## TTS SERIES

TTS 38 / TTS 46 / TTS 52 / TTS 66 MODELS





## **AVAILABLE OPTIONS**

#### **TTS MODEL**

#### Left Spindle

- Ø38
- · Ø46
- · Ø52
- Ø66

#### Right Spindle

- Ø38
- Ø46
- Ø52
- Ø66

#### **Upper Turret**

- Without driven tools
- With driven tools
- With Y axis

#### Lower Turret

- Without driven tools
- With driven tools
- With Y axis

Without Lower Turret.

It is possible to purchase the machine with only the upper turret.



TTS SERIES









TECHNICAL CHARACTERISTICS

TTS MODEL

Machine without belts.

Direct drive for all motors.

FANUC Servo Motor for turret indexing.

Integrated spindle motor for driven tools 13 kW, 26,8 Nm, 12,000 rpm

Oil-cooled turret

## Integrated spindle synchronous motor

Synchronous motor allows faster acceleration and deceleration than traditional motors. Oil-cooled.

Roller bearings used in spindle.

FANUC Servo Motor for turret indexing.

## Integrated spindle motor for driven tools 13 kW, 26,8 Nm, 12,000 rpm

- · Y axis integrated spindle motor
- Direct drive
- · Oil-cooled

Oil-cooled turret.

#### Thermal sensor in the bed

Controls the temperature of the oil that cools:

- The spindles.
- X and Y integrated spindle motors.
- X<sub>3</sub> axis ball screw mounts.
- The turrets.

- · Y axis integrated spindle motor
- · Direct drive

Turret clamped with

curvic coupling.

· Oil-cooled

## TTS SERIES

• X axis integrated spindle motor
• Direct drive

Turret clame

Turret clamped with curvic coupling.

Roller type linear guides.

Ball screws mounted at both ends and pre-stretched. Ball screws with automatic lubrication.

## Integrated spindle synchronous motor

Synchronous motors allow faster acceleration and deceleration than traditional motors. Oil cooled.

Roller bearings used in spindle.

· X3 and Z3 axis sub-spindle. · Fanuc Option < Compound Machining>

Highly rigid cast iron 45° MONOBLOCK

000 \*\*\*\*\*\*\*\*\*\*\*\*\* 808

· Oil-cooled

Removable, separate coolant tank, guarding design prevents coolant contact with the machine bed ensuring thermal stability.

The coolant tank can be removed without removing the chip conveyor.

· X axis integrated spindle motor

· Direct drive

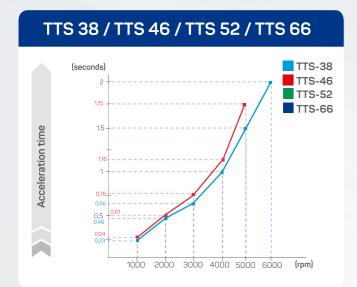
· Oil-cooled



## **INTEGRATED SPINDLES WITH SYNCHRONOUS MOTORS**

- · SPINDLE REMAINS COOL
- · REDUCED THERMAL EXPANSION
- · SUPERIOR PRECISION

#### **ACCELERATION TIME**



## No pulleys or belts

- · No belt slippage · Better surface finish
- · Lower noise level · Less maintenance

