



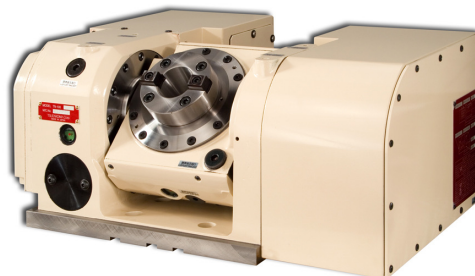
GANESH MACHINERY

CELEBRATING 26 YEARS IN BUSINESS – 1985 TO 2011

GANESH 5X – 160 CNC MACHINING CENTER



**VMC-2216 with 6" Riser, Tsudakoma Trunion Tilting
Rotary Table *(Made in Japan)***



Ganesh Machinery, Inc. - 20869 Plummer St. Chatsworth, CA 91311

Phone 818-349-9166 | Toll Free 888-542-6374 (US only) | FAX 818-349-7286 | www.ganeshmachinery.com

GANESH VMC 2216 5X - 160

Rugged Box Way 5-Axis Machining Center



SMALL OVERALL FOOTPRINT 6.5' x 6.5' - LARGE 22" x 16" x 20" AXIS TRAVELS

Massive Cast Iron Box Way Construction -

The 5X-160 machine casting was CAD designed with FEA (Finite Element Analysis), and computer analyzed with the internal structure reinforced with numerous strategically placed heavy cast ribs to intensify rigidity. The heavy-duty casting and the box way design dampen vibration for superior machining capability for enhanced tool life and fine surface finishes. Slideways are coated with Turcite®-B antifriction material to minimize stick/slip characteristics and to ensure long-term accuracy under demanding cutting conditions.

The machine is constructed of all certified premium Meehanite® castings. The 17.5" wide spacing of the saddle box ways offers the optimal guide ratio for the slideways, further enhancing the performance of the machine. The Ganesh 5X-160 weighs twice as much as most competitive machines in this class for added strength and rigidity for heavy-duty production.

Double Anchored Balls Screws -

Premium quality ball screws are pre-tensioned and anchored at both ends, and then 100% inspected for parallelism to the axis guideways. The rotational torque of each ballscrew is inspected over the entire length of travel to guarantee a true smooth non-binding alignment, to ensure maximum service life and the highest possible machining accuracy. The geometric ball bar test conducted on each machine checks for servo gain synchronization, backlash, lateral play, squareness, and straightness to ensure your machine will perform to our rigid accuracy and performance standards. Laser technology is employed to measure linear and pitch error accuracy and repeatability to ensure high quality standards for superior machine cutting performance

STANDARD GANESH 5X - 160 MACHINE FEATURES:

Machine Construction:

- Fine grain and high density cast iron using the superior Meehanite process yields superior vibration dampening and improved surface finish and tool life
- Double anchored and pre-tensioned ballscrews in all 3-axes
- Built-in leveling ledge makes it easy to level machine low to the ground

Box ways:



- ⇒ *Turcite-B Coated way surfaces to minimize stick/slip*
- ⇒ *Hardened and Ground wide Box Way saddle for heavy-duty cutting performance*
- ⇒ *Hardened and Ground Square Box Ways on Vertical Column and Longitudinal axis*
- ⇒ *Hardened and Ground Machine Table for enhanced wear resistance*

Spindle:



- ⇒ *15-HP Spindle Motor for superior metal removal capability*
- ⇒ *Rigid tapping for high-speed precision tapping performance*
- ⇒ *CAT-40 taper spindle for the tool rigidity needed for tough materials*
- ⇒ *6-bearing thermal symmetrical dynamically balanced spindle*
- ⇒ *12,000 RPM spindle standard with package pricing*

Automatic Tool Changer - ATC:

- 20-tool high-speed twin-arm tool changer optional and in value package
- 2.5 second tool change with twin-arm
- Bi-directional shortest path tool indexing to decrease tool change time

