



# HD(M)690 AngLock<sup>®</sup> Vise

HD690

HDM690

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 [www.kurtworkholding.com](http://www.kurtworkholding.com) to receive the full benefits of the Kurt Manufacturing Lifetime Ironclad™ Warranty.

## Introduction

Thank you for purchasing a Kurt vise. You have just purchased one of the best machine vises in the industry. The HD(M)690 vise is the newest in our Heavy Duty Vise Series. The outstanding accuracy of this product is second to none. Backed by a lifetime limited warranty, this product will last many years when used and maintained properly.

The original Kurt AngLock Vises are designed for precision clamping on a machine table. The new design will increase your flexibility to do more with the same equipment. They can be used for, but not limited to operations like precision boring, drilling, tapping, and finishing.

This vise features a Quick change, movable jaw in a Pull Type body design with both English and Metric threads. The HD Platform gives this vise a new advantage machining odd shaped parts. It also has a wider, more stable stationary jaw that bolts down from the top. This means no need to remove the vise from your machine table for cleaning. Other features include: 80,000 psi ductile iron body, hardened vise bed & jaw plates, semi-hard steel screw.

## Set-up Instructions

Now that you have your new Kurt HD-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, chip guard and instruction manual in the shipping carton. The chip guard rests between the ways of the vise and can be trimmed to size to help keep the 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.

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

## Manual Vise Clamping Force

Torque Ft.-Lbs.	HD(M)690
10	975
20	1625
30	2400
40	3250
50	3700
60	4275
70	4700
80	5250

## 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.

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. 1 on next page)*

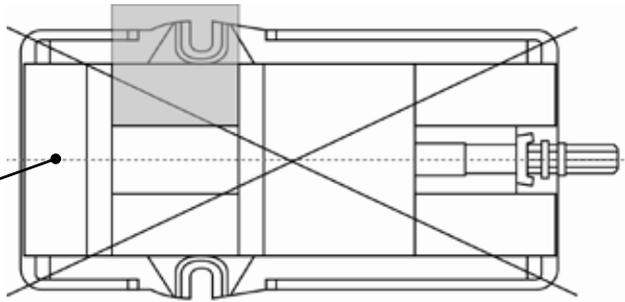
If one-sided clamping is necessary you **MUST** use a dummy part on the other side. When using parallels or step jaws you must select a size that keeps the bottom of the clamped part at or below the top of the movable and stationary jaws. Always use jaw plates for clamping. If jaw plates are not used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

Fig.1

**Sketch #2A**

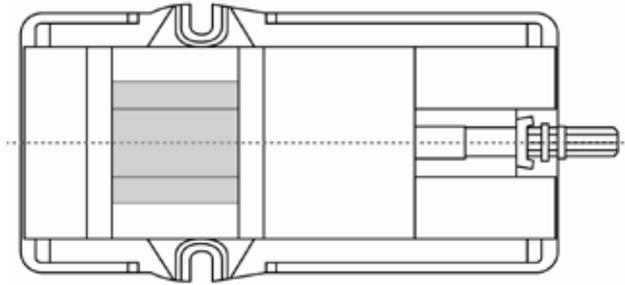
Incorrect part clamping.

Vise width centerline



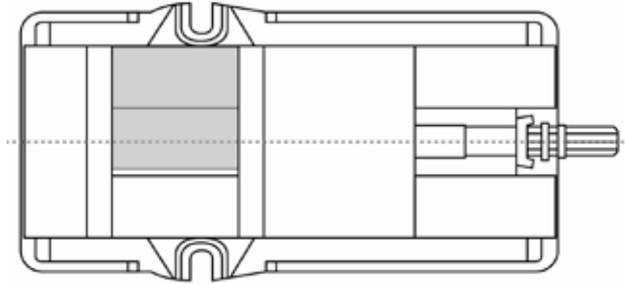
**Sketch #2B**

Correct part clamping.



