



**GANESH  
MACHINERY**  
*The Edge in Cutting.*

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# **GANESH GT-27 SL**

## **GANG-TOOLED SLANT-BED LATHE**

**With “C” Axis for Driven Tool Applications**



**6,000 rpm Spindle, 1-1/8” Bar Capacity.  
27mm Capacity 5-C Collet Spindle included.**

## Ganesh GT-27 SL GANG-TOOLED CNC LATHE

The Ganesh GT-27 SL is a Compact 30° Slant-bed Ø1.125" (27mm) bar capacity gang-tooled CNC lathe with an available "C" axis for driven tool applications. The GT-27 SL CNC machine features shorter cycle times due to the enhanced machine rigidity and the ability to move efficiently from tool-to-tool with minimal movement from the face of the workpiece, without withdrawing and indexing.

The GT-27 SL uses both a 5-C collets, in the included collet spindle, and an optional Ø4" 3-jaw hydraulic lathe chuck. Included with the machine are 7-gang tool holders, with 3 external tool holders that use ½" cutting tools and 4 internal tool holders that mount Ø ¾" ID tooling, and optional ER-11 and ER-16 collet extensions. Additional tool holders can be mounted on the 21" long cross-slide with 13.5" of travel. For added tooling density the ID-tools stations can be double-tooled using dual-insert boring bar holders for rough and finish boring, boring and turning, boring and threading etc. on one tool shank. These special tool holder use twin insert boring bars that are designed to be used without the need for wasteful spindle reversals; to go from boring to thread cutting for instance.

The GT-27 SL has a long 21.26" tool plate with a generous X-axis stroke of 13.58" to maximize the number of tools that can be used on the cross slide. The Z-axis features 4.5" of travel which sets the workpiece length limit. A precision rotary C-axis with 360,000 radial positions (0.001-degree resolution) can do axial and radial cross milling, drilling, engraving and other complex machining.

The 3528-pound GANESH GT-27 SL is equipped with a 6000-rpm 6-horsepower dual-wound spindle motor. A hydraulic cylinder provides a secure grip on the workpiece for heavy machining applications, without the push-back so often seen when air collet closers are used.

The GT-27 SL is built using World-Class premium Japanese components, with motors and drives from Mitsubishi, and premium double-anchored and pre-tensioned NSK ballscrews, bearings and linear ways. The machine is assembled in Taiwan. The machine comes complete with hydraulic workholding featuring a built-in Hardinge-style 5-C collet spindle for barstock up to Ø1.125" (27mm).

Shown below is just a sampling of the bar work and 2<sup>nd</sup> operation work completed on the CYCLONE GT-27 machine.



# **Ganesh GT-27 SL Slant-Bed Design Specifications**

## **Machine Bed -**

The one-piece closed box 30° slant-bed machine casting is made of high-density Meehanite® processed cast iron that is heavily ribbed to increase lateral stiffness and maximize stress absorption. The symmetrical torque-tube casting ensures that no twisting occurs in the bed during heavy cutting or as a result of thermal migration. The cast bed weighs 2,900 pounds and the design gives superb vibration control, which provides for superior surface finish and increased tool life. The assembled machine weighs over 3,500 pounds making it the heaviest machine in its class.

## **Linear Ways**

Premium heavy-duty 28mm wide linear slide ways are used on both axes. The fast rapid traverse rates reduce non-cutting time and the low stick/slip characteristics of the linear ways ensures superior complex work piece shape definition because the axes precisely follow the control contouring commands.

## **Ballscrews –**

PMI 25mm premium quality double-nut double-anchored pre-tensioned ballscrews are utilized to ensure high accuracy and long service life. The ballscrew nuts are preloaded and forced lubricated then laser aligned during machine assembly. The ballscrew rotational torque is checked over the entire travel length to ensure that there is a non-binding assembly so as to minimize wear and thermal migration that would adversely affect machine accuracy. Built by PMI, Precision Motion Industries.

