade to a larger vise.

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. on next page)

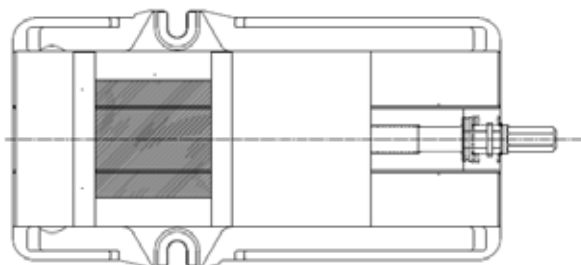
If one-sided clamping is necessary you **MUST** use a dummy part on the other side. When using parallels or step jaws you must select a size that keeps the bottom of the clamped part at or below the top of the movable and stationary jaws. Always use jaw plates for clamping. If jaw plates are not used,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

Sketch #2a
Incorrect part
clamping

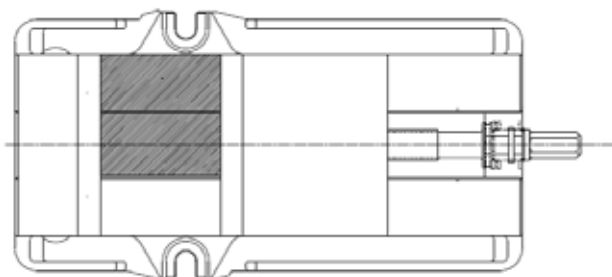
Vise width
centerline



Sketch #2b
Correct part
clamping

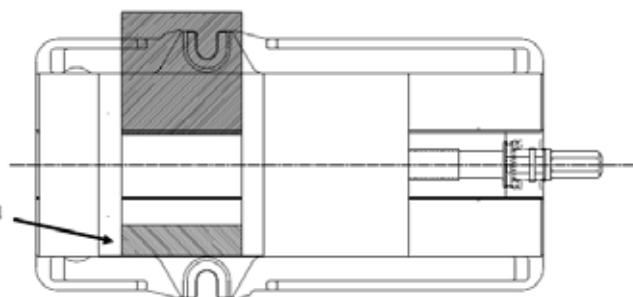


Sketch #2c
Correct part
clamping



Sketch #2d
Correct part
clamping

Non-machined
spacer

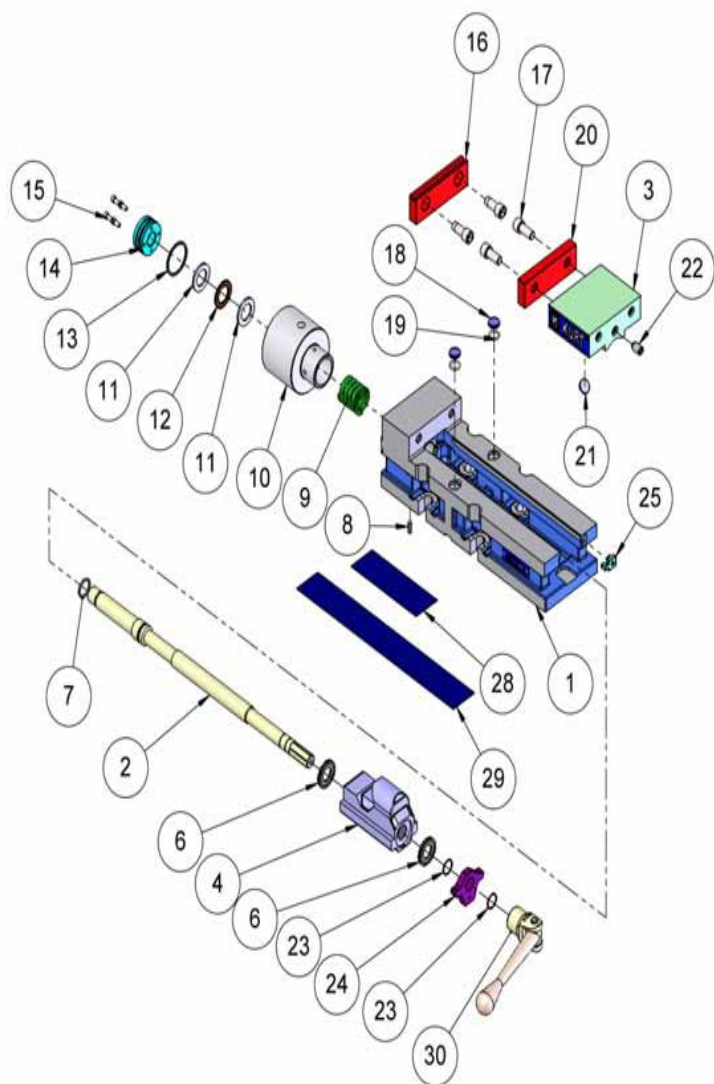


3400H Parts List

