



**2 AXIS TOOL
GANG TYPE
CNC
TURNING
AND
MACHINING
CENTER
Model TGC32**

- ✓ Machines are fully modular design concept
- ✓ Extreme versatility and flexibility
- ✓ Easy possibility of future upgrade
- ✓ Tool gang type 2 axis machining with optional turret with axial and radial tool arrangements
- ✓ Dead tools or with live and dead tools either on the gang tool blocks as well on the tool turret
- ✓ Turning and milling operations on a single set up
- ✓ Complex jobs in short time cycles and easy set ups
- ✓ Chuck or collet Workholding options
- ✓ High stock removal rates in turning or milling operations
- ✓ Bar feeding configurations are available
- ✓ Manual or automated machine tending
- ✓ Turnkey projects
- ✓ Several options of CNC structures

MACHINE POSSIBLE CONFIGURATIONS

Tool Gang type basic configuration

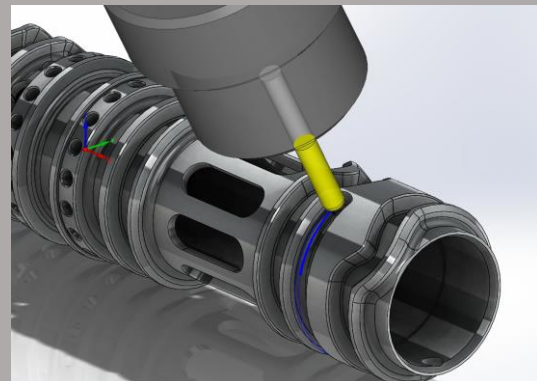
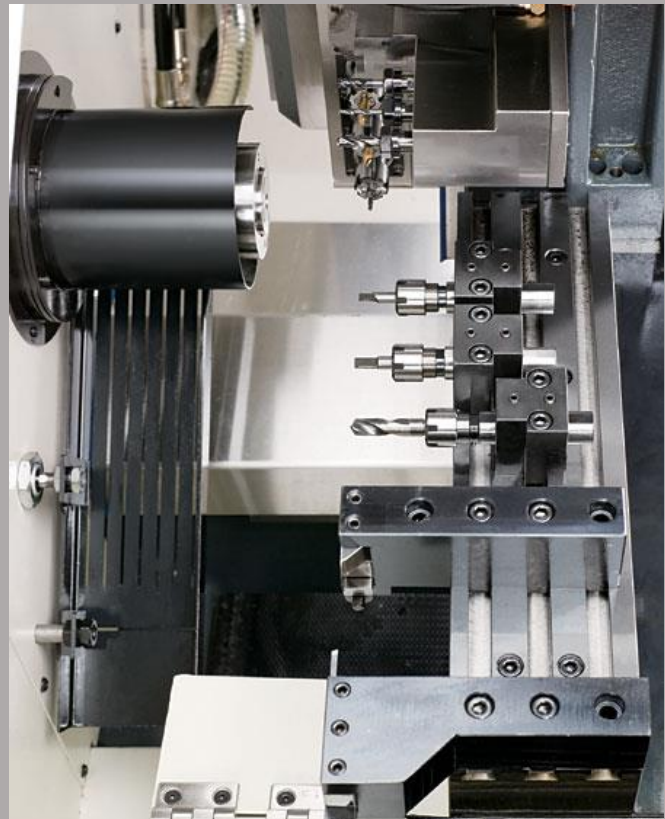
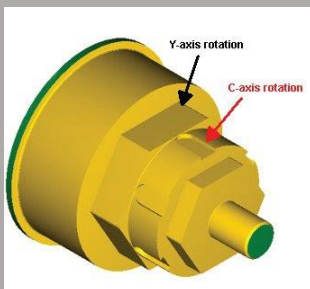
- Complete set of over table and tool blocks for all kinds of tools
- Machines can be supplied with all tooling for piece complete machining in a single set up
- Tool sets can either feature dead or live tools
- Axial or radial positions
- Coolant thru the tool is available
- ER tool clamping systems is standard, but others are possible.
- The machine can be supplied with additional gang over tables to allow several gang tool presetting arrangements, ready to be quickly changed.
- The over table features reference locators to allow precise repeatability for over table changes.

