

54002 with Tesca Industrial control, 3-axis CNC bench milling machine with Tesca ISO industrial control, with options for automation. The 54002 is a benchtop machine with full metal cutting capabilities, handling materials such as brass, aluminium, mild steel, nylon, etc. Industrial control panel with digital graphics simulation, compatible with Fanuc programming.

Objective

Understand the concept, components and programming skills of milling machine to develop different kinds of practical applications simulated as exercises and also produce components with optimized cycles.

Accessories available:

Workbench
Pneumatic vice,
6 station ATC,
4th axis rotary table,
Automatic door
Loading/ Unloading Arm



Learning Objectives:

Having successfully completed this lab, the student will demonstrate

- knowledge in Demonstrate an in-depth knowledge on cutting parameters.
- Knowledge on Tooling, process planning.
- Learn about standard machine operations.
- Learn about CNC basic Programming .
- Basic Maintenance of CNC machinery

SPECIFICATIONS	In metric units		In US Customary units	
Travel				
X axis	mm	225	in	8.9
y axis	mm	150	in	6.0
Z axis	mm	115	in	4.6
Table				
Table size	mm	360 x 132	in	14.2 x 5.2
T- Slot	mm	2 x 10 x 50	in	2 x 0.4 x 2
Load on table	Kgs	15	lbs.	33
Spindle				
Spindle		Belt Drive, Unit type		Belt Drive, Unit type
Spindle nose to table top	mm	70 to 185	in	2.8 to 7.3
Spindle to Column	mm	120	in	4.8
Spindle nose taper		BT30		Bt30
Spindle motor capacity	Kw	0.37 (Std)/0.75 (Optional)	hp	0.5 (Std)/ 1 (Optional)
Programmable spindle speed	rpm	150 - 4000	rpm	150 - 4000
CNC detail				
Control system	Tesca Industrial Control (Fanuc code compatible)			
Feed rate				
Programmable feed rate	mm/min	0 - 1000	in/min	0 - 39.4
Rapid feed	mm/min	1200	in/min	47.3
Accuracy				
Positioning accuracy	mm	0.015	in	0.0006
Repeatability	mm	±0.008	in	± 0.0004
Axis				
Axis resolution	mm	0.015	in	0.0006
Average positioning variation in VDI/DGQ 3441 in X/Y/Z	mm	0.015	in	0.0006

Note: Specifications are subject to change.

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IT-2013, Ramchandrapura Industrial Area, Sitapura Extension,
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Axis motor		Stepper		Stepper
Guide ways/ Ball screws				
Slides	Dovetail guide ways fitted with Turcite B			
Ball screws X/Y/Z	mm	16x5 - C5 class	in	0.6 x 0.2 - C5 class
Electric motors				
Axis motor		Stepper		Stepper
Axis motor capacity	Nm	0.8	Nm	0.8
Power source				
Main supply	110V & 12A / 230V & 6A, Single Ph., 50/60 Hz			
Machine dimensions				
L x W x H without ATC (approx.)	mm	1000 x 575 x 650	in	39.4x22.7x25.6
Weight (approx.)	Kgs	170	lbs.	374
Coolant / Lubrication				
Coolant	Optional: Oil Mist Coolant			
Lubrication	"Centralized, Manual Single shot Optional: Automated"			
Features				
Compatibility / Upgradable	FMS / CIM system		FMS / CIM system	

TOOLING PACKAGE

Collet Chuck BT 30/A45 RD 25 with Pull Stud	Nos.	1
Collet Chuck BT 30/A45 RD 16 with Pull Stud	Nos.	1
RD 25 Collets Dia 6,	Nos.	1
RD 25 Collets Dia 8,	Nos.	1
RD 25 Collets Dia 10,	Nos.	1
RD 25 Collets Dia 12,	Nos.	1
RD 25 Collets Dia 16,	Nos.	1
Rd 16 Collets Dia 5,mm	Nos.	1
Spanner Er -16 mm	Set	1
Spanner Er -25 mm	Nos.	1
HSS End Mill Dia 10	Nos.	1
HSS End Mill Dia 12	Nos.	1
HSS Slot Drill Dia 5	Nos.	1
HSS Slot Drill Dia 6	Nos.	1
HSS Slot Drill Dia 8	Nos.	1
HSS Slot Drill Dia 10	Nos.	1
HSS Slot Drill Dia 12	Nos.	1
2 lipped carbide cutter Dia 25 Shank Dia 16mm	Nos.	1
APMT 1212 insert	Nos.	2
6 mm carbide Cutter (only for Tesca Control)	Nos.	1
Clamping Kit	Nos.	1