## **Machine Spindle -**

The fixed position machine spindle is supported in two matched-sets of high quality NSK 7012 Class-7 (P4) bearings configured in the very stable quad-duplex pair configuration, which are lubricated for life. The spindle is dynamically balanced to eliminate vibration for better surface finish and workpiece accuracy. This extra attention to detail in assembly produces a spindle that generates less heat and maintains a longer operational service life. Every spindle is put through a 72-hour test run prior to assembly that records any thermal gradients or spindle vibration. This process ensures many years of trouble-free production usage. The spindle is driven by a multi-ribbed offset drive belt to enhance the cutting torque power range for more efficient metal removal over a wide range of spindle speeds. An integral Hardinge-style 5-C 27mm capacity collet spindle puts the cutting action close to the spindle bearings for maximum rigidity and minimum runout.

## **Spindle Motor -**

The spindle is driven by a highly reliable Mitsubishi servo motor designed specifically for heavy-duty machine tool applications. The motor is balanced within 5-microns to provide state-of-the-art surface finishes. The motor is designed with less rotor inertia than standard induction motors and features a large diameter output shaft and heavy-duty radial load bearings for a long service life. This means faster acceleration/deceleration rates and reduced cycle time for increased productivity. The Mitsubishi motor is matched to a Mitsubishi servo amplifier module which provides variable current to the motor ensuring both high reliability and accuracy in angular positioning for superior thread start positioning and thread truncating, engraving, and other live tool machining where accurate high response angular positioning is required.

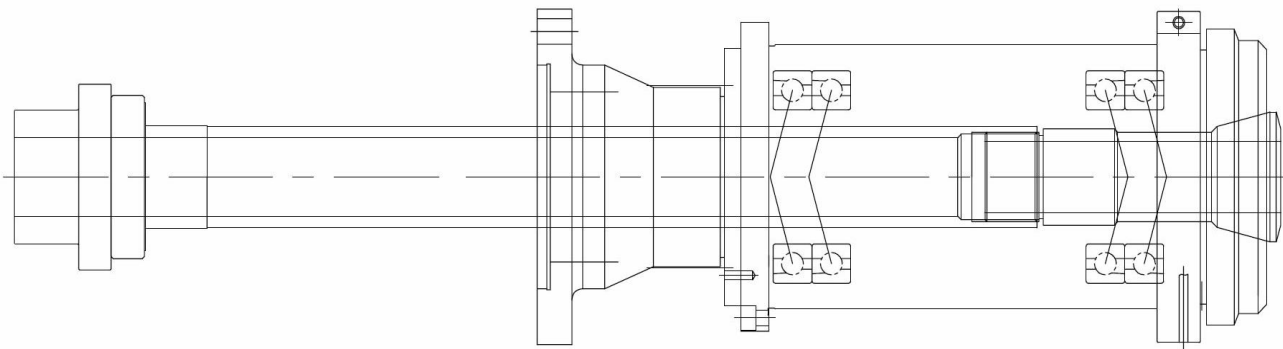
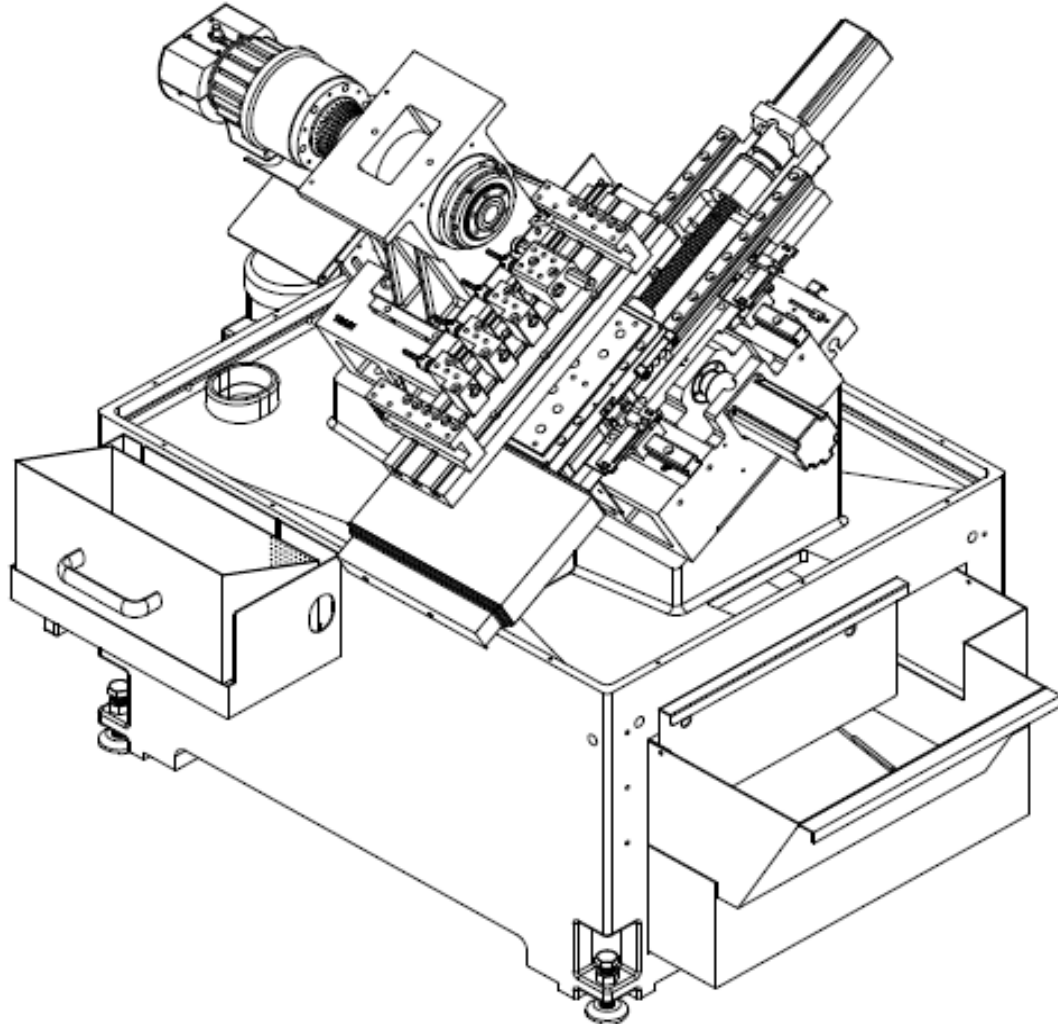
## **Brushless Axis Motors -**

