KURT WORKHOLDING

# CTTL6CS TriLock Tower
## WITH CARVESMART JAWS

### Operating Instruction Manual
### CTTL64CS / CTTL65CS / CTTL66CS


(Tower shown with optional Carvesmart aluminum soft jaws and steel hard jaws.)

**WATCH PRODUCT SETUP VIDEO**
Scan Code with Phone Camera

# TABLE OF CONTENTS



# TOWER DATA

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

Purchase Date: _____ - _____ - _____

Purchase Order: _____

Purchased From: _____

Delivery Date: _____

Serial No.: _____

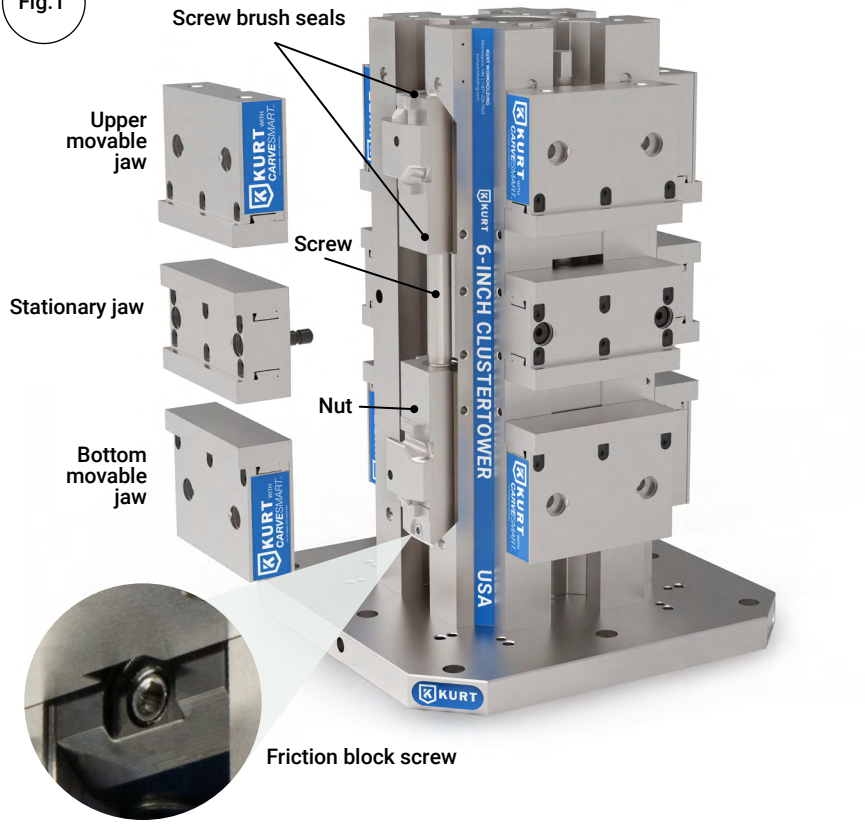
**NOTE: PLEASE REGISTER YOUR WARRANTY ONLINE AT KURTWORKHOLDING.COM**

# INTRODUCTION

Thank you for purchasing a Kurt CTTL6CS TriLock Tower. You have just purchased one of the best machine towers 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.

When clamping the tower vises, the patented Anglock design induces a ½ pound of downward force for each pound of forwarc clampingforce — minimizing jaw lift and increasing accuracy (Fig.1). Other features include: 80,000 psi ductile iron body, hardened vise bed & jaw plates, and a semi-hard steel screw.

Fig.1



# SET-UP INSTRUCTIONS

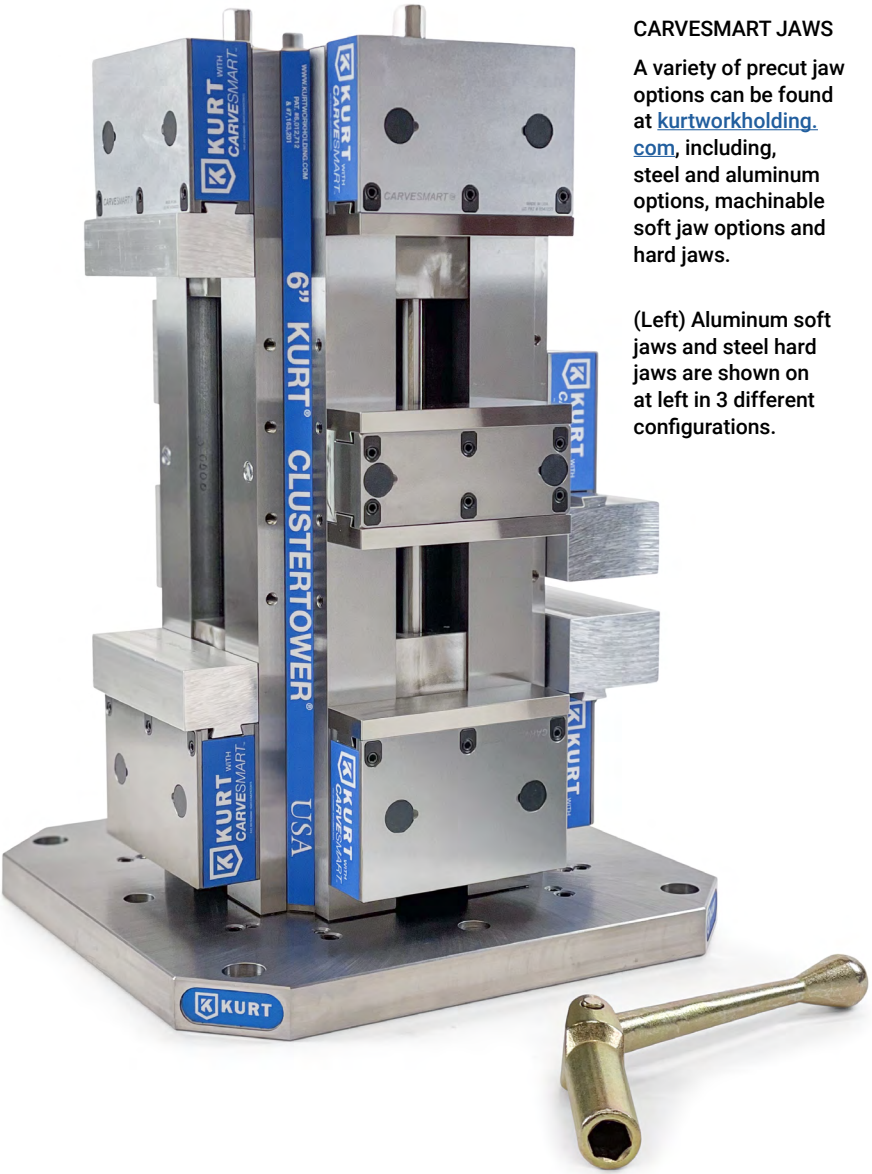
Now that you have your new Kurt Tower, it's time to set-up and begin using it. You will see that your new tower comes with a Kurt swivel handle. The handle is specifically designed to provide maximum torque to your tower (clamping force provided below). Your tower should be mounted to a clean, flat surface. 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 tower with solvent or another cleaner if needed.