**Sketch #2C**

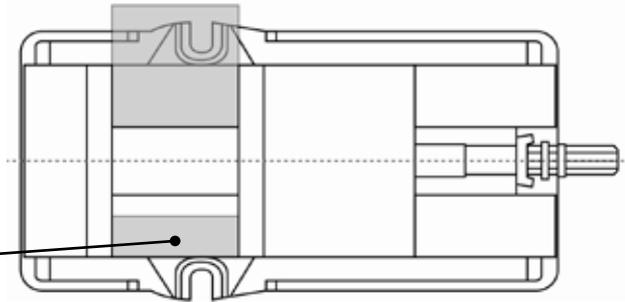
Correct part clamping.



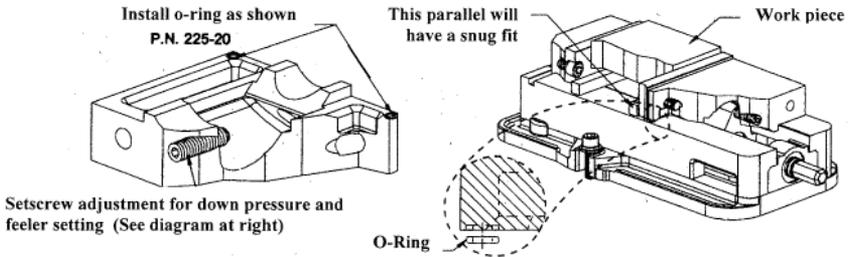
**Sketch #2D**

Correct part clamping.

Non-machined spacer



## Proper O-Ring installation and Usage



Most jobs require a tight contact between the workpiece and the parallels (see above). This option offered by Kurt Manufacturing Company is ideal for that. The O-Ring installation will provide for the movement needed when working with parallels.

### Note:

We do not recommend using this option with step jaws.

### Installation:

Install the O-Ring in the movable jaw as shown above in two places. Tighten the adjustment set screw for a .002" space under the front face of the movable jaw, then the jaw will tighten down during clamping and provide down movement, pulling the part onto the supporting parallel.

## Quick Change Jaws

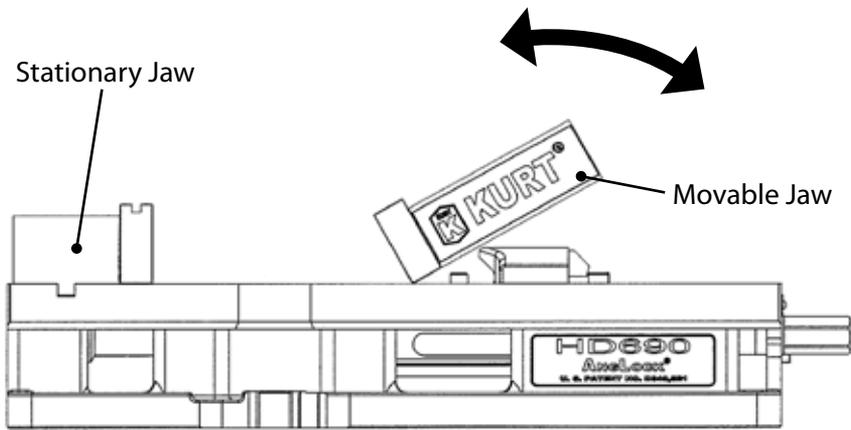
The movable jaw of this vise can be attached and detached very easily by hand. All that is required is to grasp the jaw with two hands. Place your fingers towards the center of the vise and your thumbs to the back. With a firm grip on the jaw lift up and forward to release the jaw from the spring loaded plunger. Slide the jaw forward until it clears the nut and then lift it from the vise body.

The stationary jaw is simply detached by removing the 4 SHCS from the top of the stationary jaw itself. This will allow you to strip down the vise from the top and NOT remove it from your machine table. Whether you have a "J" jaw, aluminum or cast machinable jaws you can change your vise to meet your needs.