ITEM#	PART#	DESCRIPTION	QTY
1	3400V-1	BODY,MACH	1
2	3400V-5	SCREW	1
3	DL430-2	MOVABLE JAW	1
4	3400V-3	NUT	1
5	DL400-111	KURT LOGO TAF	
6	PT400-211	BRUSH SEAL	2
7	3400V-99	O-RING #117	1
8	D40-42	THRUST WASHER	2
9	D40-41	THRUST BEARING	1
10	HDHLM4-96	O-RING #125	1
11	3400V-8	2-PIECE RETAINING NUT	1
12	00-1191	SHCS 8-32 X .375	4
13	D40-315	4" GROOVE JAW PLATE	1
14	00-1355	SCHS 3/8-16X 1.00LG	4
15	3400V-191	PROTECTIVE	2
16	605-02	O-RING	2
17	D40-7	JAW PLATE	1
18	D40-9	SEGMENT	1
19	01-3906	SHSS HDOG 3/8-16 X .625	1
20	3400-147	RETAINING RING	1
21	3400V-224	SCREW SUPPORT	1
22	WRSL46	WORKSTOP	1
23	3400V-102	MODEL/SERIAL TAG	1
24	07-0230	U-TYPE DRIVE SCREW	2
25	DL400-248	CHIP GUARD, SHORT	1
26	DL400-249	CHIP GUARD, LONG	1
27	D40I-10-SA	4" HANDLE ASSEMBLY	1

ITEMS 5,23,24 ARE NOT SHOWN ON THE DRAWING.