Coolant and Chip Management:

- Peripheral chip wash down in chip enclosure to minimize machine maintenance
- Chips can be easily removed from the machine via a roller-mounted basket.
- The optional chip conveyor can be installed on either side of the machine.
- Hinged side-panel doors allow the operator easy access to the work area.
- A separate Grundfos coolant pump is provided for chip wash-down
- One-piece sliding coolant tank is mounted on rollers for easy cleaning access.
- Tramp way oil recovery system is provided to reduce coolant contamination

Machine Features:

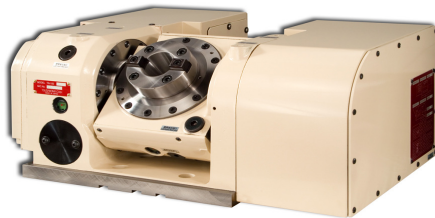
- *A work-light with a swivel joint is provided so the operator can view critical work areas.*
- *A spindle load meter is located on the front of the control panel for easy viewing.*
- *A MPG (manual pulse generator) is provided w/ X1, X10, and X100 feedrate multipliers.*
- *A tri-color machine condition signal lamp broadcasts the machine operating condition.*
- *The electronics cabinet is cooled by a heat exchanger unit for enhanced reliability.*
- *Stainless steel doorsill guard is provided to keep the doorsill from being chipped.*
- *T-slots ground to 0.625" to fit standard workholding T-nuts*
- *Automatic Metered Lubrication for slideways and ball screws*
- *Water resistant halogen lamp is included*
- *Inspection Report on accuracy, Instruction Manual, Tools and Tool Box all included*
- *Large compliment of parts and accessories in stock to ensure continued operation*

High Reliability Servo Motors and Drives

The premium control features look ahead capability for high speed machining. Highly accurate Digital Servo motors feature the ability to tune the spindle and the axis drives for a perfect dynamic response for exceptional geometric accuracy. Colored Graphic Display and Tool Life Management. All of this capability is backed by the dependable nationwide 2-year warranty.

Built in six-inch riser

Our 5-axis machines have a built in six inch riser to allow for plenty of Z-axis clearance and minimal interference with the ATC.

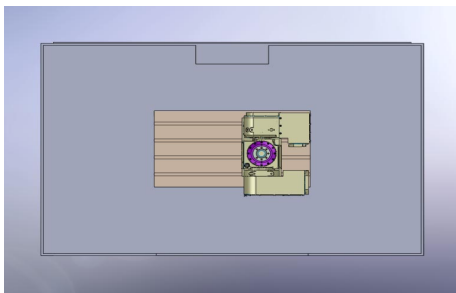


TSUDAKOMA TN-130 Tilt Rotary Table

(Made in Japan)

With Dual-Taper Pneumatic Clamping System

Tsudakoma TN-Series rotary tables are high speed, ultra compact tilting rotary tables. The new TN-Series rotary tables utilize a dual taper, double disc braking mechanism which generates massive clamp torque – an increase of up to 320% vs. previous models. These new TN-Series models feature one piece cast Monoblock frame construction for maximum rigidity. Tsudakoma TN-Series tables guarantee indexing repeatability of ± 2 arc seconds, and are available with a full range of options including rotary scales, various chucks, collets, and automation accessories.



