

KITAGAWA

Serving the
Workholding
Industry, Fall '96

workholding times

Chucks - Customized with the Customer in Mind.

While most manufacturing facility personnel are accustomed to seeing a KITAGAWA chuck on their lathe or machining center, many are quite surprised to find that KITAGAWA offers far more than the conventional lathe chuck. In fact, most come away discussing far more than they had anticipated with our staff of sales engineers.

With uptime, productivity and quick change, the phrases of the day, workholding has become more than a passing thought when considering a machine purchase. As most of us have discovered, long gone are the days when the standard chuck could handle every job.

Today's highly competitive market requires that manufacturers be extremely flexible in attending to the needs of their customers. Due to the complexity of certain workholding situations, standard equipment may put such goals out of reach. In response to this, KITAGAWA has designed and extensively tested custom chucks, special top tooling and locators, as well as a balancing service to care for these applications.

Along with manufacturing hundreds of chucks in our Schaumburg, Illinois facility every month, we now offer, from stock, high precision Pull Back, Power Wing (ball-lock), extra long stroke, 2+2 four jaw, counter centrifugal, self-contained and quick change chucks and collet chucks. Finger chucks for wheel builders, precision scroll chucks and ultra high precision air chucks are also available.

In addition to our wide variety of KITAGAWA chucks, our CAD stations facilitate the layout of complete retrofit chuck packages, from hose packages to top jaws. If you have a part that demands more than you believe your chuck can handle, be sure to contact one of our trained sales engineers for answers at **1-800-222-4138**.



Please feel free to call today and request the visit of one our trained KITAGAWA representatives. Ask for Tim at 1-800-222-4138.

QUARTERLY NEWS...

Price Reduction!

To further enhance the success and popularity of the QB Series Quick Change Chuck, we have reduced soft jaw prices. We will continue to offer the tallest and longest dimensions available in these replacement jaws. See this month's 'FEATURE PRODUCT' section for a full review of the QB Series Quick Change Chuck.

KITAGAWA Meets European Industrial Standards

Since April of 1995, all KITAGAWA chucks manufactured in Japan, England and the United States conform to the new workholding standards established by the European Machine Tool Industry.

Success at IMTS '96

If you were among the 126,000 people whom attended the International Manufacturing Technology Show in Chicago, Illinois, September 4-11, you had the opportunity to visit our new KITAGAWA booth. Our new exhibit, displaying over 20 chucks and cylinders, as well as the new QB300, FG Finger Chucks and power vises, generated a great deal of sales and leads. Look for us next at the APEX show in Nashville, Tennessee, January 22-24, 1996.



FG Series

HIGHLIGHTS

- Quarterly News
- Tech Talk
- Feature Product
- Dear "Chuck"



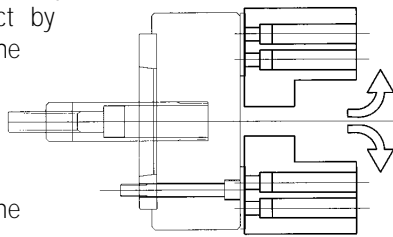
TECH TALK

Tall Jaws

In the early 1990s, D & B MACHINING CO. began manufacturing parts to support the water and sewer industry. During its short history, and after purchasing a new CNC lathe, the company was put to several workholding-related tests. The part being machined was a 12" long cast iron pipe with a 9" and 12" diameter flange at each end respectively. Due to the physical nature of the parts, tall jaws were found to be necessary. When 8" tall jaws were used, jaw breakage resulted. What happened?

'Moment of Leverage'

To get a full appreciation of what occurred, we need to consider an important law of physics called "moment of leverage." Commonly, we take advantage of this effect by using a pipe to extend the length of a torque wrench to gain a mechanical advantage. While this can be used as an advantage in some applications, top jaw height is not one of them.



KITAGAWA's manual reads, "As the 'center gripping height' is increased, the maximum hydraulic pressure needs to be proportionately reduced (see Fig 1 for 'center gripping height,' dimension H)." The reason for this is that the extra leverage created by the taller jaw actually places accentuated flexing on the master jaw, thereby leading to fatigue and possible failure. You may ask, since I am holding the part squarely along the entire length of my part, how could any flexing occur?