Please be sure to exercise good judgment when securing your tower to the mounting surface. Be sure your tower is secured and will not move when applying cutting pressure.

| CTTL6CS | |
|---|---|
| **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 |

# SET-UP INSTRUCTIONS

TriLock towers can be set up in several single-station vise configurations and as a standard double-station vise. Vise configuration-changing instructions can be found starting on page 10.




CARVESMART JAWS

**A variety of precut jaw options can be found at kurtworkholding.com, including, steel and aluminum options, machinable soft jaw options and hard jaws.**

**(Left) Aluminum soft jaws and steel hard jaws are shown on at left in 3 different configurations.**

# 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. For repeatable clamping force, we recommend using a torque wrench to set the clamping force to one of the torque specifications listed on page 4.

**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 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. (See Fig. 2 on next page) 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.

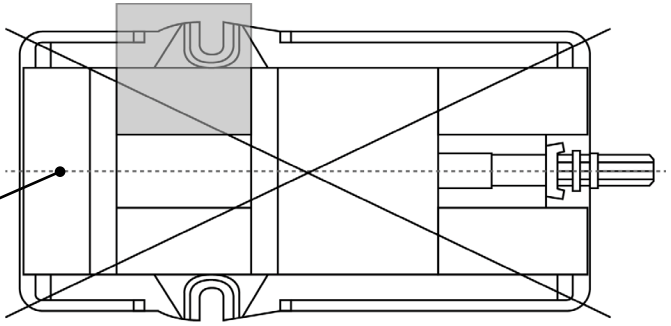
Always use jaw plates for clamping. If jaw plates are not used, damage to the mounting surface of the movable and stationary jaw will occur. This will result in reduced clamping accuracy and repeatability.

Fig.2

Sketch #2A

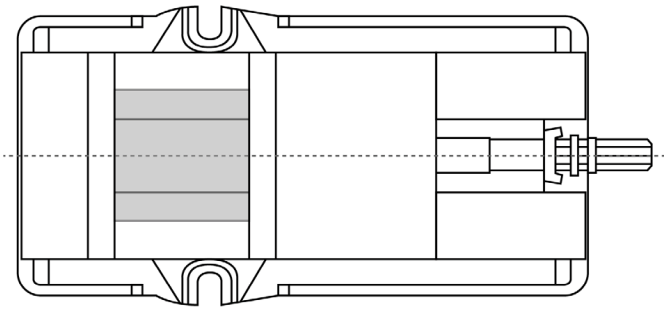
Incorrect part clamping.

Vise width centerline



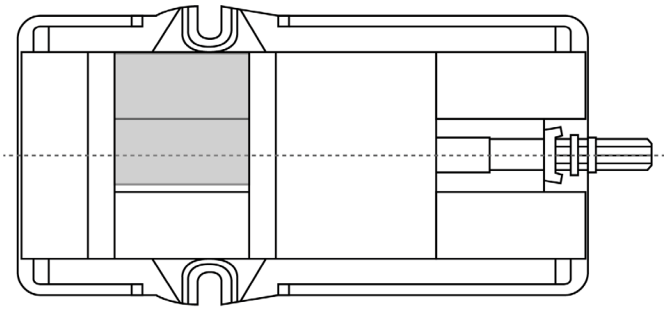
Sketch #2B

Correct part clamping



Sketch #2C

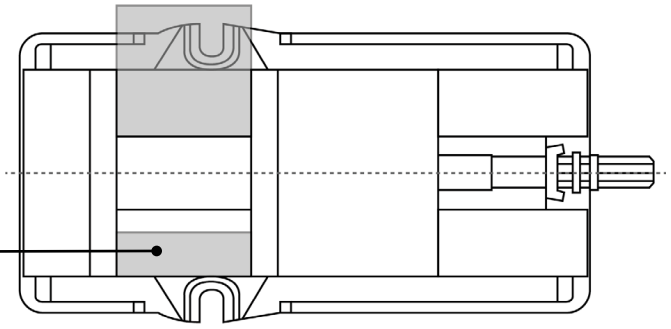
Correct part clamping



Sketch #2D

Correct part clamping

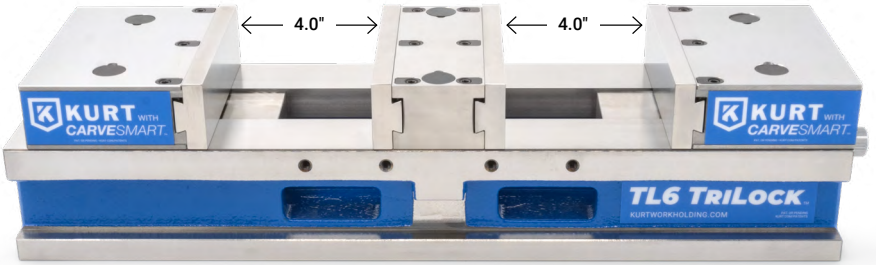
Dummy spacer



# TRILOCK 3-IN-1 DESIGN

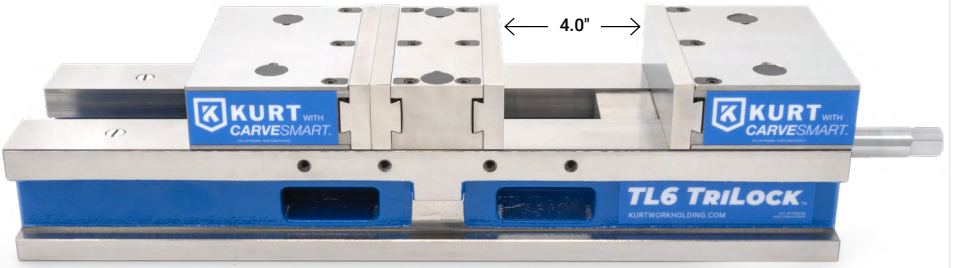
Your new tower features four TL6CS TriLock vise style Carvesmart jaw sets with patented design that adjust in minutes between a double-station vise, large single-station vise, and a small single-station vise.