Both axis motors use the high-performance Mitsubishi Brushless AC servo motors that provide for less wear and are totally enclosed to ensure no dust or damage to the motor for increased reliability. This Brushless AC motor design improves productivity by accepting higher voltages and increased current for faster acceleration and deceleration.

## **Automatic Lubrication System –**

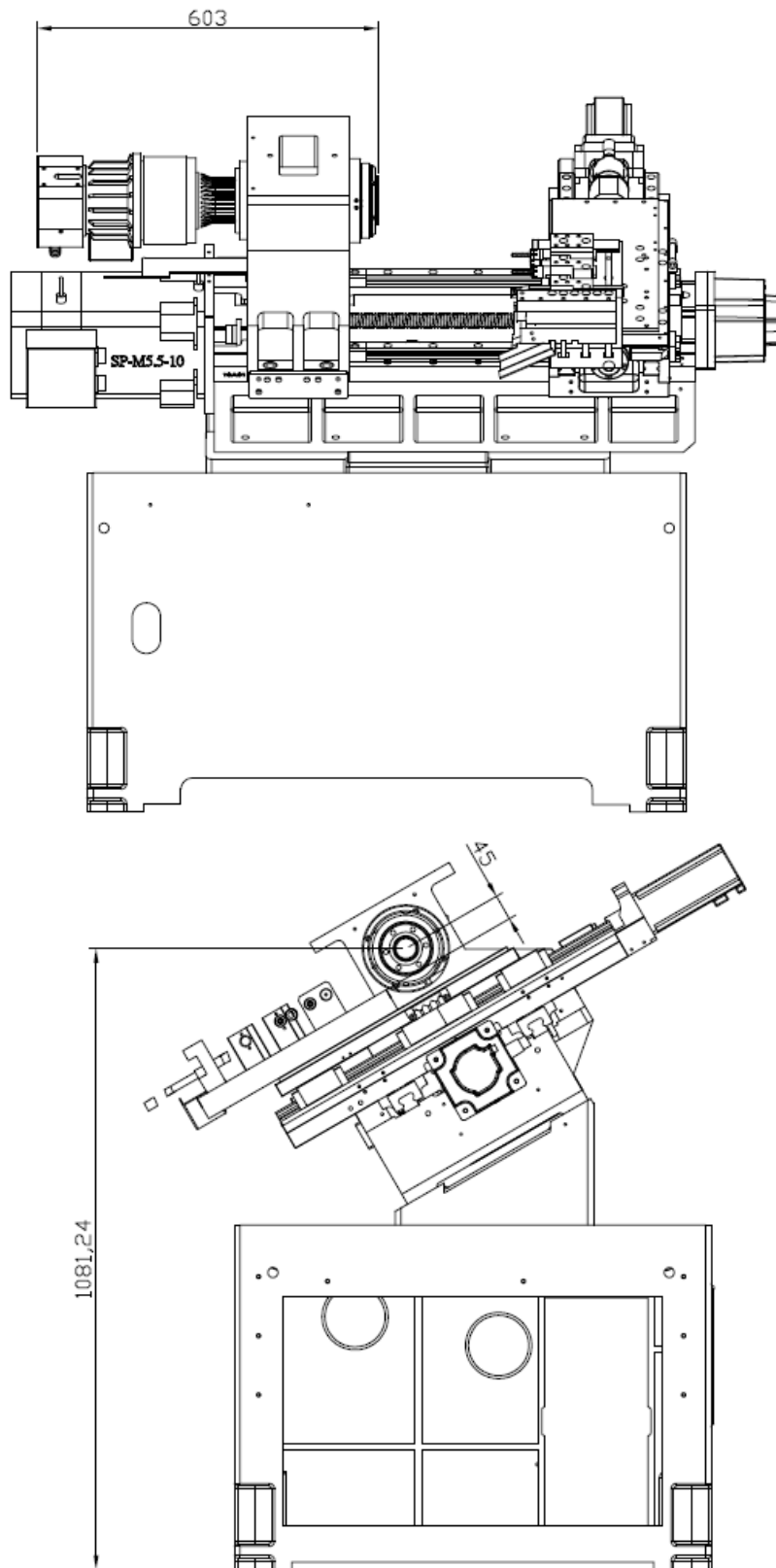