Advanced Preview Machining with high-speed look-ahead capability for fast & accurate 5-axis applications

TSUDAKOMA TN-130 Tilt Rotary Table Specifications

Tilt Angle	-17 to + 107 degrees
Spindle Outer Diameter	90 mm (3.54")
Tilting Center Height	150 mm (5.90")
Rotary Axis Clamp Torque	500 Nm
Tilting Axis Clamp Torque	500 Nm
Motor Speed for rotary axis	5000 RPM
Motor speed for tilt axis	5000 RPM
Minimum input increment	0.001 Degrees
Speed Reduction Ratio (Rotary)	1/60
Speed Reduction Ratio (Tilt)	1/120
Table Rotation Speed (Rotary)	83.3 RPM
Table Rotation Speed (Tilt)	41.7 RPM
Indexing Accuracy of Rotary Axis	± 20 Arc Seconds
Indexing Accuracy of Tilt Axis	± 22.5 Arc Seconds
Rotary Axis Repeatability	± 2 Arc Seconds
Tilting Axis Repeatability	± 2 Arc Seconds
Allowable wheel torque (Rotary Axis)	152 Nm
Allowable work weight	35 Kg (77 lbs)
Allowable work movement	57 Nm
Allowable load when table clamped	500 Nm
Allowable work inertia	0.08 kgm squared



Super Precision Spindle Bearings

The 5X-160 advanced design 6-bearing thermal symmetrical spindle is dynamically balanced and provides high axial thrust capacity while generating minimum heat buildup for accurate machining.

- *The spindle design features 4 class-7 P4 high precision angular contact bearings at the front of the spindle, with 2-additional bearings at the top, to provide for high rigidity.*
- *A special labyrinth seal is designed into the nose of the spindle to prevent coolant ingress, or fine particle contamination, during machining to ensure high spindle accuracy and a long and productive machine service life.*

The GANESH 5X – 160 benefits includes:

- **Multi-sided machining capability with reduced setups for efficient and profitable operation.**
- **Easy access to all part surfaces for complete machining in one setup.**
- **Faster machining times because larger diameter cutters can be used for less step-over loss.**
- **Optimized cutting tool use to avoid zero-cutting situations with ball nose end mills.**
- **The machining of parts, such as impellers, blades, and dental and medical components that can't be done on a 3-axis machine.**



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VMC-5X-160 Machine Technical Specifications

Working Area

Longitudinal travel (X-axis)	22" (560 mm)
Cross travel (Y-axis)	15.75" (400 mm)
Vertical travel (Z-axis)	19.68" (500 mm)
Spindle nose to table surface distance	4" – 30" (100 – 762mm)
Maximum Weight Capacity (much higher if weight is evenly distributed)	700lbs (320kg)

Milling spindle

Spindle Bearing	Angular contact spindle bearing
Spindle transmission type	direct belt drive - torque increaser style
Spindle tool taper size	#40-Taper (BT or CAT style)

Spindle drive

A.C. brushless motor	Electronic 2-speed torque range <i>Vector-Drive</i>
Power	15-hp Peak, 10-hp (60% duty-cycle)
Programmable speed range (stepless)	12,000 RPM Spindle Standard with Package

Axis feed drives

	AC digital servo drives
Resolution	0 .0001" (0.0025mm)
Rapid traverse feedrate	787"/min (20m/min)
Cutting feedrate	0.04 - 394"/min (0.01-10m/min)
Axis motor horsepower	X-Y 2-hp / Z 3-hp
Ballscrew diameter / pitch / class	32mm / 8mm / C3-P8
Ballscrew mounting	double-anchored ballscrews
Positioning repeatability	±0.0001" (0.0025mm)
Positioning accuracy	±0.0002" (0.005mm)

Tool system

	Features automatic shortest path bi-directional tool changer
Tool magazine type	Side-Arm changer
Number of tool stations	20-tool ATC
Tool taper type	CT #40 or BT #40
Max. Tool diameter	Ø3.9" (Ø 100mm)
Max.tool weight	15 lbs (7 KG)
Tool change time	2.5 seconds with high speed ATC

Lubrication system

Guideways	fully automatic central oil lubrication with low level monitoring
Spindle bearings	lifetime grease lubrication

Coolant equipment

Tank volume	48-gallons (192 Liters)
Coolant pump hp / flow rate	Grundfos 1/4-hp / 24-gpm
Coolant dispersal	dual coolant nozzles with independent flow control vales
Chip wash	4-nozzle chip wash-down, with separate Grundfos coolant pump