### Standard Double Station



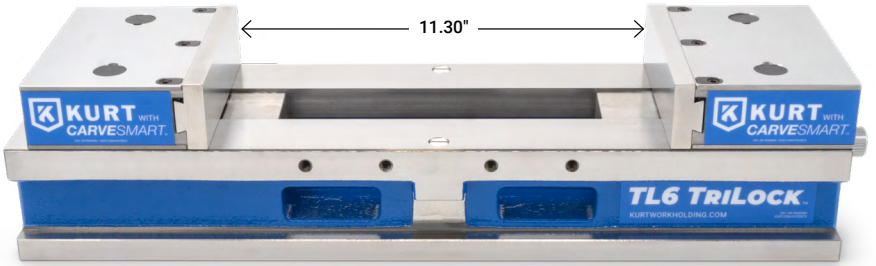

(CTTL6CS Tower vise sizes and configurations match the TL6CS model shown here with .5" hard jaws)

### Small Single Station




(CTTL6CS Tower vise sizes and configurations match the TL6CS model shown here with .5" hard jaws)

### Large Single Station




(CTTL6CS Tower vise sizes and configurations match the TL6CS model shown here with .5" hard jaws)

# THIRD HAND FRICTION BLOCK

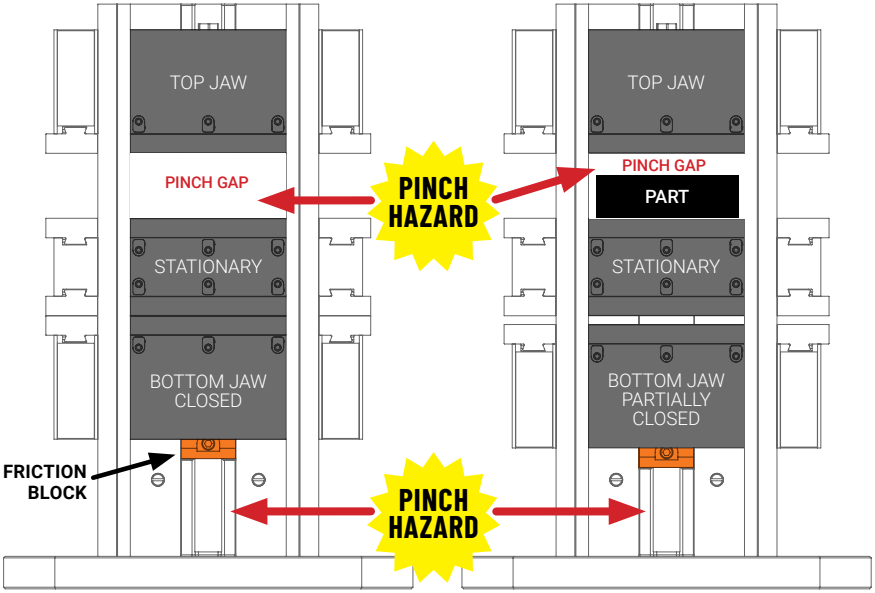
3-in-1 size adjustments are faciliated with a friction block designed to allow the screw assembly to move freely within the body.


**Using the "Third Hand" Friction Block:**

The friction block (also known as the Third Hand) has three tension settings:

1. **Fully engaged.** This setting locks the friction block/screw assembly in place. Tighten the third hand screw clockwise all the way through the middle section to reach full engagement. **NOTE:** When tightening clockwise for fully engaged, do not tighten more than 20 ft-lbs.
2. **Middle friction setting (neutral).** The neutral setting allows for approximately 1 full screw turn of looseness between fully engaged and fully disengaged. This setting places friction on the friction block/screw assembly so that they can't accidentally slide down in the tower and cause a pinch hazard during operation.
3. **Fully disengaged.** This setting allows the friction block/screw assembly to move freely in the vise body. It can be used for adjusting between the 3-in-1 vise sizes and is also the setting for cleaning and friction-free screw assembly movement/removal. **NOTE:** When tightening counter-clockwise direction for fully disengaged, do not tighten more than 40 ft-lbs.

# PINCH POINT WARNING: KEEP HANDS CLEAR OF JAWS WHEN RELEASING FRICTION BLOCK




## CAUTION: AVOID A POTENTIAL PINCH HAZARD

**KEEP HANDS AWAY FROM JAWS DURING OPERATION. LEAVE FRICTION BLOCK DISENGAGED UNLESS NEEDED TO SUPPORT BOTTOM JAW.**

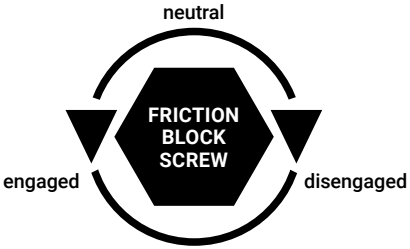
Disengaging the friction block when the upper jaw is open and the bottom jaw is closed or partially closed can create a pinch point between jaws and parts and friction block and base plate.

PINCH POINT VIDEO
Scan with phone camera

**DISENGAGED POSITION:**
Counterclockwise past Neutral

**NEUTRAL POSITION:**
One turn of free motion between Engaged and Disengaged

**ENGAGED POSITION:**
Clockwise past Neutral




STANDARD DOUBLE STATION


BOTTOM SMALL SINGLE STATION

# 5 DIFFERENT PART-HOLDING SETUPS

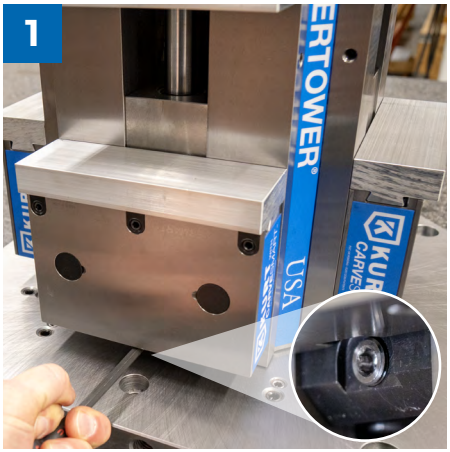

TOP SMALL SINGLE STATION


BOTTOM LARGE SINGLE STATION

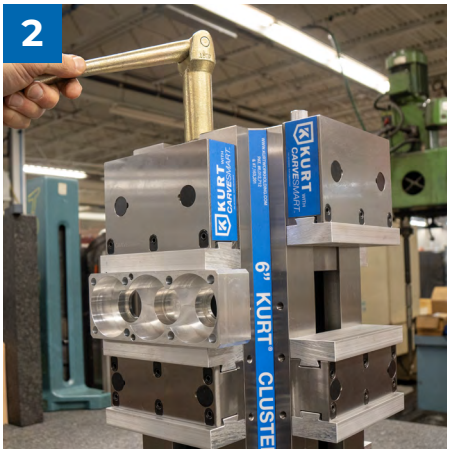

TOP LARGE SINGLE STATION

# OPERATING INSTRUCTIONS

## Standard Double Station Use:




Starting with both jaws open, tighten the friction block screw (third hand) to the fully engaged position. Turn the vise handle counterclockwise. The top jaw should only be opening at this point.