The automatic lubrication system operates on a timed interval and monitors for low oil level or blockage and will stop the machine at the end of the current cycle if a fault condition occurs.

## Ganesh GT-27 SL Slant-Bed Gang-Tooled CNC Lathe



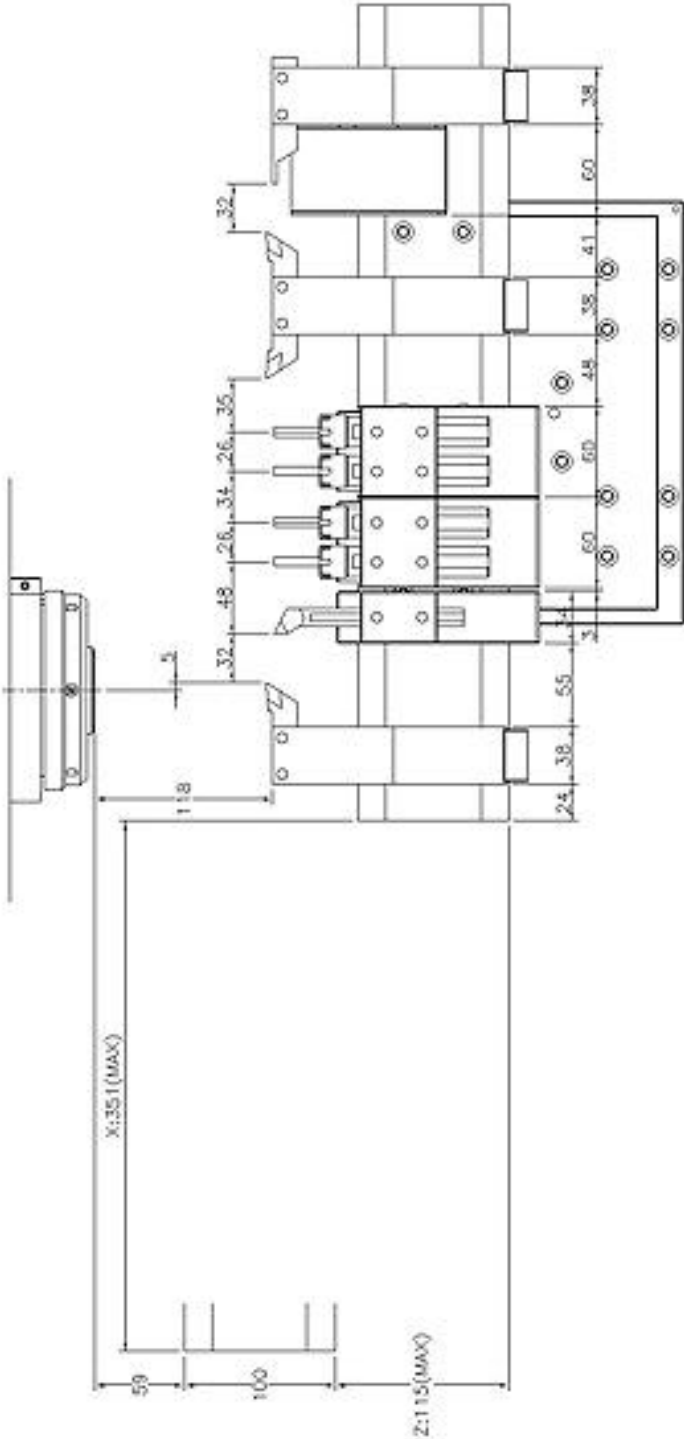
**Quad-Duplex Pair of Class-7 NSK 7012 Class-7 (P4) Spindle Bearings**

