

Index

WILL DEMONSTRATE MODULAR 8-SPINDLE AUTOMATIC CNC TURNING MACHINE AT PMTS 2015

Index will demonstrate its MS22C-8, a modular eight-spindle automatic CNC turning machine, producing brass connector parts at PMTS 2015, Booth 400. The MS22-8 is designed for fast parts machining capability.

The Index MS22C-8 has many applications, from automotive to medical technology. It can be bar-fed or loaded with chucked parts.

The machine can be configured to operate as an 8-spindle machine, a double 4-spindle machine, dropping two complete parts at a time or a machine with double rear-end machining. The MS22C-8 in double 4-spindle mode runs as two machines working with one another simultaneously on a single base. Every second tool station always has simultaneous access to the same tools.

The MS22C-8 can accomplish turning, off-center drilling and thread cutting, inclined and cross-drilling, milling, multi-edge turning, hobbing, tooth milling, deep-hole drilling or slotting. Another benefit for the user is that all standard tool holders and tool holder system interfaces can be used with a range of adapters (Capto, HSK, VDI, INDEX systems).

Each of the eight spindles, arranged in the Index spindle drum, are assigned two cross-slides which can travel on the X-axis as well as the Z-axis. Each cross-slide can be additionally equipped with a Y-axis.

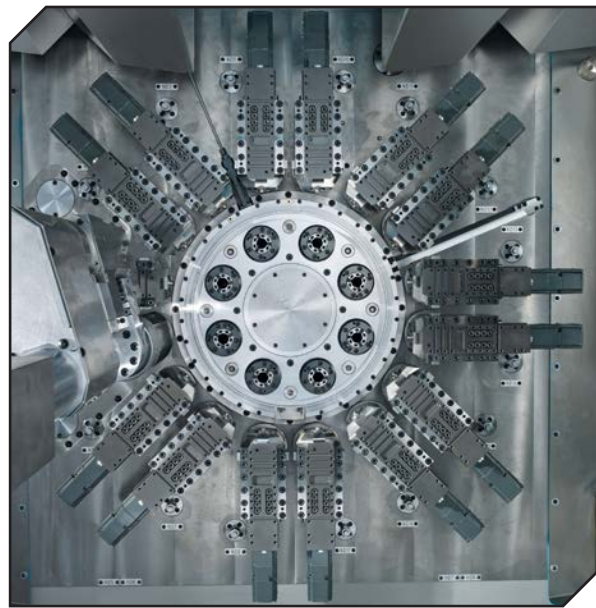
The speed of each of the eight liquid-cooled spindles can be controlled separately. The fluid-cooled spindle drum keeps the thermal growth in the spindle carrier to a minimum. The advantage compared to the previous air-cooling approach is the higher power density in the spindle drum and the capability of energy recovery from the heated cooling fluid. In addition, the spindle bearing temperature can be kept at a low level, which also prolongs its service life and improves thermal stability.

The cross slides with integrated drive have a low-mass design with hydrostatic bearing support. Their low moment of inertia and resulting high dynamics facilitates acceleration in operation.

When operated as an 8-spindle machine, the drum indexing angle from spindle to spindle is 45°; if the machine operates with two times four spindles, the drum indexing angle is 90°.

In double rear-end machining, there are six spindle positions available for front machining the workpiece and two spindle positions for rear end machining, and they all work simultaneously. With this approach, it is possible to machine the rear end of a workpiece during two drum indexing cycles.

After front machining, for which six spindle positions are available, workpieces are picked up by two rear machining units and machined simultaneously on the rear end. Because rear-end machining is done dur-



ing two drum indexing cycles, up to six tools can be used for this simultaneously with the other spindles.

The advantage of hydrostatic sliding guide in the feed axis (Z) is their damping characteristic that prevents the transfer of the machining vibrations to the adjacent slide via the headstock. This helps to mitigate vibration and rattling while workpieces are being machined—even when the most diverse machining processes are being performed concurrently by the eight spindles.

For example, one spindle can be used for heavy-duty roughing while high-precision finishing takes place on another spindle without sacrificing surface quality. In addition, the hydrostatic bearing is wear-free—there is neither friction nor a stick-slip effect.

The swiveling synchronous spindles are locked into the end positions by three-part Hirth couplings. The high level of stiffness that this achieves also guarantees that even with bar diameters up to 24 mm, rear-end machining operations with very high cutting volumes and simultaneously high machining precision can be performed.