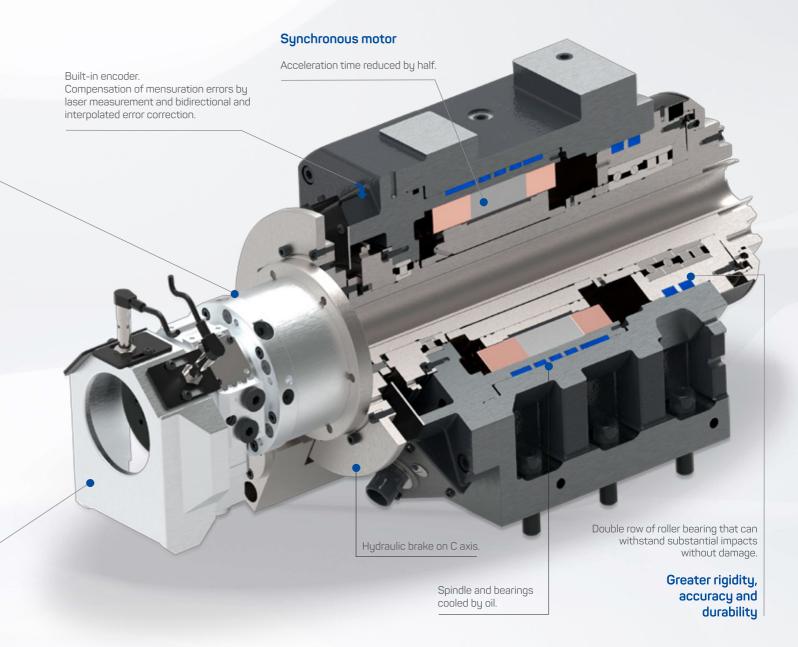
#### Hydraulic cylinder at 45kg/cm2

- More compact (Reduced cross-section means higher clamping speed)
- · Greater sensitivity for light clamping

#### Special coolant collection tray manufactured by CMZ

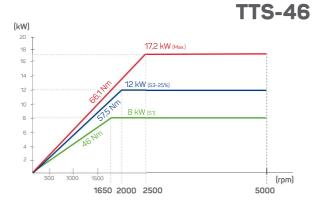
- Excellent access to adjust the detectors.
- Easy chip removal.
- Protection against coolant entering into the hydraulic circuit.

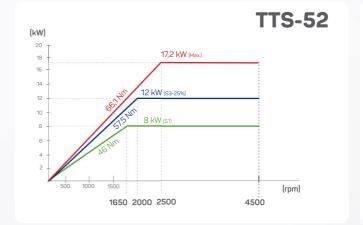
## TTS SERIES

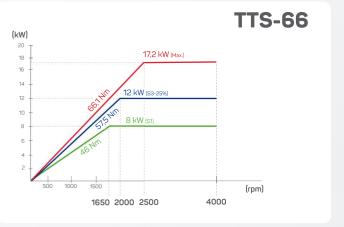


#### **POWER AND TORQUE DIAGRAMS**











## **TURRET WITH** 12,000 rpm **DRIVEN TOOLS**

## TTS SERIES

#### **Hydraulic Clamping**

Turrets hydraulically clamped with curvic couplings for accurate indexing and rigidity.

## Indexing time 150 ms

The turret changes a position (30°) in 150 ms

and indexes to the furthest position (180°) in 440 ms

24 POSITIONS

#### **Built-in motor** for driven tools

Decreased vibrations at higher spindle speeds.

#### Motor and turret cooled with oil

Allowing driven tools to work continuously at 12,000 rpm (S1).

The turret indexes one position

#### Fanuc servomotor changes turret position in only 150 milliseconds

(30°) in 150 ms and rotates 6 positions (180°) in 440 ms.

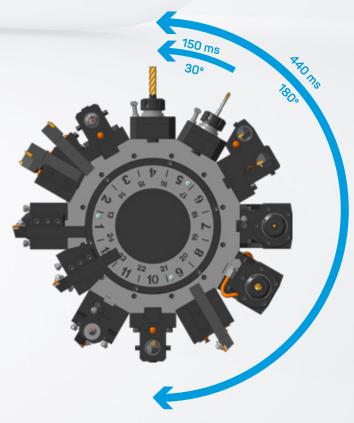
#### Standard tool holder BMT 44

BMT 44 is a popular standard toolholder.

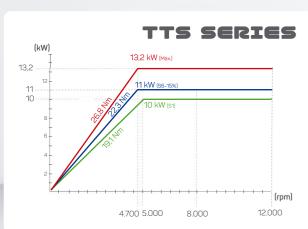
#### 12,000 rpm driven tool holders

CMZ manufacture their own tool holders. 12,000 rpm with internal cooling.

#### **INDEXING TIME**



#### **POWER AND TORQUE DIAGRAM** OF DRIVEN TOOL MOTOR





## PNEUMATIC PART CATCHER

## TTS SERIES





#### Option 2: Component collector

The collector has a pneumatic opening and closing movement.