3400H DRAWING

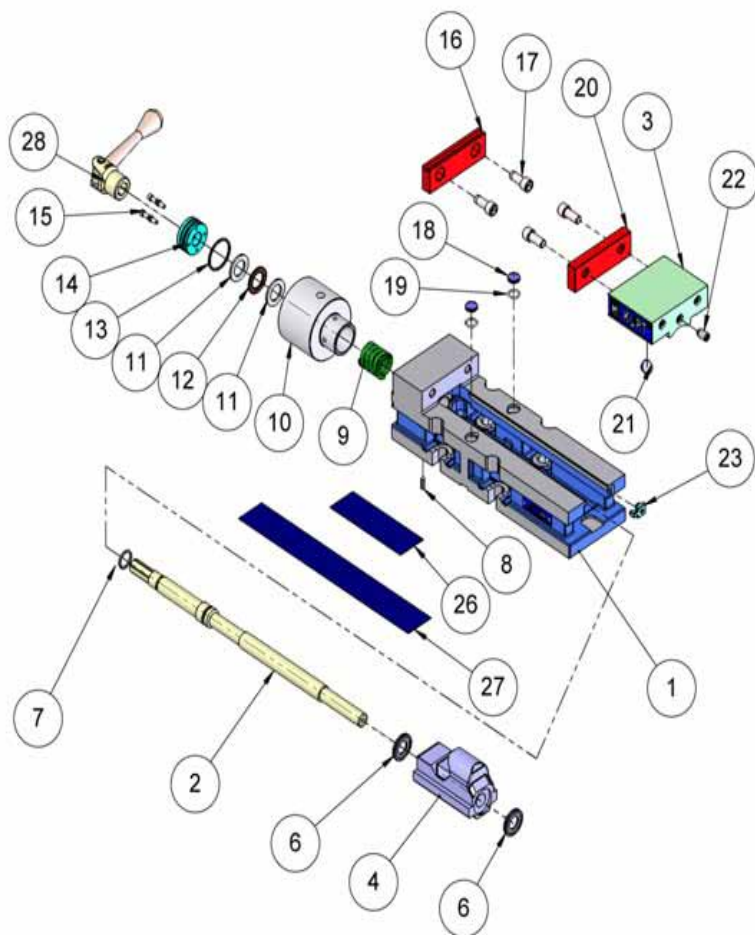


3410H Parts List

ITEM#	PART#	DESCRIPTION	QTY
1	3400V-1	BODY,MACH	1
2	3410V-5	SCREW	1
3	DL430-2	MOVABLE JAW	1
4	3410V-3	NUT	1
5	DL400-111	KURT LOGO TAF	
6	PT400-211	BRUSH SEAL	2
7	3600AA-68	O-RING #115	1
8	D40-42	THRUST WASHER	2
9	D40-41	THRUST BEARING	1
10	HDHLM4-96	O-RING #125	1
11	3400V-8	2-PIECE RETAINING NUT	1
12	00-1191	SHCS 8-32 X .375	4
13	D40-315	4" GROOVE JAW PLATE	1
14	00-1355	SCHS 3/8-16X 1.00LG	4
15	3400V-191	PROTECTIVE	2
16	605-02	O-RING	2
17	D40-7	JAW PLATE	1
18	D40-9	SEGMENT	1
19	01-3906	SHSS HDOG 3/8-16 X .625	1
20	WSRL46	WORKSTOP	1
21	3410-102	MODEL/SERIAL TAG	1
22	07-230	U-TYPE DRIVE SCREW	2
23	DL400-248	CHIP GUARD, SHORT	1
24	DL400-249	CHIP,GAUD, LONG	1
25	D40I-10-SA	4"HANDLE ASSEMBLY	1

ITEMS 5,23,24 ARE NOT SHOWN ON THE DRAWING.

3410H DRAWING



Maintenance Schedule

It is very important to perform regular maintenance on your Kurt vise to assure 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 for chips, 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

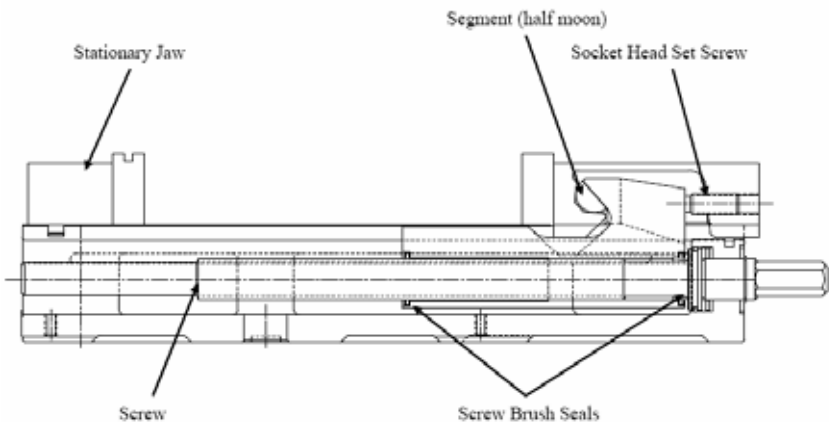
1. Open the vise to the maximum opening.
2. In the back of the movable jaw (handle end, center hole) loosen the socket head set screw (approx. 6 turns) With the hex key (Allen wrench) in the set-screw socket lift up and forward to pivot the jaw off of the vise bed.
3. Slide the Jaw slightly toward the stationary jaw and lift up to remove the jaw from the “hook” of the nut. Note: A spherical segment (shaped as $\frac{1}{2}$ 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 items:
 - a. Nut and 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 ¼ 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 insure proper clamping. (See Fig. below)



3 to 6 months

1. Open vise to maximum opening.
2. Loosen 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 exposing the bearings.
8. Remove the thrust bearing assembly consisting of (2) thrust washers and (1) 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 thrust washer (i.e.marine grade grease)
11. Install thrust bearing assembly on the screw in the reverse manner.
12. Install the first collar by spinning on the screw until it stops. (Items 12-14—See Fig. 1)
13. Install the second collar behind the first and spin 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.