The Hirth coupling also means it is no longer necessary to electronically compensate at the end position. The mechanical lock ensures optimal stiffness and increases the positioning accuracy. This allows even highly complex components to be produced that require complex cut-off side machining. The swivel movement to the rear-end position occurs in less than 0.3 seconds.



The advantage of the front-opening design for the operator is the accessibility during setup and tooling. Moreover, there is the free chip flow down into the chip discharge chute. To save space, the Index engineers placed the control cabinet "on the machine." This principle of integrating the control cabinet into the machine roof

has been applied to Index multi-spindle machines for almost 15 years.

Discharging workpieces damage-free from the work area and placed on pallets in the right position for later treatment, the MS22C-8 can include optional handling solutions: machine- integrated handling with external stacking unit that ensures both destruction-free removal

of parts from the machine, including measuring operations for the workpieces if needed. Workpiece data can be fed back directly to the machine control so it can automatically correct its machining parameters.

For more information:
Index Corporation
Phone: (317) 770-6300
www.indextraub.com

Northfield Precision Instrument

INTRODUCES EXPANDED COLLET CHUCK

Northfield Precision Instrument Corporation, a designer and manufacturer of precision workholding chucks, recently introduced its newest expanding mandrel collet chuck.

This chuck was custom-designed for a customer to clamp the minor diameter of an internal spline. While clamped, the customer machines the internal counter bore, the outside profile, and the face of the workpiece. The chuck also includes air detect sensor holes, and provides positive air blowout to keep chips and slurry away from clamping and locating surfaces.

Northfield Precision Instrument designs and manufactures air chucks for any lathe, boring machine, grinder or VMC. Models include through-hole, high-speed and quick-change. Chucks are available in SAE or metric, in sizes from 76 mm to 457 mm.

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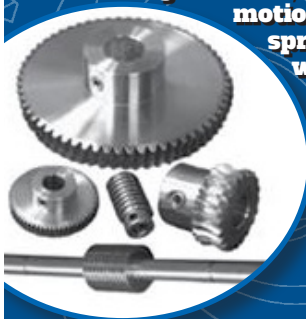
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Dillon

NOW OFFERS 1018 STEEL JAWS FROM 1½ TO 10 INCHES TALL

DMI Series H extra-high chuck jaws from Dillon Manufacturing provide extended jaw lengths with heights available to 10-inches tall. The longer lengths can provide greater workpiece stability, plus multiple uses of the blank before it is consumed. The extra length also allows the machinist to avoid additional time and costs associated with the welding and bracing needed to lengthen a standard height top jaw.

Manufactured from 1018 steel, 4140 steel or 6061 aluminum, these extra high jaws are available in all standard chuck mounting styles. DMI Series H, extra high jaws are ideal for precision boring, tapping, drilling and finishing.

With production capabilities to produce large runs of jaws with the same speed and accuracy as small runs, Dillon is qualified to handle any jaw manufacturing request. Their applications department works with customers to modify jaws from an extensive catalog of existing designs, or manufacture custom jaws from supplied customer specs/drawings.



Dillon uses optical checking to check for more than just simple dimensions. Length and width measurements, for example, can be obtained from two separate measurements by using a micrometer. These superficial measurements, however, might not reveal burrs, scratches, indentations or undesirable machined characteristics of a part. Such imperfections are detected on the DMI comparator.

For more information:
Dillon Manufacturing, Inc.
Phone: (800) 428-1133
www.dillonmfg.com

Drake

DELIVERS DRUM GRINDER FOR THE TAPERED ROLLER BEARING INDUSTRY

Drake Manufacturing Services Co., LLC recently delivered a “drum” or “crown” grinder to an Asian manufacturer of tapered roller bearings. The drum is a threaded steel drive roll used in a centerless grinder to move the tapered rollers across the face of the grinding wheel. The rollers start on one end as rough blanks and emerge on the other as round rollers. The drums wear over time so the Drake grinder not only grinds threads on new drive rolls, but also regrinds the threads after they are worn.

This 8-axis precision CNC drum/roll grinder is also called a crown grinder because the outside diameter of the drive roll is actually shaped like a barrel. The B-axis of the Drake machine pivots during the grind to keep the grinding

wheel tangent to the radius surface of the roll.