We need to remember that when the jaws are formed with either a boring ring or the "plug" method, the jaws actually prelate or toe-out. As you release the plug or ring, the jaws relax and return to their original position. But remember, the boring of the jaws was perpendicular to the face of the chuck. Now, when the jaws have relaxed, there is actually a conical taper going from small to large in the newly bored jaws. Therefore, when a piece of bar stock is chucked on, the jaws will flex outward again to hold onto the parallel surface. While short jaws will create some "lift," taller jaws will flex or toe outward significantly more, resulting in master jaw fatigue or even failure.

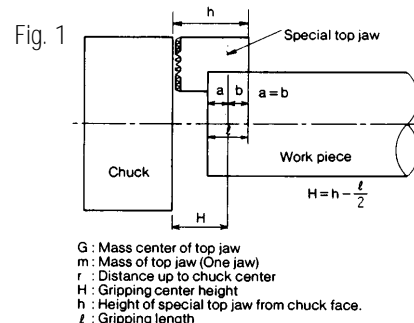
It has been found that reducing the hydraulic pressure nearly eliminates this flexing effect. To recalculate the new hydraulic pressure, it is necessary to obtain a chart from the chuck manufacturer showing the **relationship between center gripping height and plunger input force**. This chart shows the progressive reduction in hydraulic pressure in relation to the top jaw's height.

'Centrifugal Forces'

Now that we have a better understanding of the mechanics involved with using tall jaws, another problem arises resulting from hydraulic pressure reduction. We will use our KITAGAWA B210 Chuck as our test subject in the following scenario:

The B210 Chuck is supplied with 2" tall jaws from the factory. But let's assume that a job requires the use of 4" jaws. Based on the charts, it is found that the pressure needs to be reduced by 51%. Hypothetically, if the maximum pressure rated by the machine were 300 psi, this would mean cutting the pressure down to 144 psi to accommodate the new jaws. But how is this lower pressure affected by the centrifugal force of the machine's high speed?

First of all, 51% lower hydraulic pressure means 51% lower gripping force. With less gripping force to keep the jaws locked onto a part, the centrifugal force of high speeds means the jaws will loosen from the part even at lower speeds. To eliminate the risk of losing a part, it would be necessary to lower the machine speed. Charts from the chuck manufacturer are available to help determine speed reduction rates.



If you are having problems with your workholding setup, feel free to contact us for assistance at 800-222-4138.

FEATURE PRODUCT



QB300 SERIES

Quick Jaw - Change Chuck

Three jaw wedge style chucks that slash down time and maximize productivity through a unique locking mechanism. This Series allows for 30 second jaw changes while delivering .0008" repeatability. QB300 Series Chucks do not require a long stroke cylinder and are fully interchangeable with most power chucks.

When was the last time an operator was actually able to change over a set of chuck jaws in 30 seconds?

PARR INSTRUMENTS INC. of Moline, Illinois accomplishes that feat on a daily basis. "With seven to eight jaw changes per day, it is critical that we minimize the down time associated with very small lot sizes of one to three parts," stated production foreman, Dick Harness, in his daily setup address. "KITAGAWA QB Series Chucks have worked consistently well, without any problems," added Harness.

Over 30 years ago, KITAGAWA produced its first quick change chuck. Today, the QB300 Series Chuck is KITAGAWA's solution to quick jaw change without compromising quality or performance.

The highest quality chuck available, our QB300 Series is based on a wedge style design. The jaw change, too, is based on a simple master jaw design that incorporates an interlocking mechanism, locating pin and stud. Since no long stroke cylinder is required to operate the QB Series, there is no need to replace the hydraulic cylinder, cylinder adapter and draw tube. This results in a significant savings.

Another feature of the QB300 Series is its user-friendly design. Many quick change systems on the market today make use of a base jaw and T-slot arrangement that becomes easily contaminated and difficult to maintain. Because of the superior master jaw design of the QB Chuck, contamination is virtually eliminated, making set-ups easier and more consistent. These benefits, along with the large thru hole and high performance found in all KITAGAWA chuck parts, consistently result in a guaranteed .0008" repeatability.