Air service requirements

	Air Pressure switch confirms safe air pressure
Air pressure required	85 psi @ 5-scfm
Air hose connection	Ø 1/2" (12mm)
Air blast output	M07 controlled air blast nozzle located at spindle

Program communication devices

RS-232, Flash Card, Ethernet Capability

Machine warranty 2-year control warranty and one-year machine warranty

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GANESH VMC – 5X – 160 5 - Axis

5X-160 5-AXIS VMC PRODUCTION PACKAGE PRODUCTION VALUE PACKAGE INCLUDES:

400-HSSMM
400-HSATC

12,000-rpm spindle with ceramic spindle bearings & spindle chiller
High-Speed Twin-Arm Type 20 Tool ATC (2.5-second tool change)

***FANUC OiMC-5 Axis CNC Control with 4-Axis Simultaneous capability
With all FANUC Motors and Drives with Easy Removal of Trunion to use
VMC for 3 axis work***

Machine Options

Riser Plate

Upgrade to 5 Axis simultaneous Fanuc 30i CNC Control

Machine Productivity Enhancement Options

400-RNPRB	Renishaw TS-27 Tool Offset Probe (includes interface, & software) for tool length & tool diameter offsets, and broken tool detection <i>Increases your productivity with quicker setups</i>
400-RNPRT	Renishaw OP-700 Optical Part Probe (includes interface, & software) <i>Use it for digitizing and tracing complicated parts. Eases setups For irregular parts, especially castings</i>
400-HPCS	300 PSI High-Pressure Thru The Coolant System <i>Ideal for deep hole drilling, using insert drills and other parts where chip control is a problem. Allows you to use machine power to its fullest</i>
400-SCMMP	Programmable coolant nozzle with sweep control feature <i>Increases your tool life by having the coolant pointed in the correct direction</i>
400-HSS	IBAG High Speed 20,000 RPM CAT-40 Spindle

Tooling & Work Holding



100-KD675
100-KD688
100-DL430

KURT® D-675 AngLock vise (6" x 7.5")
KURT® D-688 AngLock vise (6" x 8.8")
KURT® DL-430 DoubleLock vise
(2-clamping stations 4" x 3")

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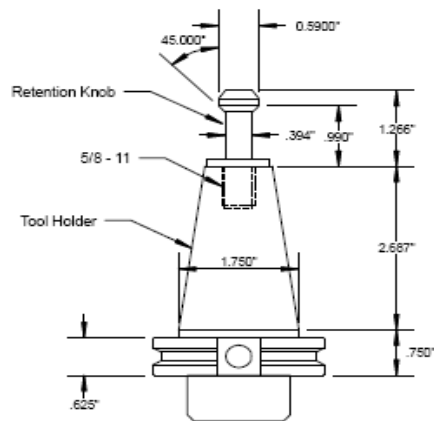
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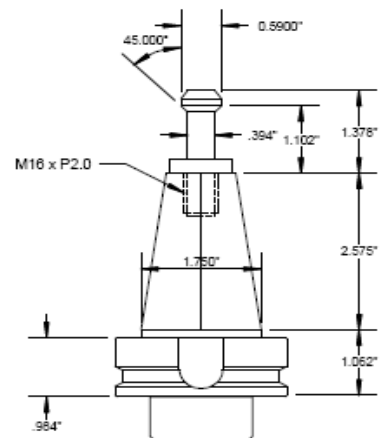
400-SC40P	Basic Start-Up Tooling Package
400-SC40D	Includes 2 CAT40ER16, 2CAT40ER32, 6 – CAT-40 Holders, 10 Retention Knobs
400-VAL2K	Deluxe Start-Up Tooling Package
400-MMSRK	Basic Start up set plus ER16 collets, ER32 Collets, ER16 Wrench, ER32 Wrench
	Sandvik® tooling certificate.
	Spare Retention Knobs



**CALL US FOR PACKAGES WITH
20,000 & 30,000 RPM CAT-40 HOLDERS**



CAT 40



BT 40

Use our Five Axis VMC for:

- **MEDICAL PARTS & JEWELRY**
- **COMPLICATED AEROSPACE PARTS**
- **ELECTRONICS & JOB SHOP PARTS**

NEED AUTOMATION?