“It was rewarding to see another customer’s eyes light up when cycle times on four different drums ground during run-off at Drake were reduced from 4 hours to just 30 minutes,” said Stig Mowatt-Larssen, Drake’s director of research and development. “Our machine design and hydrostatic spindle combination make aggressive grinding possible — even of hardened D2.”

Drake’s crown grinder is used by tapered roller bearing manufacturers in the USA and Asia to regrind drums/rolls used in their manufacturing process. The part holding fixture will accommodate most drive, feed, support and back-



Mitsui Seiki

LAUNCHES NEW VERTEX 55XII VERTICAL MACHINING CENTER

Mitsui Seiki recently evolved its "Vertex 550-5X" line of machines with new features and capabilities, and a broader range of options and configurations within the series. The new model series, comprising six distinct models, is now called Vertex 55XII. Linear axes (X, Y, Z) strokes are 550 mm (21.7") x 600 mm (23.6") x 500 mm (19.7").

"One of the key new features is an enhanced ultra-high accuracy package," said Tom Dolan, vice president of sales and marketing. "This option enhances Mitsui Seiki's existing, well-established construction techniques for accuracy and precision. As such, the Vertex line of machines are very well suited for tight-tolerance mold and die work, aerospace, energy, and other high precision component applications. Users can gain significant production improvements eliminating the traditional machine 'warm up' time for very demanding precision jobs."

Mitsui Seiki now offers a new 30,000 rpm spindle with the Vertex 55XII, in addition to the 15,000 and

25,000 rpm choices. Customers can now take advantage of the machine's acceleration and deceleration characteristics and high-speed machining functions. An HSK-80 taper spindle connection (for those requiring more heavy-duty machining) is available as an option to



up rolls used in tapered roller bearing manufacturing including Cincinnati #2 and #3, Koyo, Nissin, Seibu, and others up to 350 mm diameter and 750 mm of thread length. It is capable of producing crowns with radii from 1.9 m to 999 m with lead angles to 5° RH/LH.

For more information:
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complement the existing HSK-63 and 40-taper tool interfaces.

The Vertex 55XII line includes several configurations in the range, based on table sizes and types from 225 mm (9") to 400 mm (15.7") diameter. A choice of rotary axis drive systems—high-torque geared type or direct drive—allows for the optimum machine configuration to suit the customer needs.

Additionally, the new Vertex is available in the "B"-series version. This is a high-speed 5-axis VMC dedicat-

ed to turbine blade production. High-performance coolant and chip handling systems are available to suit customer needs. Automation devices and systems may also be integrated for on-machine inspection and work handling to further reduce setup time, and improve overall quality throughput.

The Vertex 55XII geometric accuracy is monitored in a temperature-controlled factory. The machine features a proprietary cast iron bed, which provides an ultra-rigid and thermally sta-

ble machine structure. As will all Mitsui Seiki machines, guide way mounting surfaces are hand-scraped, achieving high volumetric accuracies.

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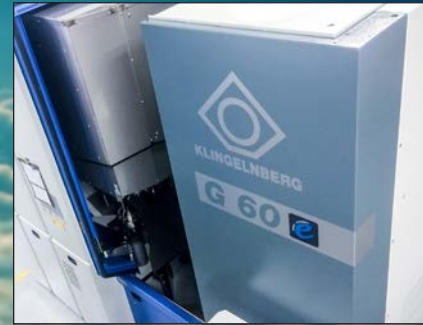
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German Machine Tools of America

RELEASES THE PRÄWEMA SYNCHROFINE 205 HS

Now available from German Machine Tools of America (GMTA), the Präwema SynchroFine 205 HS gear honing machine features direct-driven, digitally controlled spindles for the tool and the workpiece, enabling precise, rigid synchronization. The Präwema Honing gear finishing process produces quality comparable to grinding results for spur and helical gears, as well as shafts. The machine's software checks the stock allowance and workpiece runout and then optimizes the X-axis approach distance.



Measuring the workpiece does not affect the cycle time and the process can reduce cycle times by 3 to 5 seconds.

The machine features a pick-up design to enable automation. The workpieces and dressing tools are loaded and unloaded by the workpiece spindle. The large X-axis travel enables placement of additional stations adjacent to the loading/unloading station inside the machine, such as a two-flank roll-checking device. External robots and conveyor systems can also be integrated by GMTA engineering.