Tool turrets

- A tool turret can be supplied with the gang type tooling
- Direct drive tool turrets with very high-speed indexing. Bi-directional rotation to reach the next tool thru the shortest path.
- The direct drive turrets have some unique advantages over any previous
 - Noise less
 - Zero backlash always
 - Zero wearing parts on the mechanism.
- These direct turrets can feature live or static VDI type tools
- Live tools are driven by its own servo motor and can have all machining functions found on machining centers such as:
 - Drilling
 - Milling
 - Rigid tapping
- All with pressurized internal coolant thru the tool center
- For high stock removal these tools are supplied with larger gear ratio

C axis machining

- The machines can feature a C axis, a angular feed axis in the spindle that make possible to run very complex parts wit multiple operations and shapes with live tools in the gang or turret
- The CNC also have compatibility with all major CAM sytem to emulate even Y axis in the machine combining C and X axis



GENERAL TECHNICAL AND DESIGN FEATURES

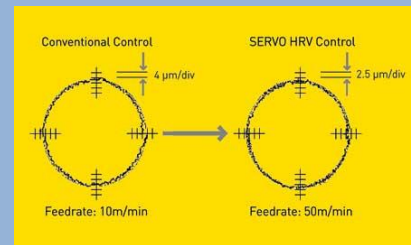
- All structure elements were designed using FEM techniques to ensure extreme precision, thermal stability, vibration damping, and overall stiffness and is composed of regularly spaced walls to create a mono block arrangement
- All main structural components such as base, headstock, sliders are high strength cast iron, thermally stress relieved to avoid future geometric precision distortions.
- The cross slides X and Z axis are supported on very high precision linear guides without overhanging condition at any position of travels
- All axis linear ways are preloaded to increase the system rigidity and no backlash in any cross directions of the movement
- All axes are driven by preloaded nut precision ball crews mounted in angular contact bearings support units to ensure zero backlashes in all directions.
- Each ballscrew is directly coupled to its servo motor to ensure the best dynamic response.
- The designs of these units are focused to have high structural stiffness with the smaller inertia as possible. This combination brings better dynamic feedback results on all axis interpolation accuracy
- All linear guides, ballscrew assemblies are automatic lubricated
- The spindle is a sealed cartridge design with lubrication for life
- Bearings are angular contact high dynamic load
- The spindle shaft features a hydraulic bar command to the chuck so there are many possibilities of chuck solutions available
- The power transmission from the spindle servo motor is thru a tooth belt drive.
- The machine can be supplied with two spindle motor versions. The turning version with vector frequency inverter control for turning operations or full servo CNC motor spindle for oriented angular positioning or full C axis interpolation axis. With C axis is also possible to supply an emulated Y axis version too.
- The tool gang is mounted on a "T" slot over table that can be quickly changed, so is possible to have some preset tool arrangements for easy and fast new job set up.
- The spindle is supplied with fast brake to allow quick machine to stop to low the dwell times on the part cycle.
- The machine can feature bar feed system for bars up to 3000mm (118") long
- The machine can feature part catcher device and, collecting gutter and other systems to easily unload finished parts.
- The machines can be supplied with customized loading unloading systems Full machine enclosure to protection of chips and other wastes.
- Enclosure service doors are locked during operation on automatic and safety monitoring
- Enclosure is SAE1015 steel with front loading/unloading door with double tempered glass window.
- All other service access doors are electric locked and monitored to no allow automatic operation mode if they all are not safely closed.
- The machine is supplied to receive an optional automatic chip conveyor with large capacity coolant tank and coolant pump system with electric valve for coolant flow command in automatic mode
- The machine CNC interface design has reserve to allow it, as basic delivered, to prepared to be robot or gantry load tended.
- All machine will complete failure diagnosis and can be connected to the factory monitoring system
- All safety standards will be provided to avoid accidental harm to the operators, the work, the machine the robot and any other element of the cell
- All safety system will not allow any intentional or accidental access to any moving or cutting area while the machine is in automatic operation mode. Forced access to any of these areas will shut down and stop completely the machine
- The machine cycle tending by robot will be synchronized and the mastered by the robot.
- All machine will complete failure diagnosis and can be connected to the factory monitoring system