To replace the movable jaw simply reverse the procedure and snap the jaw down on the vise bed. (See Fig. 2 and 3 on next page)

Fig.2

### Hard Jaws "J"

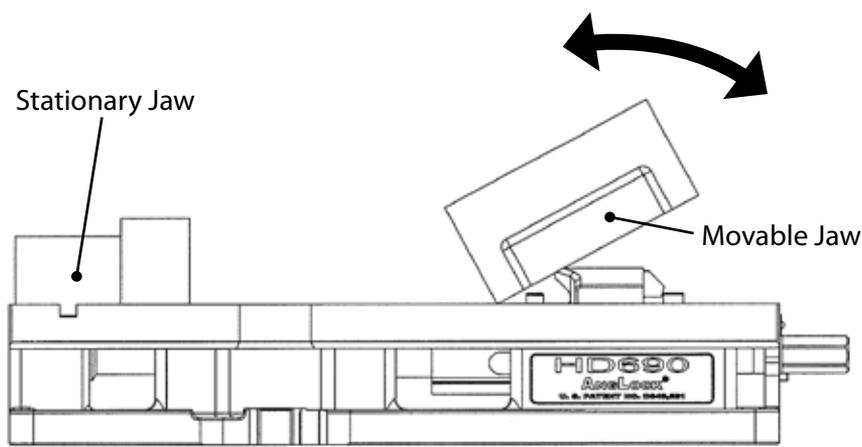


**Note:**

Hard Jaws are included in the HD(M)690

Fig.3

### Machinable Aluminum Jaws "AL"



**Note:**

Hard Jaws are included in the HD(M)690AL

## Quick Change 4 Step Process



**Step 1**  
Remove stationary jaw plate.



**Step 2**  
Remove the movable jaw by lifting up and forward.



**Step 3**  
Secure machineable jaw plate to the stationary jaw.



**Step 4**  
Secure movable jaw by pressing down and snapping on.



You can also view a tutorial video on this process at the Kurt Workholding YouTube Channel.  
[www.youtube.com/user/kurtworkholding](http://www.youtube.com/user/kurtworkholding)

# HD690 Parts List (English version)

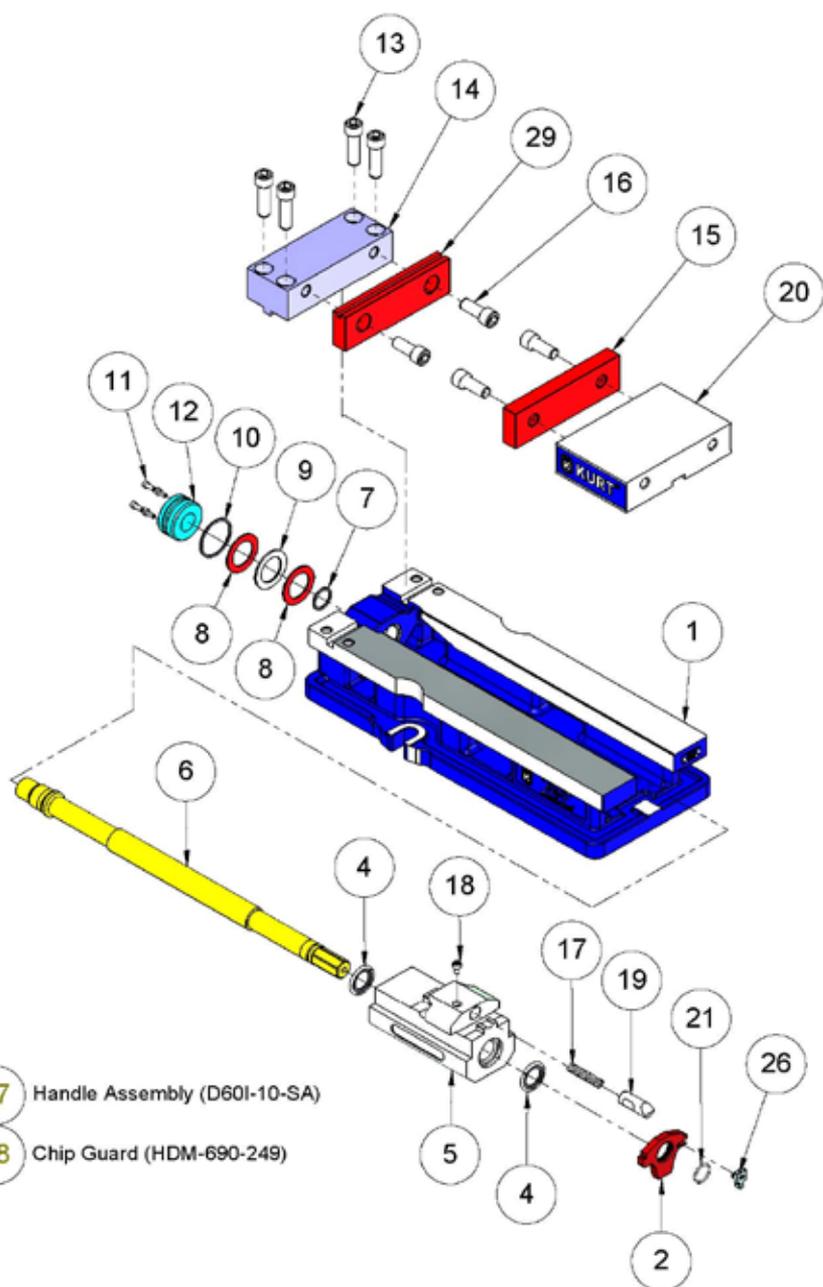
ITEM#	PART#	DESCRIPTION	QTY.
1	HD690-1	BODY, MACHINED	1
2	HDM690-224	SCREW SUPPORT	1
*4	D688-211	INTERNAL BRUSH SEAL	2
5	HD690-3	NUT,MACHINED	1
6	HDM690-5	SCREW	1
*7	3600V-99	O-RING,#117	1
*8	3600V-42	THRUST BEARING WASHER	1
*9	D80-41	THRUST BEARING	1
*10	3600V-128	O-RING,#129	1
11	00-1191	SHCS #8-32 x 3/8	4
12	3600V-8	2-PIECE RETAINING NUT	1
13	00-1439	SHCS 1/2-13 x 1-5/8 LG	4
14	HD690-6	STATIONARY JAW	1
15	D60-7	JAW PLATE	1
16	00-1419	SHCS 1/2-13 x 1-1/4 LG	4
*17	HD6-197	COMPRESSION SPRING	1
*18	26-0082	SHCS M5X.8 X 6MM LG	1
*19	HDM6-142	SPRING GUIDE	1
20	HDL6J-2	MOVABLE JAW	1
*21	MT6-96	O'RING #107	1
26	WSRL46	WORKSTOP	1
**27	D60I-10A-SA	HANDLE ASSEMBLY	1
**28	HDM690-249	CHIP GUARD LONG	1
29	D60-315-P	JAW PLATE GROOVED	1
*Included in kit	HD690-KIT	REPAIR KIT	1
**Not shown on exploded view.			