The honing machine is constructed on a natural granite bed to promote stability and control thermal fluctuations. The X and Z axes are equipped with linear motor drives. The cutting tool is clamped with a hydraulically operated system and the tool spindle can be swiveled into a vertical position, enabling easy access. Additional options are available for machining oversized drive shafts as long as 850 mm and the Präwema SynchroFine 205 HS-D model, equipped with two spindles, is offered for further reduction of cycle times.

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GWJ Technology

LAUNCHES NEW VERSION OF SYSTEM CALCULATION FOR GEARBOXES

GWJ Technology GmbH recently launched a new version of its system calculation for gearboxes. SystemManager enables the user to determine complete systems and is a system add-on to GWJ's software applications eAssistant and TBK2014.

SystemManager supports axially parallel shaft systems for multistage cylindrical gears with or without power split transmission, manual gearboxes, planetary gear trains as well as perpendicular transmission systems.

The progress of the nominal tooth force along the facewidth has already been calculated and displayed graphically for single tooth meshes of gear pairs within the system. This load distribution along the facewidth will be considered in the calculation of the load capacity by means of the face coefficient Kh β . It is possible now to consider flank

line corrections such as lead crowning, end relief or helix angle corrections in the calculation of the load distribution along the facewidth. Different modifications for the respective gear mesh can be easily checked and graphically displayed. It makes it very easy to find an optimal correction.

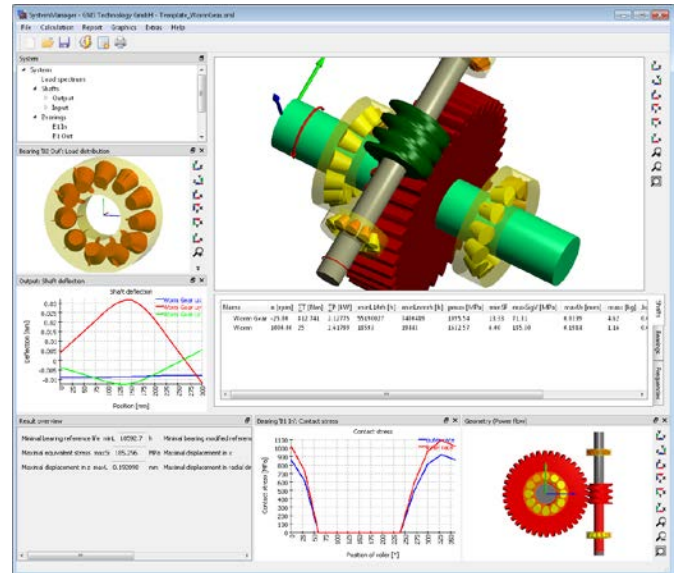
The new version includes bevel gear stages with shaft angle unequal 90°.

In addition, new force elements for worms and worm wheels were added and the new calculation module for worms was connected to SystemManager. A

whole series of additional innovations are also featured in this new version.

For more information:

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Mahr Federal

ADDS SELECTABLE RESOLUTION TO MARCATOR 1086 & 1087 DIGITAL INDICATORS

Mahr Federal recently added a selectable resolution option to MarCator 1086 and 1087 digital indicators. These digital indicators provide easier operation, a large display and a built-in wireless system for simple transmission of measurements.

The new resolution option offers five different resolutions, ranging from 0.00002" to 0.0005" (0.0005 - 0.01 mm). MarCator digital indicators with the selectable option include the 1086 R with large display, the 1086 WR large display/Wetproof IP 54, and the 1087 R and BR with analog/digital display and dynamics. These indicators are also available in the Ri integrated wireless version. Additionally, the MarCator 1086 and 1087 digital indicator line is available with 8 mm (3/8") mounting stems and a full range of backs for mounting into existing gages.

Using the selectable resolution option with Ri indicators provides a way of creating a wireless data collection package. With an i-stick USB receiver and MarCom software, users can record data from work pieces that have varying tolerances. Integrated wireless digital indicators are the most economical way to update an existing bench or hand gage for data collection. It involves no change in the operator's way of measuring parts, but allows those measurements to be documented and used for process and quality decisions.

To switch the indicator's resolution, enter the main menu of the indicator



and scroll over to the "resolution display," which is typically defaulted to 0.0001" (0.002 mm). From there, users can use the up arrow option to choose the appropriate resolution to accommodate varying gaging applications.