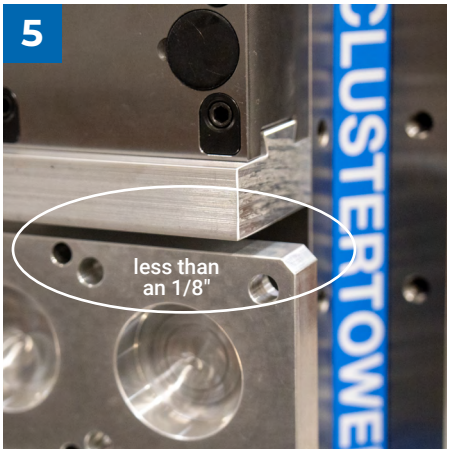



Open the jaws until the top part can fit in. Place top part and tighten lightly to hold in place. Loosen the friction block screw, or third hand, to the fully disengaged position.

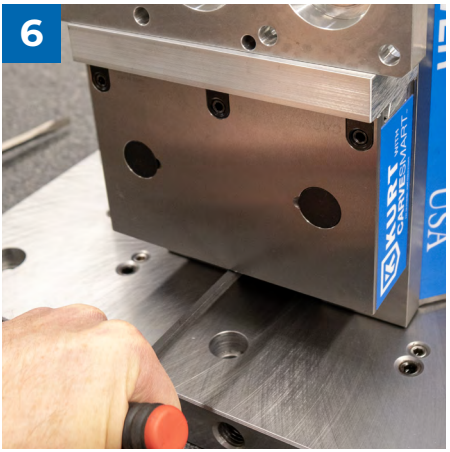

Turn the handle counterclockwise to open the bottom station until the lower part can be set in place. Place the bottom part into the station.


Close the vise by rotating the handle clockwise until both jaws come in contact with the parts.

# OPERATING INSTRUCTIONS

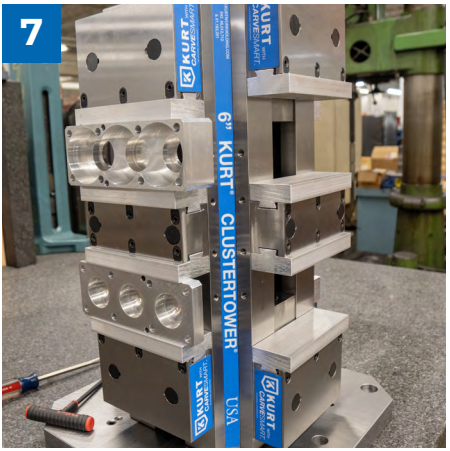



Open vise by rotating the handle counter-clockwise until the bottom jaw is less than an 1/8-inch from the part.




Next, tighten the friction block screw clockwise until fully engaged.


Engaging the friction block locks the bottom nut and allows the vise to open and close on one part at a time. Close the vise by rotating the handle clockwise to clamp the parts.




Torque the handle to within the torque range that is listed on page 4 of this manual. The vise is ready to be used for double station use for this size parts.

# OPERATING INSTRUCTIONS

**Bottom Small Single Station Use:** To use this vise as a small single station vise, holding parts in the bottom vise jaw, follow the steps below:


Tighten the friction block screw, or third hand, clockwise to the fully engaged position.


Close the top jaw by turning the screw handle clockwise until the top jaw makes contact with the stationary center jaw.

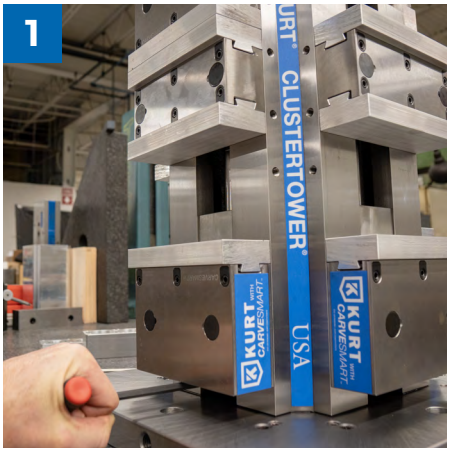
**!** PINCH CAUTION: **Disengaging the friction block when the upper jaw is open and the bottom jaw is closed or partially closed, can create a pinch point between jaws and parts.**


Next, loosen the holding block screw by turning counterclockwise to the fully disengaged position.

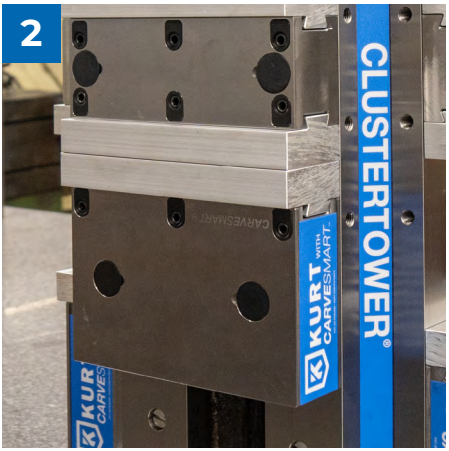

The vise is now ready to be used in the bottom small single station configuration.

# OPERATING INSTRUCTIONS

**Top Small Single Station Use:** To use this vise as a small single station vise holding parts in the top vise jaw, follow the steps below:




First, follow steps 1 through 3 for the bottom small single station vise setups on page 12.




Completely close on the bottom jaw (the fiction block should be fully disengaged).

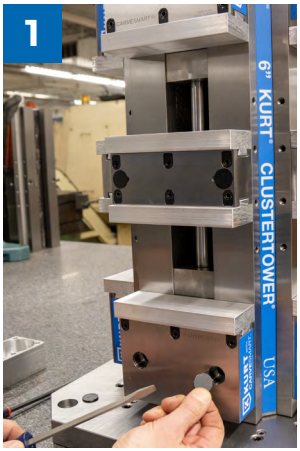
PINCH CAUTION: Disengaging the friction block when the upper jaw is open and the bottom jaw is closed or partially closed can create a pinch point between jaws and parts.


Tighten the friction block screw to the fully engaged position.


The vise is now ready to be used in the top small single station configuration.

# OPERATING INSTRUCTIONS

**Bottom Large Single Station Use:** To use this vise as a large single station vise, holding a part low in the vise, follow the steps below:






Remove the bottom jaw plugs. Pop the bottom jaw off by lifting from the back of jaw and tilting forward. Remove the vise body plugs. Reinstall the bottom jaw.