- **PALLET CHANGERS AND FANUC ROBOTS OPTIONS AVAILABLE**
 - **CALL OUR APPLICATIONS DEPARTMENT FOR DETAILS**
- **UL & TÜV ELECTRICAL APPROVAL IS AN AVAILABLE OPTION**

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Training & Travel Package

Training: Ganesh Machinery Offers 3-day in-house training for all Production CNC machines. The intense training includes programming, machine setup, Maintenance for your new machine. There is no charge for the training program for all new customers.	
Travel Package For Training at Ganesh: Includes Air fare, 3 nights hotel shuttle (back & forth to Ganesh), and lunch during training	\$1,495.00
On-Site Training: \$975 per day plus expenses	
Warranty: 1-year Full Parts and Labor Warranty. Your local authorized Ganesh Machinery servicing dealer provides warranty labor.	
Local Service: Your authorized dealer offers local installation, service & training included in price of machine.	
F.O.B: Machines ship F.O.B. Ganesh Machinery, Chatsworth, CA 91311	
Payment Terms: 20% down Payment with Purchase Order, Balance due upon receipt, Net 30 days upon approved credit, Leases with \$1.00 buyback upon approved credit	
Delivery Schedule: Stock to 8-weeks delivery. Subject to prior sale.	

Terms of Sale

Machine specifications and pricing are subject to change without notice. Quotes are valid for a period of 30-days and are quoted subject to prior sale. The tooling and accessory pricing listed in this price list is applicable when included on the same purchase order with the machine at the time of initial purchase.

Machine brochures and promotional materials may show Ganesh machines with options not included as standard equipment with the basic machine.

Machine sales are subject to the Ganesh Machinery terms and conditions of sale

SERVING INDUSTRY SINCE 1985



IN-HOUSE TRAINING CENTER



4000 SQ. FT SHOWROOM DEMO READY



STOCKED SPARE PARTS

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TERMS & CONDITIONS OF SALE

General

Products and service furnished by us are sold only on the terms and conditions stated herein. Notwithstanding any terms or conditions on Customer's orders, our performance of any contract is expressly made conditional on Customer's agreement to these terms and conditions of sale. All contracts for the sale of products shall be construed under and governed by the laws of the State of California. All orders shall be subject to our acceptance.

Prices & Specifications

All published prices and specifications are subject to change without notice. Unless otherwise specified in writing, all quotations are firm and expire thirty days after date thereof. Unless otherwise stated, all prices, published or quoted, shall be exclusive of transportation, insurance and taxes.

Transportation & Acceptance

We reserve the right to select the means of transportation and routing when Customer's instructions are deemed unsuitable. Risk of loss and/or damage shall pass to Customer upon delivery of the products to the transportation company at the FOB point. Title shall pass to the Customer when products are delivered to the transportation company at the FOB point. All products must be inspected upon receipt and claims should be filed with the transportation company when there is evidence of shipping damage, either concealed or external. The furnishing of a product to the Customer shall constitute acceptance of that product by the Customer unless notice of defect or nonconformity is received by us within ten-days of receipt of the product at Customer's designated receiving address. We may repair or, at our option, replace defective or nonconforming parts after receipt of notice of defect or nonconformity.