# Ganesh GT-27 SL Slant-Bed CNC Lathe

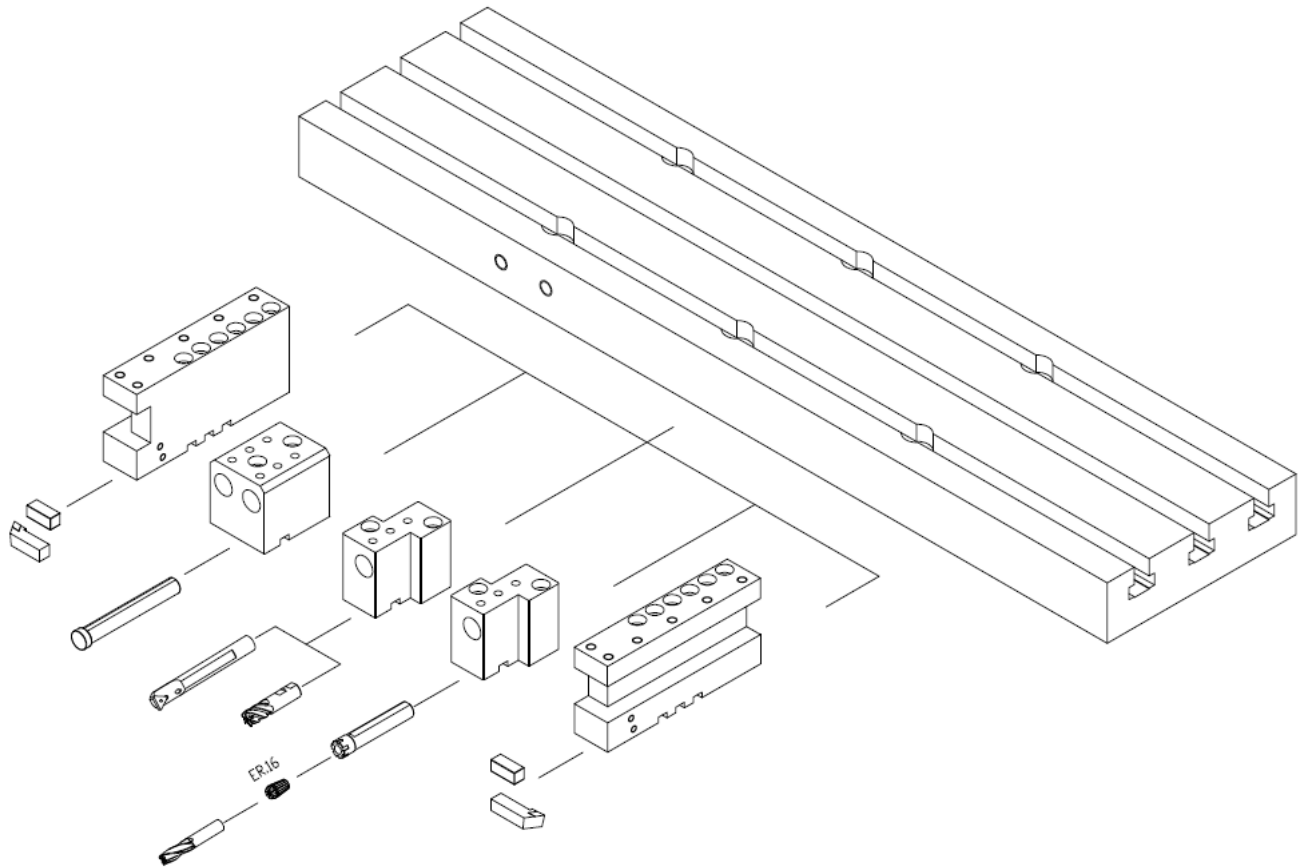


# Ganesh GT-27 SL Gang-Tooled Table

Showing Clearances for 9-Cutting Tools



# CYCLONE GT-27 Tooling Layout Example



**Standard Tool Package: 3 - 1/2" O.D. Tool Holders, 2 - Single 3/4" I.D. & 1 - Dual 3/4" I.D. Tool Holders**

# CYCLONE GT-27 MACHINE SPECIFICATIONS

<b>AXIS TRAVELS</b>		
CNC Controlled Axis	#	2-Axis (X, Z), (High-Performance C-axis is available)
X-Axis Travel (Cross Travel)	Inch	13.58" (345mm) Using Linear Ways
Z-Axis Travel (Longitudinal Travel)	Inch	4.52" (115mm) Using Linear Ways
C-Axis Travel (Rotational Axis)	Degrees	360 degrees (360,000 radial positions) (available option)
<b>SPINDLE</b>		
Drawtube I.D. Bore	Inches	1.378" (35mm)
Hardinge 5-C Collet Capacity	mm	27mm (1.125") Hardinge-type 5-C collet spindle is standard
Spindle Speed	RPM	6,000 RPM
Spindle Horsepower	HP	7.5-HP Spindle Motor (5.5kw) 30-minute duty rated
Spindle Torque	Ft. lbs.	26 ft. lbs. cutting torque (Mitsubishi SJ-D5.5/120-01. Motor)
Spindle Center Height	Inches	43" (1082mm) ergonomic work height for operator comfort
Spindle bearing (Ø95mm)		4-NSK ball bearings, 2-front & 2-rear quad-duplex bearings
C-Axis Resolution	Degree	0.001° with full contouring capability (C-axis is optional)
<b>TOOLING SYSTEM</b>		
Tool Centerline Height	mm	45mm - tool plate to spindle centerline ±0.01mm (±0.0004")
Tool Top Plate Surface Dimensions	Inches	21.26" x 4.96" (540mm x 126mm)