Tighten the friction block screw clockwise to the fully engaged position.

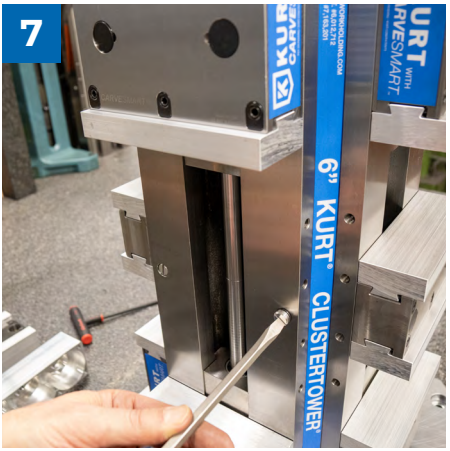

Completely close the top station. Then, loosen the friction block screw to the fully disengaged position.

PINCH CAUTION: Disengaging the friction block when the upper jaw is open and the bottom jaw is closed or partially closed can create a pinch point between jaws and parts.

# OPERATING INSTRUCTIONS

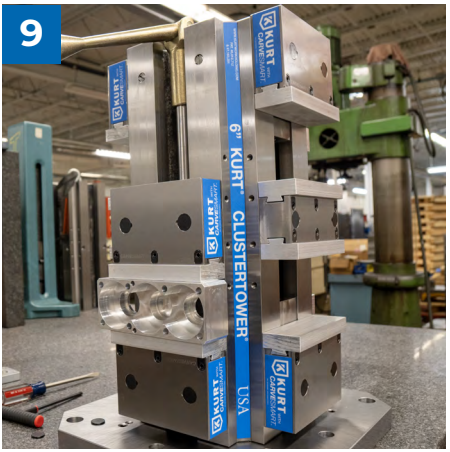
**Bottom Large Single Station Use:** To use this vise as a large single station vise, holding a part low in the vise, follow the steps below:


Remove the stationary jaw plugs and locating socket head cap screws—be sure to hold the jaw while removing the screws. Set the jaw and parts aside.




Screw the vise body plugs from the bottom jaw into the center holes.


Insert the locating screws in the lower jaw and tighten them down. Replace bottom jaw plugs.




The vise is now ready for large part use in the bottom large single station configuration.

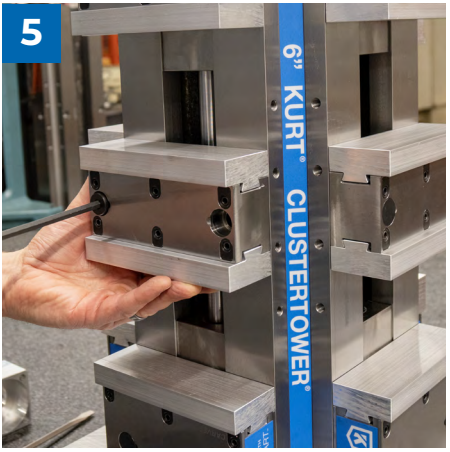
# OPERATING INSTRUCTIONS

**Top Large Single Station Use:** To use this vise as a large single station vise, holding a part high in the vise, follow the steps below:




Remove the upper jaw plugs. Pop the upper jaw off by lifting from the back of jaw and tilting forward. Remove the vise body plugs. Reinstall the top jaw.


Tighten the friction block screw clockwise to the fully engaged position.



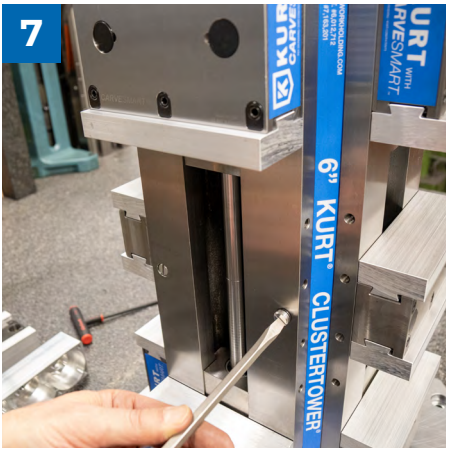

Open the top station and remove stationary jaw plugs and stationary jaw locating screws. Hold the jaw while removing the screws.

PINCH CAUTION: Disengaging the friction block when the upper jaw is open and the bottom jaw is closed or partially closed can create a pinch point between jaws and parts.

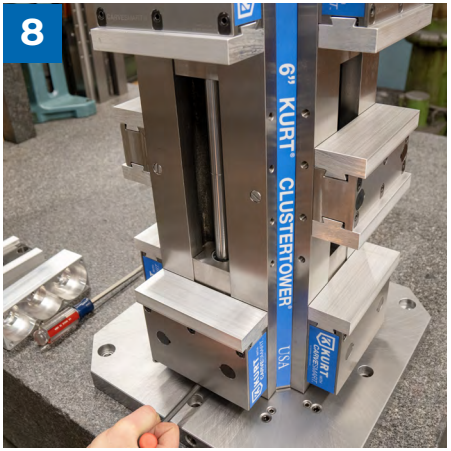
# OPERATING INSTRUCTIONS

**Top Large Single Station Use:** To use this vise as a large single station vise, holding a part high in the vise, follow the steps below:

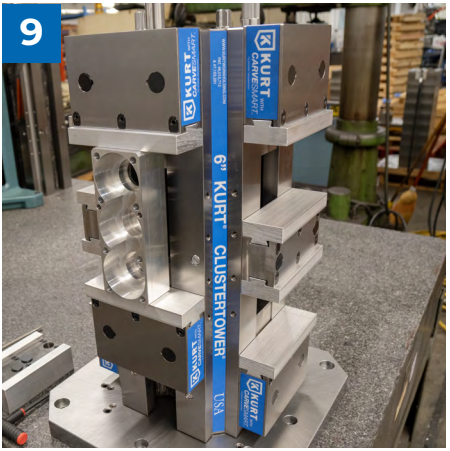

Insert locating screws into the top jaw—turn vise handle to align holes if needed. Replace the top jaw plugs after screws are tightened.




Screw the vise body plugs from the top jaw into the center holes.