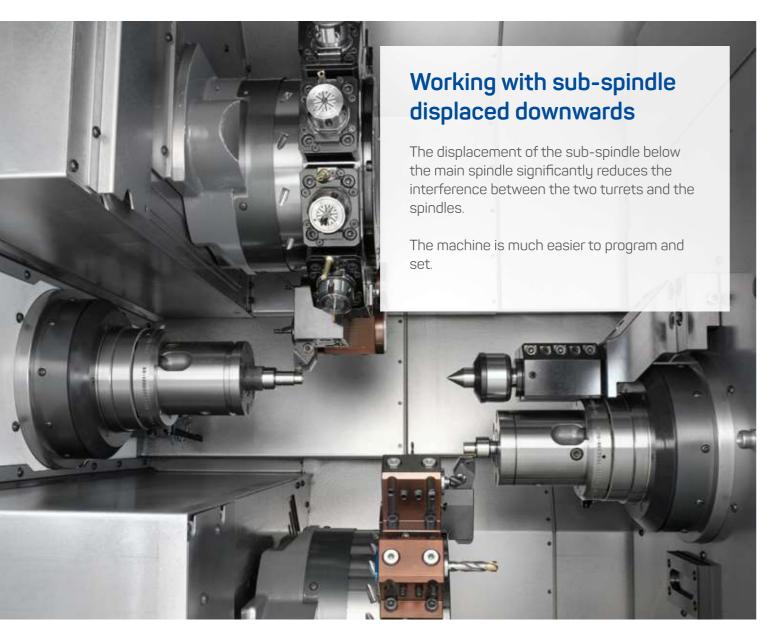


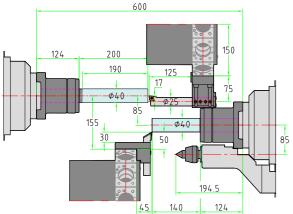
The conveyor moves finished components to the outside of the machine.



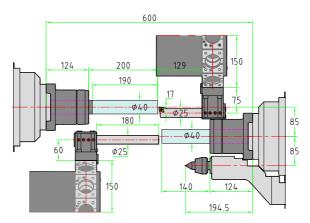
## **EXAMPLES OF USE**

## TTS SERIES



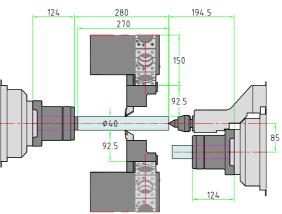


Movement of the sub-spindle reduces any interference.

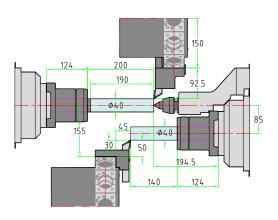


The position of the sub-spindle allows the machining of very long components.





Balanced cutting reduces vibration, allowing increased material removal.



The machine can finish the part in the sub-spindle while machining continues between main spindle and tailstock.