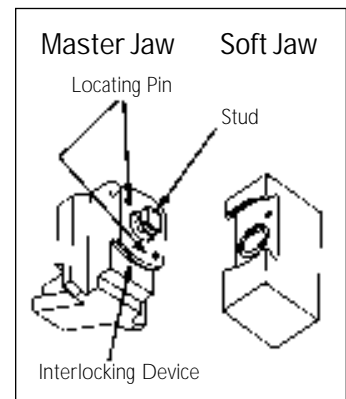
Call today to receive further specifications and information regarding the availability of the QB300 Series Chuck from KITAGAWA, the chuck experts.

Features:

- 30 Second Ultra Quick Jaw-Change
- High Accuracy (.0008")
- Long Stroke Cylinder NOT Required
- Expensive Base Jaws Not Required
- Large Thru hole
- Compact and Lightweight
- Direct Mount

Price Reduction!

Due to new purchasing arrangements, we are pleased to begin offering QB Series Soft Jaws at a substantial savings. Call today for a quotation.



DEAR "CHUCK"

Q. *Will you sell me a single master jaw?*

A. For a number of reasons, we do not sell jaws individually. The primary reasons are the accuracy and balance of the KITAGAWA chuck.

Master jaws are machined in sets of three. All the ways, angles and serrations are simultaneously ground. The balance of a chuck is vital to both the life of a machine and to the quality of the manufactured parts. In fact, the balance of a KITAGAWA chuck is measured in grams to ensure the highest quality.

For the name of the dealer/distributor nearest you, please contact us at 800-222-4138.

Q. *How do I go about returning a part?*

A. I'm glad you asked that. Since our office receives hundreds of calls daily, it has become necessary to set some guidelines to ensure that the paperwork for returned items is properly managed. "Returned Goods Authorization" (RGA) numbers have been established for this reason. To smoothly handle the return of goods, we now fax our customers an RGA form explaining our requirements. Another advantage to this system is that this same form acts as a packing slip.

Q. *Can I drill and tap the face of the chuck in order to bolt a locator to it?*

A. All KITAGAWA chucks have machinable areas. For each chuck, we can supply a machining template that indicates where and how deep the chuck face can be drilled and tapped. Call us with your chuck model if you require this information.

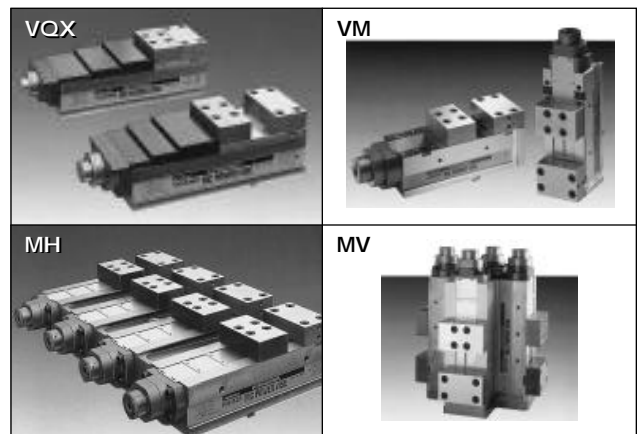
The editors of WORKHOLDING TIMES value your input. Please contact us with your questions or comments. 800-222-4138. Fax: 847-310-9484.

Power Vises Unveiled

At IMTS '96 we unveiled our new line of power vises to a very receptive audience. This response has confirmed our decision to manufacture and promote power vises, along with our highly successful line of chucks.

KITAGAWA Power Vises are suitable for a wide range of machining applications. They feature solid bodies, high clamping and positioning accuracies, an exclusive toggle joint for the efficient increase of clamping forces, easy adjustment of clamping forces and a wide range of product designs.

Our line includes: VQX-Series Vises, featuring pneumatic operation, and safety lock valves for use without an air line connection; VM-Series Vises, ideal for inside as well as outside clamping; MV-Series Vises, ideal for horizontal M/C applications; and MH-Series Vises, suitable for long workpieces as well as mass production.



People Watch

Wedding bells are ringing. In the past 12 months our office has seen three employee marriages.

In November of 1995, KITAGAWA warehouse manager, Rob David, wed Julie Ann Cerceo. In February, Tim Winard, a sales engineer with KITAGAWA, married Sheila Hyde. And, this past September, KITAGAWA sales engineer, Shawn Luschei, married Danielle Nallyt. We extend best wishes to all of our newlyweds.

Would you welcome a visit?

Please feel free to call today and request the visit of one of our trained KITAGAWA representatives. Ask for Tim at 1-800-222-4138.