Performance

We shall not be liable in any way because of any delay in performance hereunder due to unforeseen circumstance or to causes beyond our control such as, but not limited to, strike, lockout, riot, war, fire, act of God, accident, and subcontractor or supplier delays. We reserve the right to substitute suitable products, when in our opinion such substitution is necessary due to such circumstance or causes. No order may be terminated by Customer except by mutual agreement in writing. Machines are not designed to conform to UL or OSHA Standards. It is the customer's responsibility to verify the electrical standards in their county.

Warranty & Liability for Machine Sales

Our machines, including accessories and spare parts purchased and/or included with the machine sale, are guaranteed to be free from defects in workmanship for twelve months after date of purchase, unless specified otherwise. This warranty is effective only if the necessary information is provided, serial number of machine and nature of defect, and any part claimed defective is returned prepaid to us. No such return will be accepted unless we are first notified of the part to be returned. Upon its proper return to us, we shall repair or replace, at our option, the defective part. This warranty applies only if the products have been operated in accordance with normal procedure, and if no unauthorized repairs have been attempted. This warranty is expressly in lieu of and excludes all other express or implied warranties including, but not limited to, warranties of merchantability and fitness for particular purpose, use or application and all other obligations or liabilities on our part. The remedy of repair or replacement, as provided herein, shall be the buyer's exclusive remedy and will satisfy all our liabilities whether based upon contract, negligence, or otherwise. In no event shall we be liable for incidental, consequential or special damages. Liability to third parties for bodily injury including death relating to our performance or products delivered hereunder shall be determined in accordance with applicable law and shall not exceed the payment, if any, received by us for the product or service furnished.

Warranty & Liability for Accessory & Spare Part Sales

Accessories and spare parts purchased after a machine sale and/or out of the machine warranty period are guaranteed to be free from defects in workmanship for 90-days after date of purchase, unless specified otherwise. This warranty is effective only if the necessary information is provided; original date of purchase and nature of defect, and any part claimed defective is returned prepaid to us. No such return will be accepted unless we are first notified of the part to be returned. Upon its proper return to us, we shall repair or replace, at our option, the defective part. This warranty applies only if the products have been operated in accordance with normal procedure, and if no unauthorized repairs have been attempted. This warranty is expressly in lieu of and excludes all other express or implied warranties including, but not limited to, warranties of merchantability and fitness for particular purpose, use or application and all other obligations or liabilities on our part. The remedy of repair or replacement, as provided herein, shall be the buyer's exclusive remedy and will satisfy all our liabilities whether based upon contract, negligence, or otherwise. In no event shall we be liable for incidental, consequential or special damages. Liability to third parties for bodily injury including death relating to our performance or products delivered hereunder shall be determined in accordance with applicable law and shall not exceed the payment, if any, received by us for the product or service furnished.

Indemnity and Hold Harmless

Customer agrees to indemnify and hold Seller harmless for any and all claims or demands or liability, whether of not Seller has yet to become liable thereon, for any potential, threatened or actual liability, costs, or expenses, arising out of or relating to the sale or use of the equipment which is subject of this sale.

Terms of Payment

All payments for products released and shipped on approved credit accounts shall be due in full thirty days from date of invoice therefore Past Due balances shall be subject to a service charge of 1-1/2% per month. Partial shipments will be billed as made and payments therefore are subject to the above terms. We may cancel or delay delivery of products in the event Customer fails to make prompt payment therefore or in the event of arrearage in Customer's account with us.

Disputes

All disputes under any contract concerning products not otherwise resolved between Customer and we shall be resolved in a court of competent jurisdiction of Los Angeles, California.

Attorneys Fees

Should any legal action or arbitration be brought for the enforcement of this Agreement or any term hereof, or due to any alleged dispute, breach, default or misrepresentation in connection with any provisions herein contained, the prevailing party shall be entitled to its reasonable attorneys' fees, expert witness fees and other costs and expenses, as well as recoverable court costs, incurred in any such action or proceeding and any action to enforce a judgment (including bankruptcy representation) and any appeal, in addition to such other relief, as may be granted by the court.