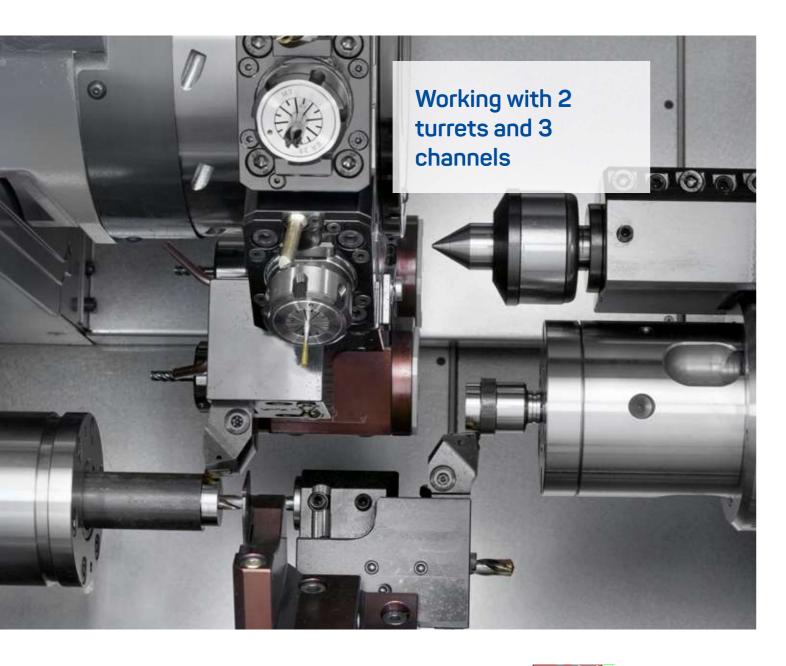
## **EXAMPLES OF USE**

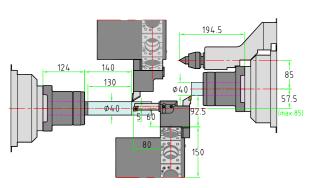
## TTS SERIES

3 tools working

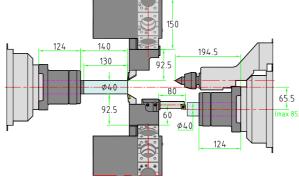
simultaneously

0 2 0 2 0

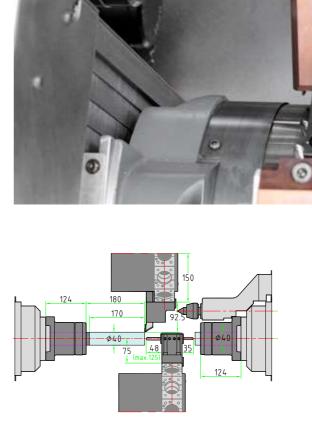




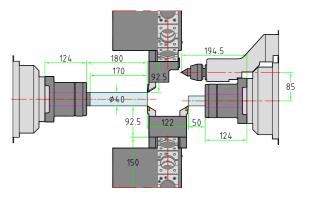
The large travel of the sub-spindle allows simultaneous working with 3 tools in varied conditions.



The third CNC channel gives the flexibility to program multiple applications using 3 tools simultaneously.



Drill simultaneously using the 2 spindles without programming limitations.



Any shape can be turned in the sub-spindle, while the same turret works on the main spindle.



## **TOOL HOLDERS**

#### Boring bar holders Ø25



**Ø25-H=60 mm** 310.04.092142



**Ø25-H=75 mm** 310.04.092143



**Ø25 (2X)** 310.04.092145



(Ø25-Ø16) 310.04.092020 (Ø25-Ø12) 310.04.092018 (Ø25-Ø10) 310.04.092017 (Ø25-Ø08) 310.04.092016

(**Ø25-Ø06**) 310.04.092015



**(ø25-ø20)** 310.04.092022 **(ø25-ɛr25)** 310.04.092013 **(ø25-g16)** 310.04.092020 **(ø25-ɛr20)** 310.04.092152

#### Boring bar holders Ø20



**Ø20-H=70 mm** 310.04.092144



(**Ø20-Ø16**) 310.04.092147 (**Ø20-Ø12**) 310.04.092148 (**Ø20-Ø10**) 310.04.092149 (**Ø20-Ø08**) 310.04.092150

(**Ø20-Ø06**) 310.04.092151



**Ø20/ER20** 310.04.092153

## Holder for compound machining

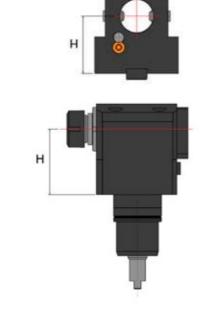


**Ø25-H=60 mm** TTS/10300/20



(Ø25-Ø20) TTL/10300/20 (Ø25-Ø16) TTL/10300/16 (Ø25-Ø12) TTL/10300/12 (Ø25-Ø10) TTL/10300/10 (Ø25-Ø08) TTL/10300/08 (Ø25-Ø06) TTL/10300/06

# 24 POSITIONS





**Static holders** 

**□20** 310.04.092136



□**20** TTS/10300/39



TTS SERIES

**25** 310.04.092137



**□20** 310.04.092138



□**20 (x4)** 310.04.092139



□**20** 310.04.092140



**H=32** 310.04.092141

#### **Driven holders**



Max. 6.000 rpm ERA 20 310.04.092128



Max. 6.000 rpm ERA 20 310.04.092129



Max. 6.000 rpm ER25 310.04.092130



Max. **12.000** rpm **ER25** TTS/10400/05



Max. 6.000 rpm ER25 310.04.092131



Max. 12.000 rpm ER25 TTS/10400/09



Max. 6.000 rpm ERA 20-H=60



Max. 6.000 rpm ERA 20-H=60 310.04.092133



Max. 6.000 rpm ER25-H=60 310.04.092134



Max. 6.000 rpm ER25-H=60 310.04.092135



Max. 12.000 rpm ER25-H=60 TTS/10400/02



Max. 12.000 rpm ER25-H=60 TTL/10400/04



## **CNC FANUC SERIES 30**

WITH IHMI INTERFACE
AND NEW HARDWARE STEP 2

15" Touch screen

## **Data Transfer**



**2 GB**Part program memory







Use **VNC Viewer** software to see the CNC screen of your lathe in any computer sharing the screen with your operator and being able to get support online in a very simple and efficient way.