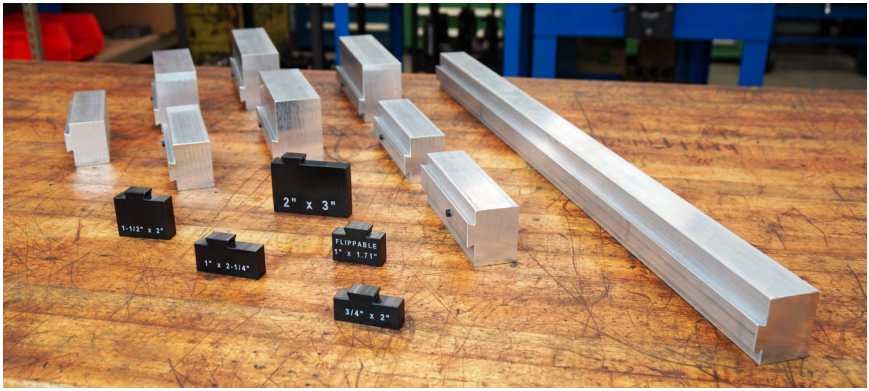

Loosen the friction block to fully disengaged.




The vise is now ready for large part use in the top large single station configuration.

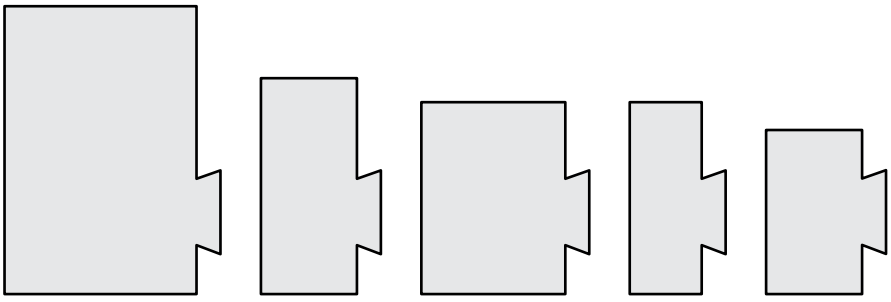
**PINCH CAUTION:** Disengaging the friction block when the upper jaw is open and the bottom jaw is closed or partially closed can create a pinch point between jaws and parts.

# CARVESMART JAW OPTIONS



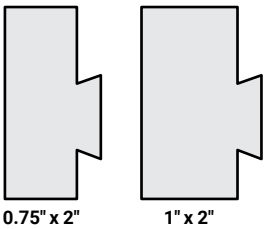

### 6061 Extruded Aluminum Jaws:

Aluminum jaws are available in five profiles and several pre-cut lengths with SmartStops including: 4", 6", and 8" sizes. Also available in 31" and 94" lengths that can be cut to any size.



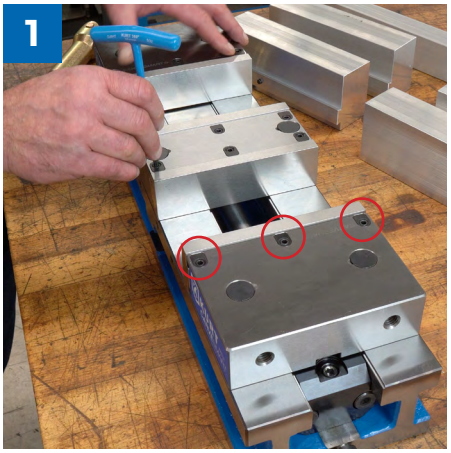

### 1018 Steel Jaws:

1018 cold rolled steel jaws are available in two profiles and several pre-cut lengths with SmartStops including: 4", 6", and 8" sizes. Also available in 31" lengths to cut to any size.

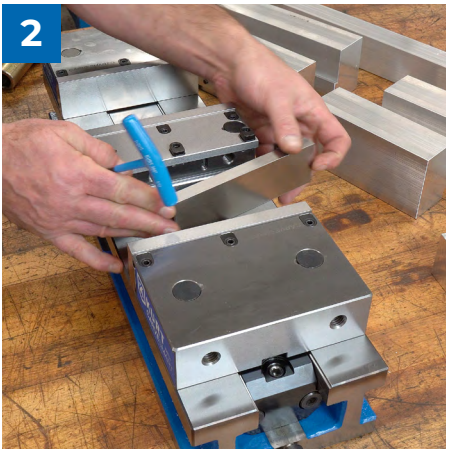


# CHANGING CARVESMART JAWS

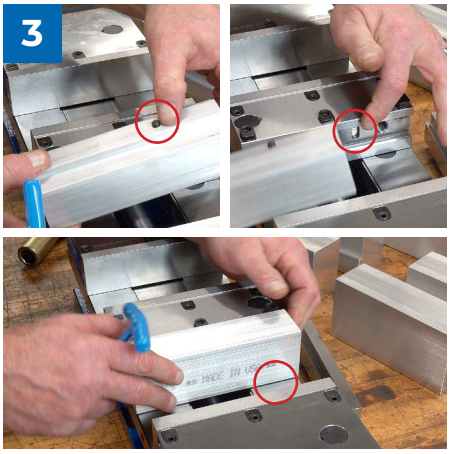
CARVESMART jaw plates change in seconds by loosening 3 clamp screws on each jaw. A variety of jaw options are available at: kurtworkholding.com



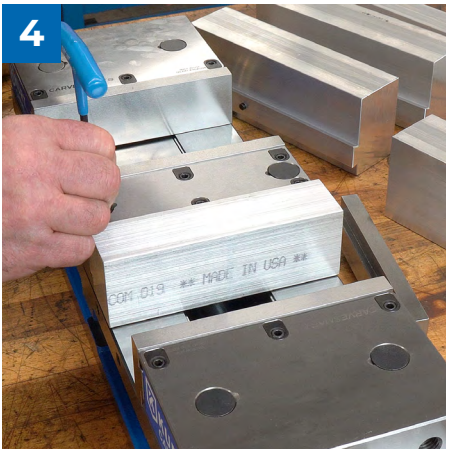

**Loosen 3 screws on top of each jaw for each individual jaw plate.**




**Remove existing plate (if present).**




**Be sure to align the location pin and that the new jaw plate is flat against vise top.**



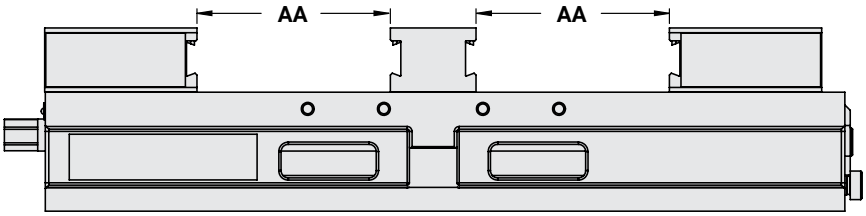

**Then firmly tighten all screws. Do the same with each individual jaw plate and you're ready to go.**

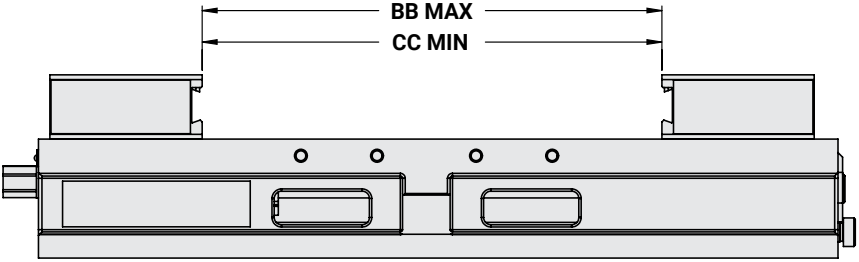
Fig.3

# JAW POSITIONING

**Note:** Dimensions below are in inches unless specified.

**Vise should not be used without jaw plates installed in stationary and movable jaws as it is shown in the diagrams below.**