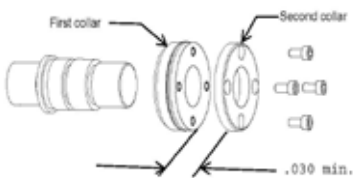
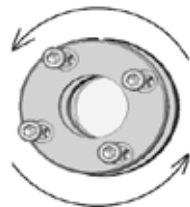
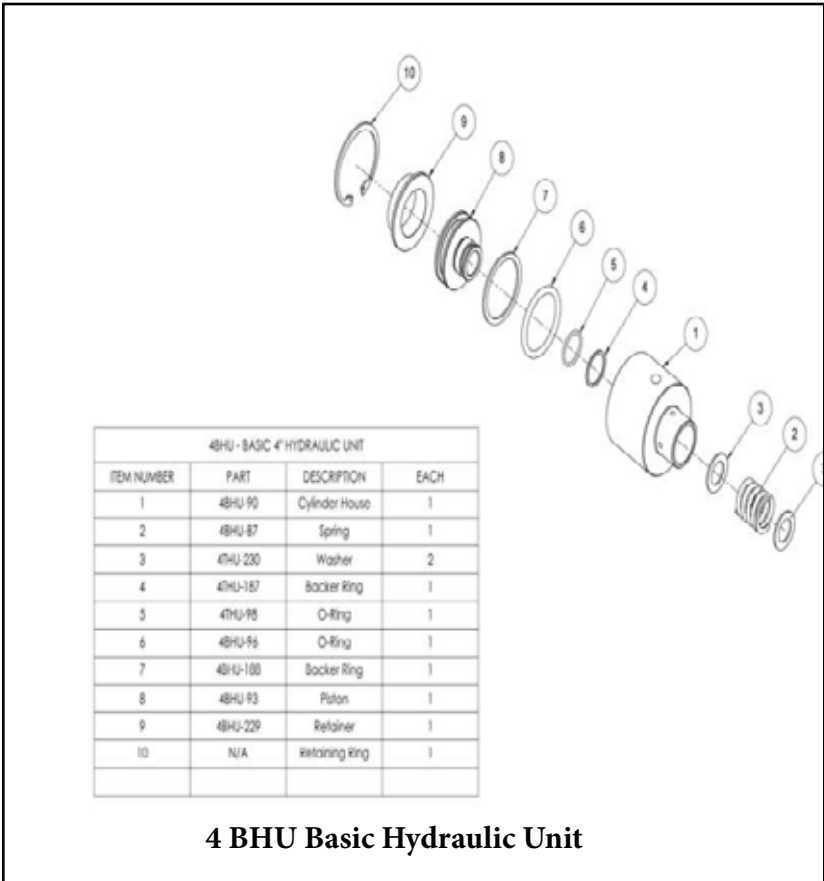


Fig. 1

Fig. 2



15. Then turn the collar back TWO (2) more screw holes. This will allow proper distance for the collar to lock on the threads and keep the bearings firmly in place. (Items 15-16—See Fig. 2)
16. Install the four SHCS and tighten.
17. Install the screw support in the body on the screw (Hex end).
18. Your vise is now ready to use.



Hydraulic Set-up

The 3400H 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 straight fitting on the Hydraulic Unit of the 3400H/3410H vise.
4. A filter-lubricator-regulator (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 HDH690/691 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.

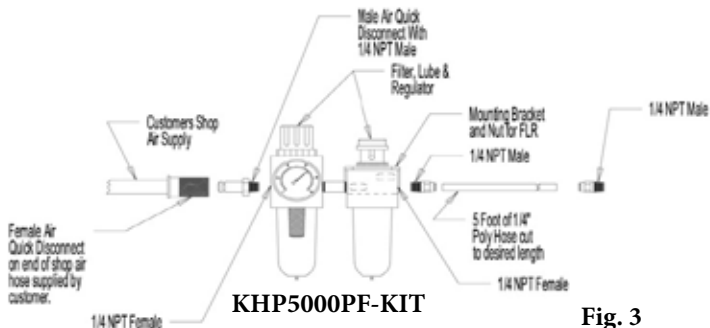


Fig. 3

Typical Hydraulic
vise conection



Fig. 4



Fig. 5

Hand Valve connection

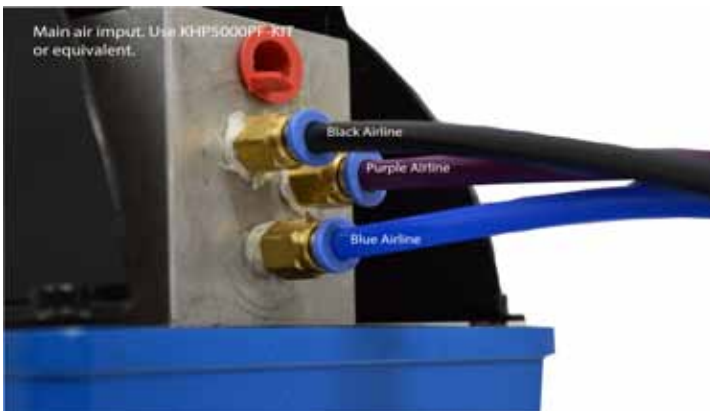


Fig.6

Troubleshooting Tips

The Kurt 3400-Series vise will operate trouble free for many years, if properly maintained. 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 filed with chips and threads could be jammed. Properly clean and grease vise.

Problem: The collar comes off.

Tip: Retighten the four SHCS that hold it on. Proper adjustments need to be made. See the 3-6 month maintenance schedule.

Problem: The handle support is loose or comes off.

Tip: You may need a new retaining ring. This support will float, this is normal. Install a new snap ring if needed.

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.



LIFETIME WARRANTY

IRON CLAD™

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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9445 East River Road NW
Minneapolis, MN 55433

Phone: 877-226-7823
Fax: 877-226-7828

kurtworkholding.com

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