KURT

Self-Centering

Vise

Model:
SCD430
SCD640

Installation & Operation Guide

P/N SCD640-95

Model SCD430 and SCD640

Kurt has two Self-Centering vises, a four-inch jaw width (SCD430) and a six-inch jaw width (SCD640). Jaw opening on the four-inch model is 6.25" and 8" on the six-inch. Centering accuracy from minimum to maximum opening is .0006" with .0002" repeatability. Both movable jaws are Anglock design with zero lift. With optional V-Jaws, the SCD640 can clamp a 6" diameter and the SCD430 can clamp a 4" diameter. A unique feature is an adjustment that allows the centerline of the jaws to be set. This is especially important when mounting several vises on one machine and all centerlines must match.

Installation

Your vise has been packaged to prevent damage during shipment, please inspect the vise carefully for any signs of shipping damage and, if necessary report it to your carrier.

After inspection, follow these steps to install your Self-Centering Vise.

1. Position the vise on your machine table, pallet or sub-plate using the precision bored holes located on the bottom of the vise for alignment. Dowel pins or sine keys are the primary components used in conjunction with the bored holes to locate the vise on a table, pallet or sub-plate.

2. Securing the vise to the machine table, pallet or sub-plate can be accomplished one of two ways.
   - The preferred option would be to use the two drilled and counter bored holes provided in the bed of the vise. Secure the vise to the machine table with two socket head cap screws through the drilled and counter bored holes provided.

   - Another option is to use external clamps on the clamp groove on each side of the vise. Note: to reduce any possible deflection while clamping parts, mount external clamps on each side towards the center of the vise in the clamp grooves.

   - If desired both mounting options may be used.

Adjusting Centerline

Your vise is equipped with a feature that allows you to adjust the centerline of the two clamping jaws. It may not be necessary to adjust centerline if you are using only one vise at a time. If you are using more than one vise at a time and wish to have the centerline of the vises all in line the procedure is as follows. (Reference Figure 1)

1. Lightly clamp parallel block between the jaws.
2. Loosen the lock screw in both threaded collars located near handle end of vise.
3. Holding the lead screw from turning alternately rotate each collar until adjustment of centerline is accomplished.
4. While holding screw from turning lightly snug threaded collars to holding block.
5. Tighten lock screws in both threaded collars.

Adjusting Gibs for Accuracy

Yet another feature of the Self-Centering Vise is adjustable gibs in each movable jaw for maximum accuracy. There are two gibs in each movable jaw and can be adjusted to provide a snug running fit with the center way. For most applications one movable jaw should be adjusted to have a close running fit with the center way, this will become a reference surface. The other movable should remain loose so it can pivot and adjust for any non-parallelism of the work piece. The procedure for adjusting the gibs is as follows.

1. Remove the two slotted head set screws located on the top surface of the movable jaw. Note: These are just plugs, and allow you access to the gib adjustment screw.

2. Pressure on the gib is accomplished through the use of a set screw in the movable jaw. By tightening or loosening the set screw you can increase or decrease the amount of pressure applied on the gib.

3. Adjust gib as desired.
   - Too much pressure on the gibs and the vise screw will be hard to turn.
   - Too little pressure on the gibs and the movable jaw will be loose and will pivot or rock.
   - Both front and rear gibs on each movable jaw should be adjusted with the same amount of pressure.

4. After the gibs have been properly adjusted reinstall the two slotted set screws.

Sizing and installing chip shields

Your Self-Centering vise has been equipped with tight fitting seals at all points where the screw passes through the nuts. These seals act as a secondary protection system against chips. A chip shield system was designed as the primary protection against chip accumulation. Proper use of the chip shields will protect the seals on the nuts and eliminate excess chips from accumulating inside the vise body. The procedure for sizing and installing chip shields is as follows. (Reference Figure 1)

1. Clamp part in the vise the way you will be running them.
2. Cut a piece of chip shield material long enough to extend underneath the jaw plates.
3. Unclamp part and open jaws wide enough to install the cut piece from step 2 into notch in center way.
4. Re-clamp part making sure jaw plates pass over the top of the chip guard. No binding should occur.
5. Place a piece of chip shield material at the front of the vise. Cut it to length so it extends underneath the retaining plate a short ways.
6. Anchor the chip shield to the holding block with the two button head set screws on top of holding block.

Chip guard caution: Use caution when handling chip guard material. Edges and corners are very sharp. Failure to take caution could result in personal injury .

Precautions

When using the Self-Centering vise in production, remember the following points.

1. Use the handle provided with the vise or a torque wrench. The rated clamping forces are obtained with these handles. Never use an extension (cheater bar) or strike the handle with a hammer. This will cause damage to the thrust bearings.

2. When using parallels or step jaws, select a size that keeps the bottom of the clamped part at or below the top surface of the movable jaw. Clamping above this surface could result in jaw lift and loss of accuracy.