SOME FEW EXAMPLES OF PIECES PRODUCED IN THESE MACHINES:



Advanced CNC system and Servo axis

- ✓ CNC FANUC Series 0 T-Fi
- ✓ Featuring 1 or 2 path control , one for each group of 2, axis X,Z, S or 3 axis X,Z and C
 - ✓ Spindle High Response vector functions
 - ✓ Advanced HMI
- ✓ Advanced technology Servo amplifiers FANUC Alpha series with optic fiber technology connecting cables to the CNC
- ✓ FANUC Alpha series feed axis and spindle servo motors
 - ✓ Energy efficiency Spindle HRV Control level 2
- ✓ Robot /machine communication functions (if this robot option will be acquired with machine)
- ✓ Gauging / machine communication functions (if some post-process gauging option will be acquired with machine)



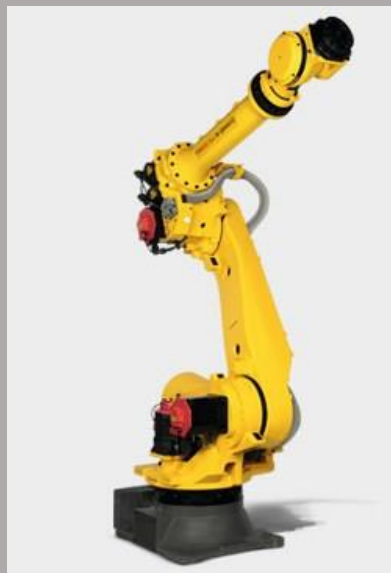
THESE MACHINES CAN ALSO BE SUPPLIED WITH ROBOT TENDING SYSTEMS

We can supply together many possibilities of robots according de load capacity, the required reach, de number of axis to move the objects in the best paths

All these solutions are customized projects that take care of all aspects such how the parts are, how much they weight, how many different of them that machine or group of machines will need to produce

Observing how is the frequency of production of each type, how the grippers and all other robot automation equipment must be to fit not only loading and unloading but be actually integrated to accomplish more tasks such distributing incoming and outgoing machined parts to more machines, palletizing and even visual recognition systems to make decisions

We can supply not only stand-alone machines but complete solutions as robot tended machines cells.