Note: Total Tool Length should be 70mm and Shank length should be at least 25 to 30 mm

OPERATION AND MAINTENANCE TOOLS		
Allen Key 1.5,2.0,2.5,3.0,4.0,5.0,6.0,8.0 mm (Each 1 No.).	Set	1
Double ended spanner - 10 X 11, 12 X 13, 14X15,16X17mm	Set	1
Oilcan	Nos.	1
63mm brush	Nos.	1
Fuses (6.3 A & 3.15 A each 3 Nos.)	Set	1
Fuses (6.3 A & 3.15 A each 3 Nos.)	set	1
Screw driver (No: 600)	Set	1

Optional Accessories				
Work Bench Weight	Kgs	55	lbs	121
Pneumatic Vice	mm	90	in	3.6

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Automatic Door		Yes		Yes
AUTOMATIC TOOL CHANGER				
Tool Shank	Type	Modified ISO30	Type	Modified ISO30
No of Tool	No.	6	No.	6
Actuation type	Type	Pneumatic	Type	Pneumatic
Maximum tool dia	mm	16	in	0.64
Maximum tool length	mm	40	in	1.6
Max tool weight	Kgs	3	lbs	6.6
Tool change time sec	Adj(50 deg) - 2s / Opp(180 deg) - 6s			
OPTIONAL: SET OF STANDARD OPERATION AND MAINTENANCE SPARES FOR ONE YEAR				
spindle poly V Belt-660 J6		no.		1
Z- axis timer belt 90XL037		no.		1
X- axis timer belt 80 XL037		no.		1
Y-axis timer belt 100XL037		no.		1
Emergency stop switch		no.		1
Limit Switch D 43 . Q1 RA Switch		nos.		3
Tool post Limit Switches		nos.		2
ATC Sensor 8 mm		no.		1
MCB 6 Amps		no.		1
MCB 2 Amps		no.		1
Stepper Drive		no.		1

REQUIRED EQUIPMENT AT SITE AND UTILITIES TO BE PROVIDED BY THE BUYER DURING COMMISSIONING, DEMONSTRATION & TRAINING

For 54002 CNC MACHINE :

Servo Stabilizer - 2KVA, Single Phase output voltage 230V ac - 1NO.

Compressor - 100 Litre tank Capacity, 6 to 8 Bar (100 – psi) (for ATC Operation) -1 no.

Desktop computer on network

- * Operating System : Windows 7 Professional or Higher
- * Intel Pentium /C2D/PDC/i3-2.4 to 3.2 GHZ
- * Ram – 2GB Min (4 GB Recommended)
- * Graphics – NVIDIA Geforce 210 -1 GB or Higher (Optional)
- * One free USB port (DVD drive)
- * 18.5"/19" TFT Monitor

Training Skills-

- * Identification of the Components of the CNC System
- * Discussion on Programming Elements
- * Discussion on Industry Standard ISO G and M Codes
- * Discussion on Various Tools to be used in a CNC Milling Operation
- * Study on Process Planning
- * Discussion on Program Zero and Offset definition
- * Preparation of CNC Programs using CNC Milling Machines
- * Discussion on Various Machining Cycles used in CNC Milling Programming
- * General machine Maintenance

Note: As part of continuous improvement, Tesca reserves the right to alter machine design and specification without prior notice.

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Ordering Details

SN.	Order Code	Details
1.	54002	Included in the package: CNC desktop milling machine Manual Vice Set of Operation and Maintenance Manuals Teacher handbook and student workbook CNCTrain Milling Software (Single User License)
2.	54002A	Tooling Package
3.	54002B	Safety Interlock
4.	54002C	6 Station Automatic Tool Changer
5.	54002D	Export Packing
6.	54002E	OPTION: Pneumatics vice
7.	54002F	OPTION: Automatic Door
8.	54002F	OPTION Workbench

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