Tool Plate T-Slots	Inches	3 T-Slots 5/8" on 40mm centers
Turning Tool Size	Inches	1/2" tool shanks
I.D. Tool Bores	Inches	Ø 3/4" tool bores
<b>AXIS DRIVES</b>		
Rapid Travers Rate – X & Z axis	ipm	712 IPM (18m/minute)
Maximum federate for thread cutting	ipm	236 IPM (6m/minute)
Minimum Programmable Input	Inch	0.0001" (0.001mm = 40 millionths of an inch)
C-Axis Resolution (optional)	Degrees	0.001 degree (360,000 Radial Positions) (optional)
Brushless AC Servo Motor Drive	HP	X = 1-HP (.75kw), Z = 1-HP (.75kw)
Ballscrew diameter	mm	25mm diameter - 6mm pitch PMI double-nut ballscrews
Linear Way Size	Mm	28mm linear ways – preloaded double-truck for each rail
<b>SYSTEM REQUIREMENTS</b>		
Electrical Requirements	KVA	8 kw – 30 amps @ 220vac ±5% 3-Phase
Pneumatic Requirements		85 psi @ 10-cfm for parts catcher and spindle brake
Hydraulic System Capacity	Gallons	10-gallon (40 liter) hydraulic tank, 500 psi pressure
Coolant Pump Motor/ Tank Capacity	HP	¾ HP/35-gallon (130 liter) tank with dual chip filtration (.56kw)
Automatic Metered Lubrication		3-6cc/15-minute (adjustable lubrication flow rate)
<b>MACHINE DIMENSIONS</b>		
Floor Space – L x W x H	Inch	72" x 52" x 70" (1,830 x 1,300 x 1760mm)
Machine Spindle Center Height	Inch	38" (965 mm)
Machine Net Weight	Pounds	3,528 lbs. (1,600 kg)
<b>Note: SPECIFICATIONS AND PRICING IN THIS DOCUMENT ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE!</b>		