For more information:

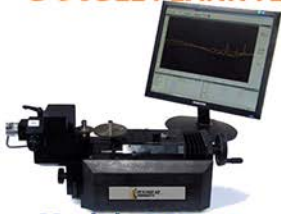
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Sunnen

INTRODUCES SSH-1680 HONING SYSTEM

Sunnen's new SSH-1680 honing system features zero shutoff for automatic cycle control and consistent bore size, finish and geometry with minimal operator attention. Rough-and-finish honing capability eliminates preliminary reaming, boring and grinding operations to help lower per-part costs.

The SSH-1680 makes quick work of parts with keyways, splines and blind bores. An adjustable spindle allows the operator to eliminate mandrel runout, making it easier to achieve precision bore geometry. Multiple land and tandem bores are bridged with Sunnen's long stones, maintaining alignment and consistent size without camber or washout.

"This machine is designed for small shops looking for a cost-effective way to streamline processes and increase the consistency of bore sizing operations," said Phil Hanna, product manager of machines/gages. "It is a 'hone-of-all-trades' and delivers a high ROI through increased productivity and part quality."

The SSH-1680 provides fast, clean cuts in a wide variety of materials, and handles part lengths up to 250 mm with bore diameters from 3-60 mm.

"Diameters 40 mm and smaller are a particular 'sweet spot' for this machine, when compared to ID grinders," Hanna said.

A rigid cast iron machine base provides strength for handling heavy parts and isolates moving components to eliminate vibration problems. The machine's design enables rapid stroking for shorter cycle times. Incrementally adjustable stroke rate (80-310 SPM) and spindle speed (250-2500 RPM) deliver fast stock removal rates. The spindle and stroker are both powered by variable frequency drives, eliminating drive belt changes and allowing dial-adjustment of speeds via the convenient swiveling control panel.

The SSH-1680 accepts all standard Sunnen tooling, including K, P20 and P28 mandrels. A universal honing fixture is standard, with a variety of workholding options available to securely fixture odd shapes and thin walled parts without distortion.

All electrical components are housed in an interlocked, side-mounted enclousure.

Standard equipment includes a universal honing fixture, parts tray, spindle runout indicator, side splash guards, and detachable 25-gallon (96-litre) coolant cart, which is mounted on casters for easy filling and maintenance.

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Reishauer

NOW OFFERS IN-HOUSE PRODUCED CLAMPING FIXTURES

Reishauer recently introduced a new generation of grinding machines that produce at cycle times below 10 seconds for automotive planetary gears. Because of this, clamping times had to be reduced to match the machine capability. Additionally, change-over accuracies of less than 0.003mm deviation have to be held over long-term production cycles. In order to maintain such low cycle times, Reishauer began to manufacture its own clamping fixtures in 2010.

Reishauer uses resistant steel that reduces the wear in the clamping area, increases the service life of the clamping fixture

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DH16
mounted on base unit

Quick change



DH19
mounted on base unit

and, as a consequence, lowers the costs per workpiece.

Correct wall thickness, clamping pressure and piston diameter have a fundamental influence on the clamping process. These factors have to be analyzed and correctly matched to the specific gear part to be ground.

With the in-house fixture production, Reishauer now offers customers a single point of contact for all issues relating to the gear grinding process. Close cooperation between the different specialist departments ensures that the requirements of the machine tool, the tooling and clamping fixture are coordinated correctly.

Reishauer engineers establish the clamping clearance between the workpiece and the clamping tool diameter to suit the requirements of specific grinding tasks, be it for automatic loading in high volume production or for manual loading of smaller batch sizes. The choice of clamping system depends on manufacturing volume and desired flexibility.

The DH30 one-piece design, for example, is the most rigid option as it is fixed directly on the C-axis workpiece spindle. The modular system DH16 for medium-sized batches provides more flexibility combined with a robust design. This type of self-centering clamping fixture is mounted on a base unit, which in turn, is bolted directly on the workpiece spindle drive.

In the case of very small lot sizes, short set-up times are important. For this purpose, the quick-change system DH19 is best suited.

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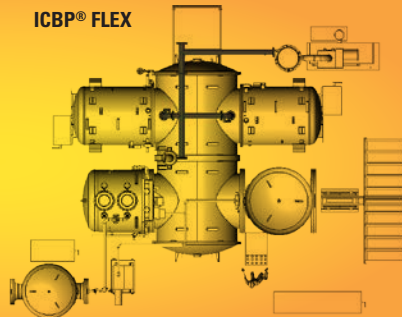
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