Automation for workpiece loading & unloading with gantry loaders

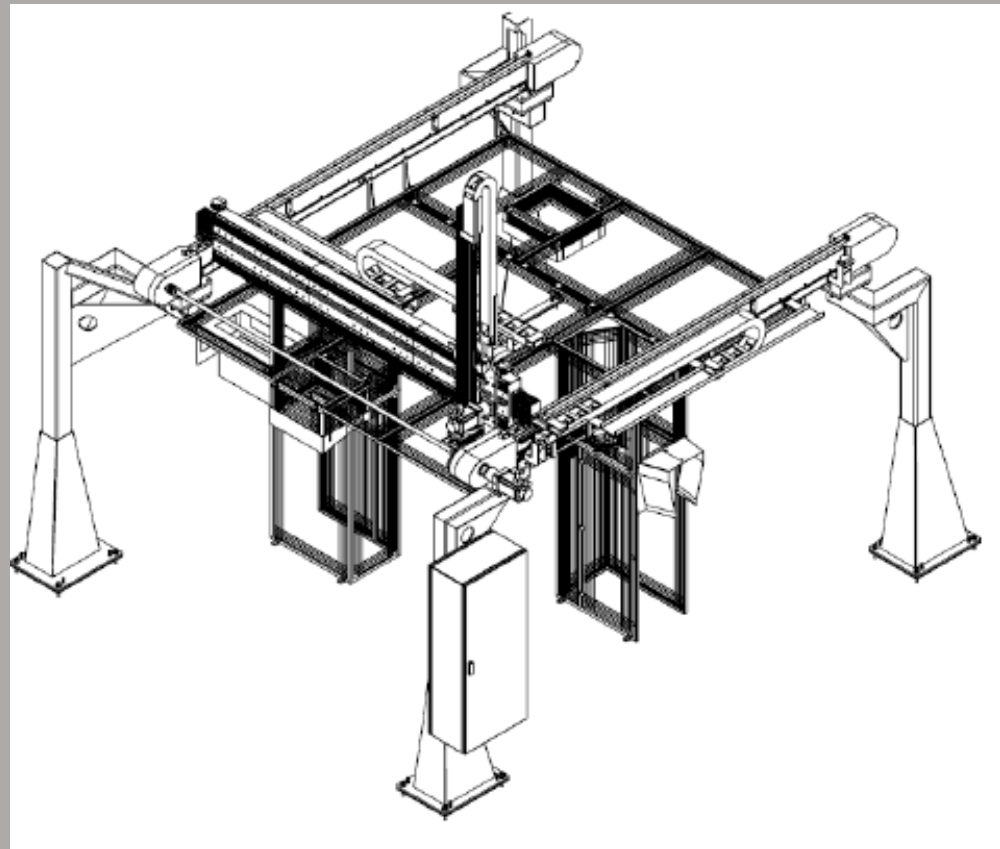
The gantry control and programming system is fully integrated into the machine systems through the Loader control function of the CNC with the same G code codes of the part program and loaders operations be executed simultaneously to the turning operations



These gantry loaders also are full modular design and can be supplied to tend one or more machines with vertical arms moving on all X, Y and Z axis. They can also have controls to allow their integration with other machines.

All gantry solutions are particularly important to be considered because the CNC of the machines can even handle the gantry loader control in parallel with the machine control taking the integration to a very good level.

Please send us your questions about any cell concept solutions you may think interesting for your production.



MACHINE SPECIFICATIONS

Machine model TCG 32MM	metric	UNIT	inch	UNIT
Main Capacity				
OD turning capacity on chuck	135	mm	5,3	in
OD turning capacity on bar	32	mm	1,3	in
Workpiece lenght turning capacity	105	mm	4,1	in
Spindle				
Central Spindle hole	42	mm	1,7	in
Spindle power @ 100 %	3,7	kW	5	hp
Spindle power @ 60 %	4,4	kW	6	hp
Spindle max. speed	6000	rpm	6000	rpm
X & Z Saddles units				
X travel	340	mm	13,4	in
Z travel	500	mm	19,7	in
Rapid feedrate axis X	15000	mm/min	590,6	ipm
Rapid feedrate axis Z	15000	mm/min	590,6	ipm
Gang Tool				
Number of tools	7		7,0	in
Square tool shank size	16	mm	0,6	in
Cylindrical tool shank collet	ER 16		ER 16	
Max. Cylindrical tool shank	10	mm	0,4	ipm
Cylindrical tool shank collet	ER 20		ER 20	
Max. Cylindrical tool shank	13	mm	0,5	ipm
Tool turret				
Turret size	120	mm	4,7	in
Number of positions	8 or 12			
Tool standard	DIN 69881			
VDI	20	mm	20	mm
Tool change time 45 degrees turn	0,21	s	0,21	s
Coolant high pressure thru the tool	7	bar	101,5	psi
Live tools for the tool gang or tool turret				
Cylindrical tool shank collet	ER 16		ER 16	
Max. Cylindrical tool shank	10	mm	0,4	ipm
Cylindrical tool shank collet	ER 20		ER 20	
Max. Cylindrical tool shank	13	mm	0,5	ipm
Max drilling capacity	16	mm3/rot	0,001	cuin/rot
Max miling capacity	4320	mm3/min.	0,264	cuin/min
Max tapping capacity	M12 X1		1/2" X 0.04"	
General				
Hydraulic circuit pressure	70	bar	1015	psi
Lubrication oil tank	0,3	lts	0,1	Gal
Pneumatic air pressure (for machines w/ part catcher only)	6	bar	87	psi
Chip conveyor coolant tank	250	lts	65,8	Gal
Machine approximate weigh with the standard supplied features	1200	kg	2640	lbs
Machine length with the standard supplied features	1850	mm	72,8	in
Machine width with the standard supplied features	1550	mm	61,0	in
Machine height with the standard supplied features	2080	mm	81,9	in