## HDM690 Parts List (Metric version)

ITEM#	PART#	DESCRIPTION	QTY.
1	HDM690-1	BODY, MACHINED	1
2	HDM690-224	SCREW SUPPORT	1
*4	D688-211	INTERNAL BRUSH SEAL	2
5	HDM690-3	NUT, MACHINED	1
6	HDM690-5	SCREW	1
*7	3600V-99	O-RING, #117	1
*8	3600V-42	THRUST BEARING WASHER	1
*9	D80-41	THRUST BEARING	1
*10	3600V-128	O-RING, #129	1
11	26-0056	SHCS M4X.07 X 10MM LG	4
12	3600VM-8	2-PIECE RETAINING NUT	1
13	26-0300	SHCS M12X1.75 X 40MM LG	4
14	HDM690-6	STATIONARY JAW	1
15	D60-7	JAW PLATE	1
16	26-0286	SHCS M12X1.75 X 30MM LG	4
*17	HD6-197	COMPRESSION SPRING	1
*18	26-0082	SHCS M5X.8 X 6MM LG	1
*19	HDM6-142	SPRING GUIDE	1
20	HDLM6J-2	MOVABLE JAW	1
*21	MT6-96	O-RING #107	1
26	WSRLM46	WORKSTOP	1
**27	D60I-10A-SA	HANDLE ASSEMBLY	1
**28	HDM690-249	CHIP GUARD LONG	1
29	D60-315-P	JAW PLATE GROOVED	1
*Included in kit	HDM690-KIT	REPAIR KIT	1

\*\*Not shown on exploded view.