3. Use the chip shields provided to prevent excess chip accumulation inside the vise body.

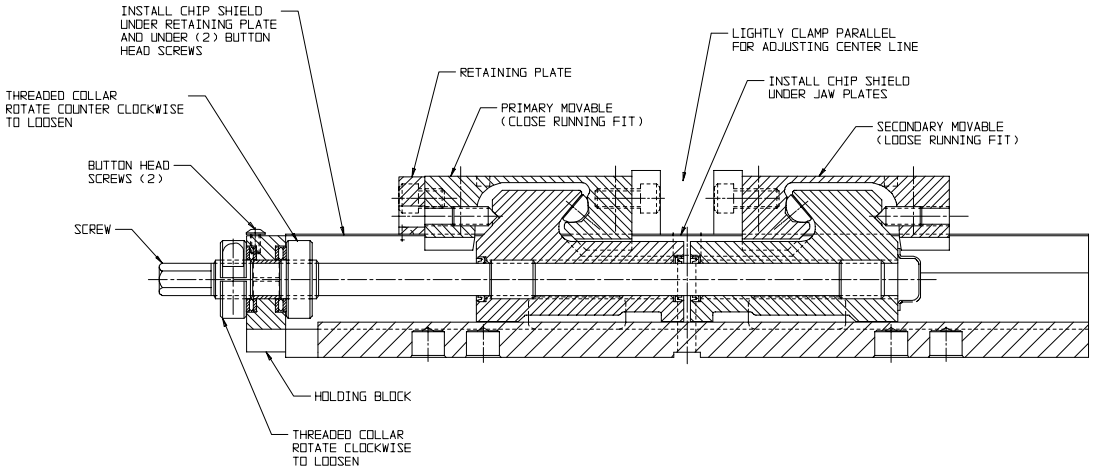


Figure 1

General Maintenance

Misuse and neglect as in any quality product will effect its longevity. Kurt Workholding is no exception. Establish and maintain a preventative maintenance schedule preventing long term problems. Maintenance scheduled times will vary depending on frequency of use and or material being machined. Suggested maintenance schedule for your Self-Centering Vise is as follows.

Daily / Weekly

1. Flush or brush all free standing chips in and around each vise.
2. Clear all free standing machined chips in and around the vise.
3. Inspect all visual screw brush seals for cleanliness.
4. Air-dry and apply rust inhibiting oil to the top surface of the vise bed.

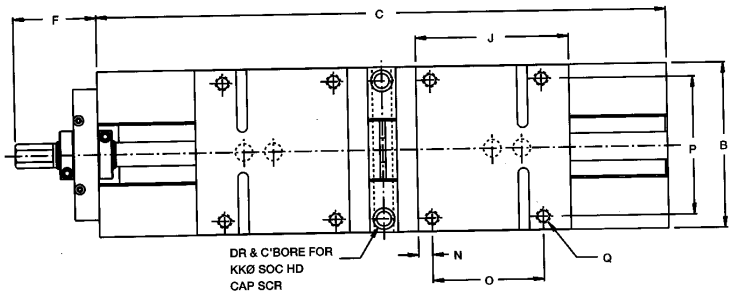
Monthly (1 to 3)

1. Flush or brush all free standing chips in and around each vise.
2. Visually inspect for chip entrapments as applicable.
3. Visually inspect all seals for wear and contamination. (Your Self-Centering Vise has (3) rubber seal on nuts. The front nut contains a seal on the front and back side and the rear seal has only a seal on the front. These seals will "sweep" chips from screw preventing contamination to the threaded screw.
4. Air-dry and apply rust inhibiting oil to any exposure of the screw and to the top surface of the vise bed. Completely open and close the movable jaw. The applied oil will help keep rust from forming in and underneath closed areas and lubricates the threads in the nut.

Every 3 to 6 months: (reference sketches)

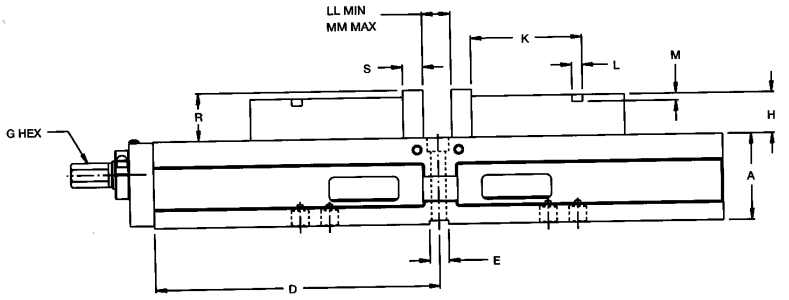
1. Open the vise until you are able to insert the long end of an Allen wrench into the socket head set screw in the backside of the movable jaw. Note: the backside of the movable jaw has (3) drilled and tapped holes.
2. Loosen the setscrew but do not remove. Turn out until the face of the set screw is approximately 1/4" beyond the backside of the movable jaw.
3. With the Allen wrench still in place, lift upward allowing the movable jaw to pivot off the nut. ***Note***: There is a segment in the shape of a half moon in the movable jaw cavity, be careful not to miss-place while cleaning.
4. Remove all chip guards.
5. Clean out any chips that may have built up underneath the movable jaw and in the center ways of the vise bed.
6. Remove the threaded collar near the hexed end of the screw. ***Note:*** Do not loosen or remove the rear-threaded collar, this will insure the centerline of the jaws stay in the same place after re-assembly.
7. Remove the holding block.
8. Clean and inspect both sets of thrust bearing assemblies.
9. Apply water-resistant grease (wheel bearing grease) to the thrust bearings.
10. Re-install holding block.
11. Install threaded collar. While holding screw from turning lightly snug threaded collar to holding block. Tighten lock screw on collar.
12. Inspect the wiper seals on the nuts. Remove any chip build up.
13. Oil all exposed surfaces of the screw and a small film to the top surface of the vise bed.
14. Apply a generous amount of grease into the cavity and place the half moon segment back in place. The flat surface will match up with the angle of the nut once reassembled.
15. Reinstall the movable jaw assuring the segment is properly in place.
16. While pulling back on the movable jaw pulling it against the segment retighten the set screw.
17. Once the set screw is tightened back out approximately $1/8^{th}$ of a turn. This set screw ***must not*** be tightened all the way down. If jaws move hard, loosen the set screw another 1/8" turn outwards.
18. Close movable jaws tightly. This will “set” the segment to its proper orientation. Open the movable jaws and re-check the setscrew for proper tightness. Again do not tighten.