The above Specifications are subject of modifications without prior notice

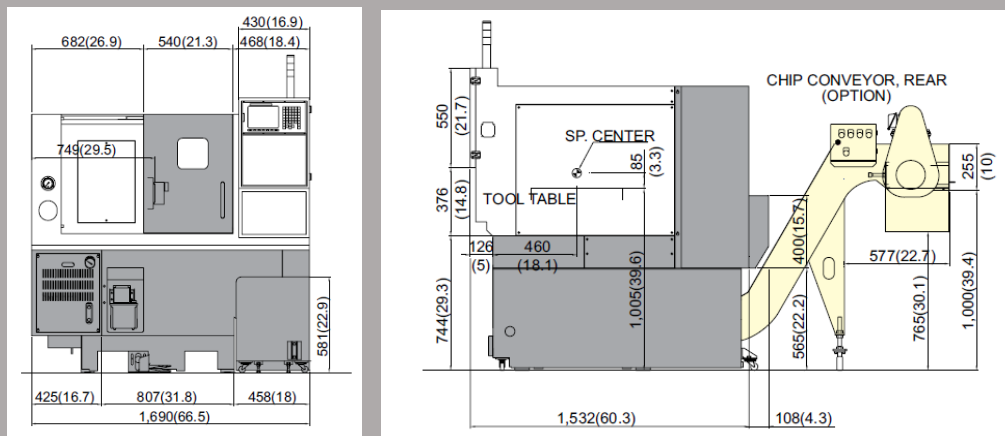
STANDARD EQUIPMENT AND FEATURES

- Electrics 220VAC-60Hz
- Bar feeder mechanical and electric interface
- Full machine enclosure to protection of chips and other wastes with sliding manual door w/ safety lock
- Set of 7 tool holders for OD and ID machining
- Set of 2 ER 16 and ER 20 collets
- Bar feeder tube set (32mm),
- Bar pusher set
- Stand set
- Service wrench and keys set
- Chip tray
- Complete hydraulic chuck/collet set with safety monitoring thru CNC w/ electric valves safety monitoring thru CNC
- Complete vector frequency inverter driver for spindle
- Guide ways covers sets for X and Z sliders.
- Machine painting scheme blue/gray high resistance enamel coating.
- Coolant unit with pump, tubing and filtering elements

OPTIONAL EQUIPMENT AND FEATURES

- Electrics different from the standard 220VAC-60Hz
- Automatic Bar feeder systems
- Additional tool gang over table
- Additional tool holders
- Tool turret dead tools type with 8 or 12 position
- Tool turret dead and live tools type with 8 or 12 position
- Live tool holders
- Options of collet set options
- Options of chuck
- Special work holders device customized design
- C axis spindle version
- Y axis emulated version
- Part catcher
- Part collecting gutter
- Robot machine tending systems
- Gantry machine tending systems
- Chip conveyor options

EXTERNAL DIMENSIONS



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