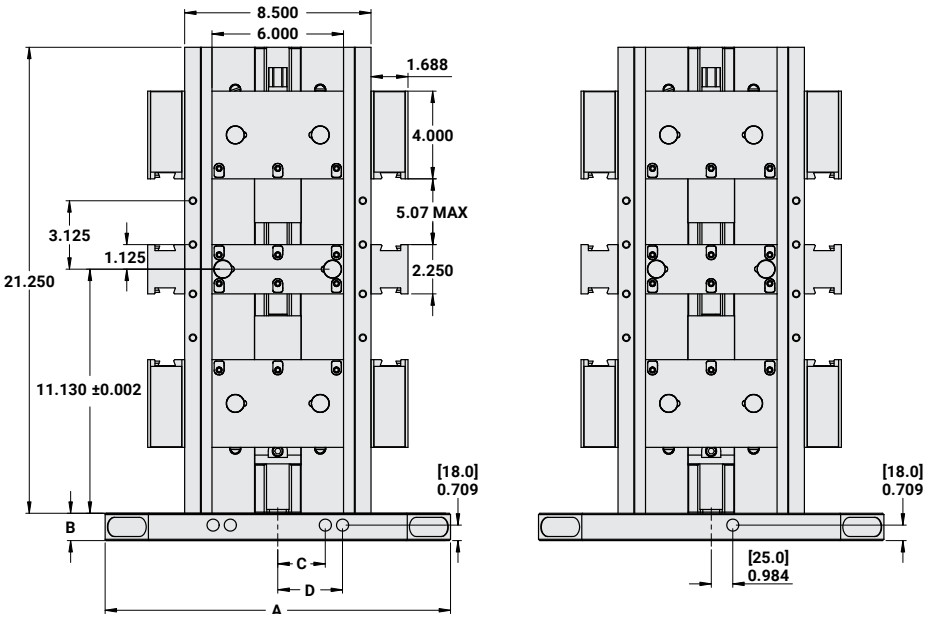

| | |
|---|---|
| **AA** | 5.07 |
| **BB MAX** | 12.37 |
| **CC MIN** | 7.16 |

Fig.4

# TOWER DIMENSIONS

**Note:** Dimensions below are in inches unless specified.

**Vise should not be used without jaw plates installed in stationary and movable jaws as it is shown in the diagrams below.**




| | CTTL64CS | CTTL65CS | CTTL66CS |
|---|---|---|---|
| **A** | 400mm | 500mm | 630mm |
| **B** | 1.250 | 1.250 | 1.500 |
| **C** | 55mm | 55mm | 100 |
| **D** | 75mm | 75mm | N/A |

# CTTL6CS PARTS LIST

| ITEM# | PART # | DESCRIPTION | QTY. |
|---|---|---|---|
| **1** | CTTL6-1 | Column, Trilock | 1 |
| **2** | TL6-5 | Screw | 4 |
| **3** | TL6-3F | Front Nut | 4 |
| **4** | TL6-3R | Rear Nut | 4 |
| **5** | TL6-14 | Protecting Plug | 4 |
| **6** | TL6-18 | Shcs, 1/2-20unf X 1.5 Lg Modified | 4 |
| **7** | TL6-19 | Shcs, Shoulder | 8 |
| **8** | TL6-20 | Shcs, Precision Locating 1/2-13 | 8 |
| **9** | TL6-87 | Spring, Die | 4 |
| **10** | TL6-197 | Preload Spring | 8 |
| **11** | TL6-224 | Holding Block | 4 |
| **12** | TL6-225 | Friction Shoe | 4 |
| **13** | TL6-292 | Vise Body Plug, 0.5” | 16 |
| **14** | TL6CS-2 | Movable Jaw | 8 |
| **15** | TL6CS-6 | Carvesmart Stationary Jaw | 4 |
| **16** | TL6CS-111 | Sticker, Movable | 16 |
| **17** | D688-211 | Internal Brush Seal | 12 |
| **18** | DX6-169 | Wave Spring | 12 |
| **19** | HDM6-142 | Spring Guide | 8 |
| **20** | HD6-267 | Spring | 8 |
| **21** | 80007 | Carvesmart Clamp Nut | 48 |
| **22** | 80003 | Carvesmart Clamp Screw | 48 |
| **23** | 3600V-191-SA | Protective Plug Assembly | 24 |
| **24** | DLU4-96 | O-Ring, Buna N, #014 | 24 |
| **25** | 26-0082 | Shcs, M5 X .8 X 6mm Lg | 8 |