TOP VIEW

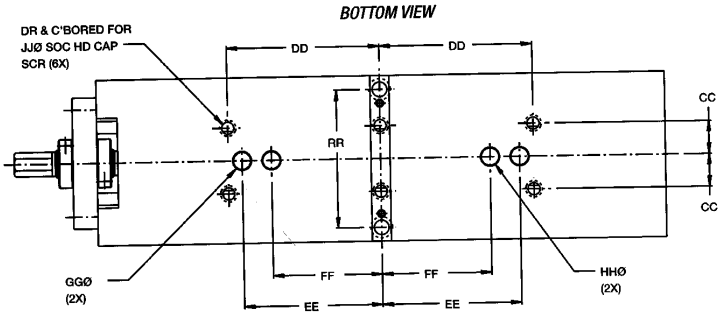


VISE CLAMPING FORCE-LBS.		
Torque-Ft. Lbs.	SCD430	SCD640
10	912	985
20	1,757	1,760
30	2,410	2,576
40	2,935	3,770
50	3,549	4,382
60	4,902	5,764

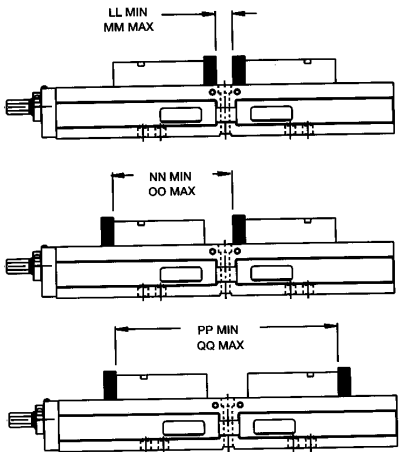
SIDE VIEW



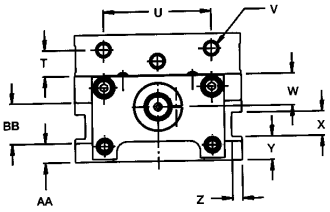
BOTTOM VIEW



JAW POSITION



FRONT VIEW



DIMENSIONAL DATA		
	SCD430	SCD640
A	2.375	3.125
B	4.000	6.000
C	15.500	20.500
D	7.750	10.250
E	0.5005	0.6880
F	2.440	3.000
G	9/16	3/4
H	1.115	1.485
J	4.000	5.500
K	3.000	4.000
L	0.250	0.375
M	0.188	0.250
N	0.312	0.500
O	3.000	4.000
P	3.312	5.000
Q	5/16-18	1/2-13
R	1.235	1.735
S	0.547	0.725
T	0.687	0.940
U	2.500	3.875
V	3/8-16	1/2-13
W	0.871	1.156
X	0.690	0.880
Y	0.700	0.850
Z	0.250	0.360
AA	0.550	0.690
BB	1.000	1.470
CC	0.813	1.188
DD	3.750	5.500
EE	5.000	5.000
FF	3.937	3.937
GG	0.625	0.625
HH	0.630	0.630
JJ	5/16	3/8
KK	3/8	3/8
LL	1.000	1.000
MM	6.250	8.000
NN	5.540	7.240
OO	10.790	14.240
PP	10.090	13.470
QQ	15.340	20.470
RR	3.000	5.000
Ship Wt Lbs	40	100

CUSTOMER SERVICE

For additional information or question about your vise, Please contact Kurt Manufacturing at 1-800-328-2565 between the hours of 7:30 a.m. and 4:30 p.m. Central Standard Time.

REPLACEMENT PARTS

Contact your Kurt Manufacturing representative for a complete list of Self-Centering vise replacement parts and pricing. Your representative can also provide you with a Kurt Manufacturing Product Catalog containing all products and accessories for your Workholding needs.

FACTORY CONTACT

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