**The Cyclone - GT-27 is manufactured in Our Modern  
Certified ISO 9002 Production Facility in TAIWAN.**



## Mitsubishi M70 CNC High-Speed, High-Performance CNC Control

The **Mitsubishi M70 CNC control** provides a very high level of feature content for greater functionality and ease of use which translates into increased high-quality production. The control features modern 64-bit RISC CPU technology with a range of high-speed and high-accuracy functions, resulting in faster processing times and more precision-machined parts; all in a highly user-friendly platform. The servo drives communicate via the high-speed 64-bit fiber-optic backplane so the servo network can optimize the speed and position loop gain. Interpolation with nanometer (1 “billionth” of a meter) resolution, 340-block look-ahead, and specially developed control functions automatically minimize synchronization deviations caused by mechanical backlash and vibration and work together to provide fine surface finish, optimized position accuracy, faster operation, and more production throughput for more profit.



The **M70** control features:

- **64-Bit Ultra-Efficient RISC CPU processor** and high visibility 8.4” TFT color LCD screen.
- **Includes 4GB High-Speed Data Server CF memory** for part storage & direct DNC operation
- **340 block buffered look-ahead and 33,700 block per minute processing speed**  
**The 4-features above work in harmony to provide faster program throughput & greater productivity**
- Conversational form-based programming interface for efficient program development
- Mid-program block number restart function for operator convenience after a program interruption
- Dampened backlash compensation eliminates spiking during the axis reversal moves for higher accuracy machining, superb surface finishes, and exacting feature definition.
- Nanometer interpolation with 340-block look-ahead provide fine machined surface finishes
- Least input & command increment of 0.001mm (0.000040” “40-millionths”)
- 4-axis simultaneous contour control capability & synchronous rigid tapping & peck tapping
- Graphics –Tool path and 3-D part shape are presented to help detect errors at an early stage
- NC Monitor – remote monitoring of machine screens for observation on a home or office PC
- Intuitive HMI for ease of operation and rapid setup & changeover and “on the fly” tool offsets
- MPG handwheel can be used to activate the program for check-out in simulation & actual operation
- Program copy, move, delete functions, and input guidance screens help create part programs
- Ethernet RJ-45, RS-232, USB & Compact Flash Card ports provide a choice for communication.
- Mitsubishi high performance matched motors and drives yield exacting program feature definition.
- 3-year Mitsubishi control, motor, and servo drive warranty



# **Toellner Systems, Inc.**

*Automated Loading Solutions*

## **Toellner Pneumatic Through-Spindle Auto-Loader for (Ganesh GT27):**

This is a floor-mounted unit, which is lagged to the floor in the space normally occupied by a bar feeder (Approximate foot print 36”L x 24”D). This loader utilizes compressed air to load parts, which allows for its smooth operation. This air is channeled through a TSI provided soft start regulator, which allows the unit to be brought up to pressure smoothly avoiding all sudden movements of the air cylinders insuring operator safety. The control cabinet is located on the loader frame. Inside the cabinet is an Allen Bradley Programmable Controller. Conveniently located on the control cabinet are an E-Stop Button, Reset/Hold, and Power on/off switch. During operation, parts are staged inside the machine immediately behind the spindle during machining, resulting in the fastest load time possible.

### Key Features:

- Allen Bradley PLC and HMI
- Standard pneumatic components
- Keyence photo eyes and proxy's
- Inbound parts queue to be hand loaded by operator
- Spring loaded hardened rotating part pusher end
- Non rotating filler tube
- Welded frame construction
- All moving parts will be guarded per OSHA standards

**Prices and specifications subject to change without prior notice.**