Fig.5

# CTTL6CS MECHANICAL DRAWING

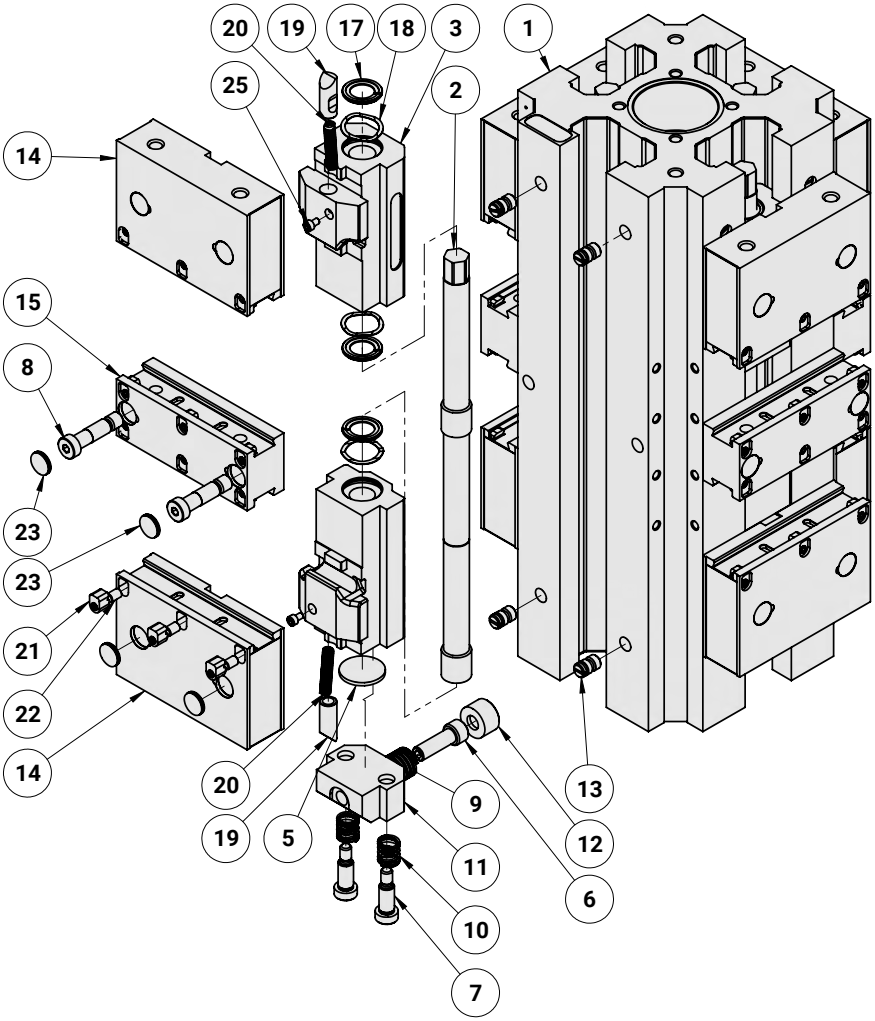
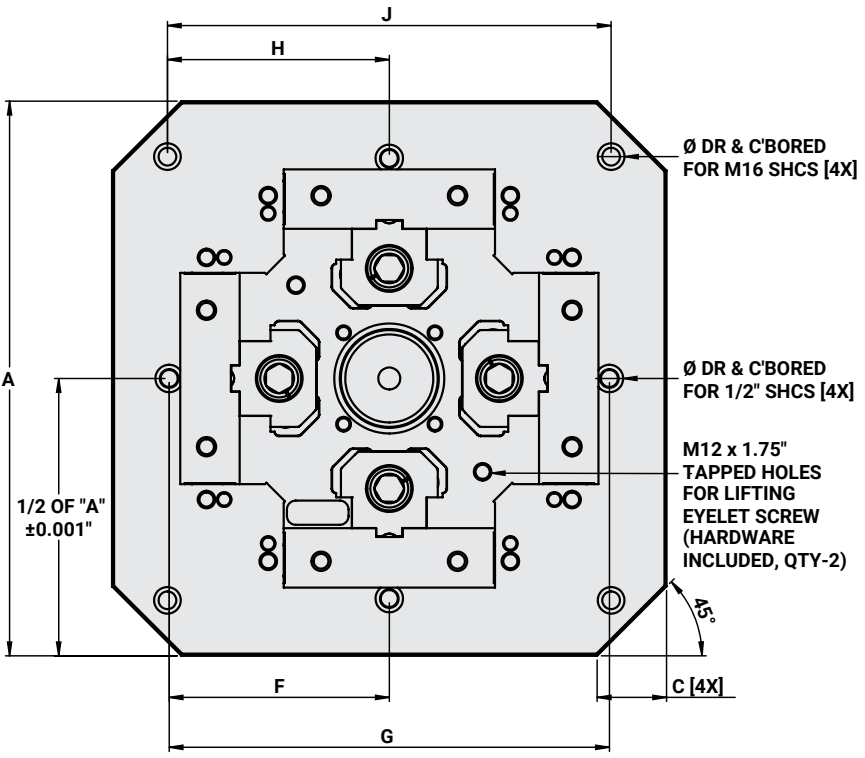


Fig.6

# MOUNTING LOCATIONS




## MOUNTING BASE DIMENSIONS

| | 400 MM BASE | | 500 MM BASE | | 630MM BASE | |
|---|---|---|---|---|---|---|
| | MM | INCH | MM | INCH | MM | INCH |
| A | 400 | 15.748 | 500 | 19.685 | 630 | 24.803 |
| C | 50 | 1.97 | 60 | 2.36 | 70 | 2.76 |
| F | — | 6.25 | — | 8 | — | 10 |
| G | — | 12.5 | — | 16 | — | 20 |
| H | 160 | — | 200 | — | 250 | — |
| J | 320 | — | 400 | — | 500 | — |

# TOWER INSTALLATION INSTRUCTIONS

CAUTION

Do not attempt to lift the tower by attaching to any of the vise jaws or injury may result. Always attach lifting devise to the tower frame.

**English Mounting:**

The CTTL6 can be bolted down using the four English 1/2" or 5/8" bolt holes indicated in figure 6 by dimensions F and L.

**Metric Mounting:**

The CTTL6 can be properly bolted down using the four Metric 12mm or 16mm bolt holes indicated in figure 6 by dimensions H and K.

The CTTLL6 can be located using edge locators or by using a center locating pin. Contact Kurt for optional center locators.

# MAINTENANCE SCHEDULE

Perform regular maintenance to ensure proper operation. Improper maintenance resultS in poor 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. Close the vise fully by rotating the handle in the clockwise direction.
2. Fully loosen the third hand friction block screw (#6, pg 23) to allow the nut and screw assembly to slide freely inside the tower body.
3. Open the vise to the maximum opening.
4. Slide the movable jaw (#14, pg 23) slightly toward the stationary jaw and lift up to remove the jaw from the "beak" of the nut.
5. Turn the movable jaw over and clean the inside cavity.
6. Remove the caps and socket head locating screws from the center stationary block. Clean the stationary block.
7. Slide the nut and screw assembly out of the tower body.
8. Remove chips, clean body cavities and apply a light coat of machine oil to the machined surface of the following item:
    a. Nut and screw assembly (clean exposed threads on the screw)
    b. Bed of vise (top of "rails")
    c. Inside of the tower between the center ways.
9. Slide the nut and screw assembly into the tower body.
10. To re-assemble the movable jaw, press down on each of the quick jaws to lock into place.
11. Follow instructions on pages 10-15 to set the vise up in the desired configuration.
12. Your vise is ready. Open and close to check for proper operation.

# TROUBLESHOOTING TIPS

If properly maintained, the Kurt CTTL6CS TriLock TriLock 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.

**WATCH PRODUCT SETUP VIDEO**
Scan Code with Phone Camera

# MAINTENANCE LOG/NOTES:


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.

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KURT WORKHOLDING

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