# HD(M)690 Drawing (English and Metric version)



# 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. Remove the movable jaw. See Attaching & Removing the movable jaw section.
3. Note: Check the spring loaded plunger for movement.
4. Turn the movable jaw over and clean the inside cavity.
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. 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 under side of the jaw makes contact with the nut and snap the jaw down on to the vise bed.
7. 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.
8. 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. 4 on next page)*

Fig.4

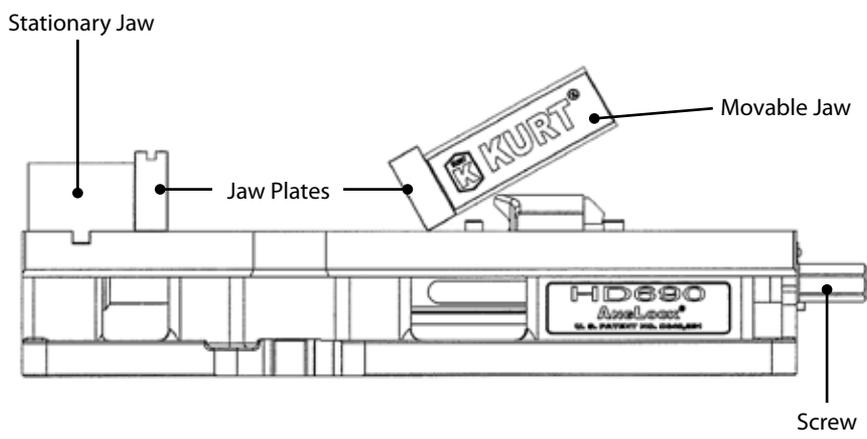
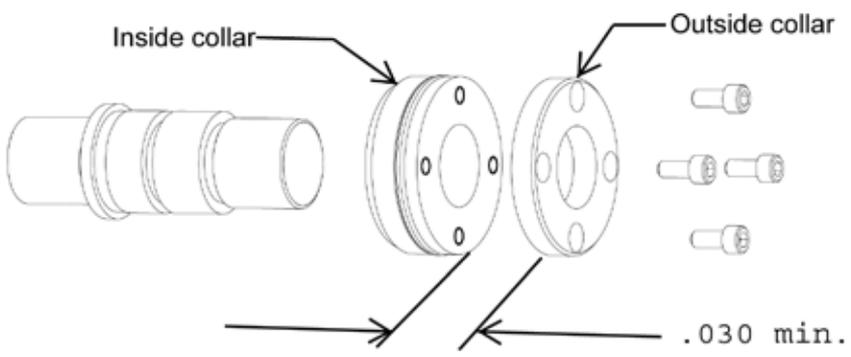


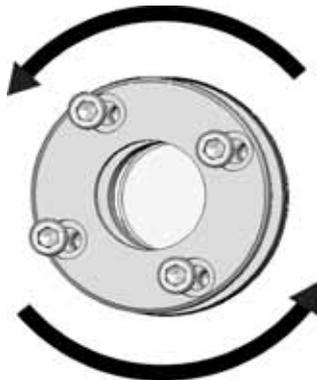
Fig.5



### 3 to 6 months

1. Open vise to maximum opening.
2. Snap off the movable jaw, and remove the stationary 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. *(See fig. 5 to the left)*
6. With one screw still half way out, spin off the outside collar.
7. Using a pin or screw, reach into the inside 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 inside collar by spinning on the screw until it stops. *(Items 12-14—See Fig. 6 below)*
13. Install the outside 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.
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. 6 to the left)*
16. Install the four SHCS and make tight.
17. Install the screw support in the body on the screw (Hex end).
18. Your vise is now ready to use.

Fig.6



## Troubleshooting Tips

The Kurt HDM690 vise will operate mostly 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 break in time for the 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.



# 40 SECONDS TO CHANGE

With the InnerLock jaw plates, it takes only 40 seconds to change out your jaw plates. Increasing productivity over multiple jobs being run on the same vise.



You can also view a tutorial video on this process at the Kurt Workholding YouTube Channel.

[www.youtube.com/user/kurtworkholding](http://www.youtube.com/user/kurtworkholding)



**Thank you for your purchase!  
If you have any feedback or questions.**

**Please contact us at:  
workholding@kurt.com  
or  
1-877-226-7823**

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**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 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, 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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