The operator can access to a desktop screen through the CNC. With this functionality software like ERP, Excel, email, Autocad, CAD/CAM... can be used from the lathe.



Visualize your PC in the lathe





## TTS SERIES



### Conversational programming

The CNC is equiped with the **New Manual Guide i** conversational programming system. It allows programming and simulating the programs in 3D.



#### Manuals

Check any machine manual instantly in the CNC. The files are indexed so that you can access the information you require directly from the table of contents of the manual.



#### Maintenance manager

The Maintenance manager will guide you to perform the recommended maintenance tasks. The dates when the maintenance was performed will be saved automatically when "Maint. complete" is pushed.



#### Easy diagnosis

Easy detection of machine faults through the graphical interface that shows the signals that control the different devices in the machine.
Status of the dectectors, signals to activate the hydraulic maneuvers, motor temperature and pressure measurements are easily monitored live.



#### Tool life (option)

The CNC allows to define groups of sister tooling. When a tool finishes its life due to the number of times being called or its cutting time, it is automatically substituted by its sister tool.



#### Tool monitoring (option)

This fuctions memorises the power consumption of each tool. Once the values are obtained it monitors the power consumption of each tool to detect tool wear or breakage. This reduces the manual handling in an unmanned process.



#### Tool catalogue

The control has a tool catalogue from which we can select the tools we want to use in our machining process. This permits to directly get the geometry of the tool for simulation purposes.



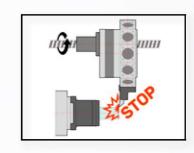
### Execution of program with the MPG handwheel

This function allows checking the programs executing them back and forth with the MPG handwheel.



### Variable speed function (Anti vibration)

With a simple setup to define the period and amplitude of a sinusoidal curve to modify the spindle speed, very good results are obtained in reducing chatter vibration. This function is available for turning with or without tailstock.



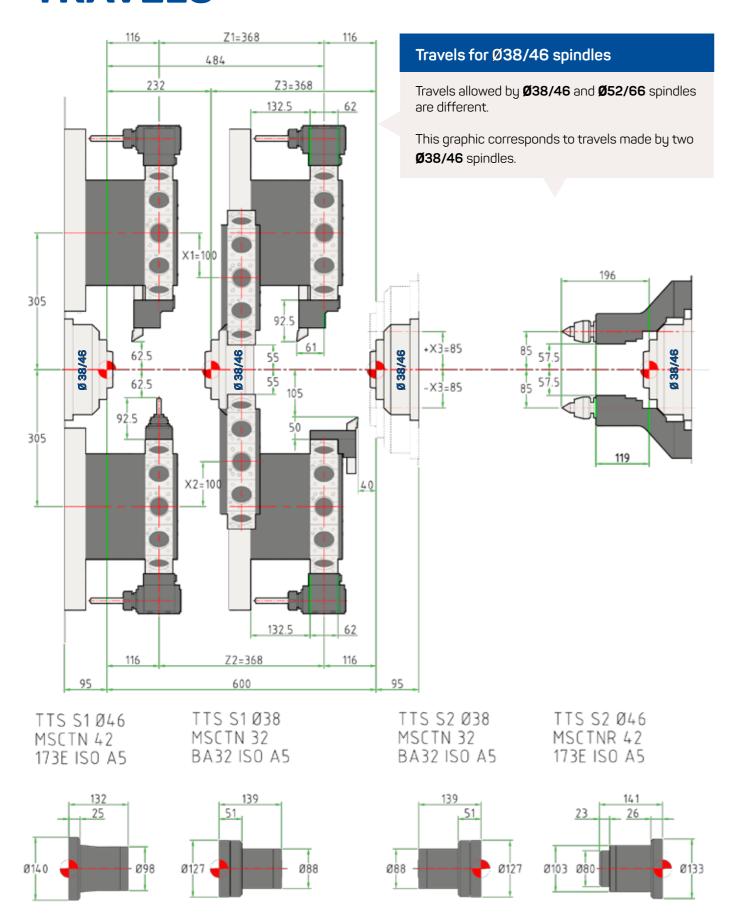
## Electronic detection of collisions (airbag).

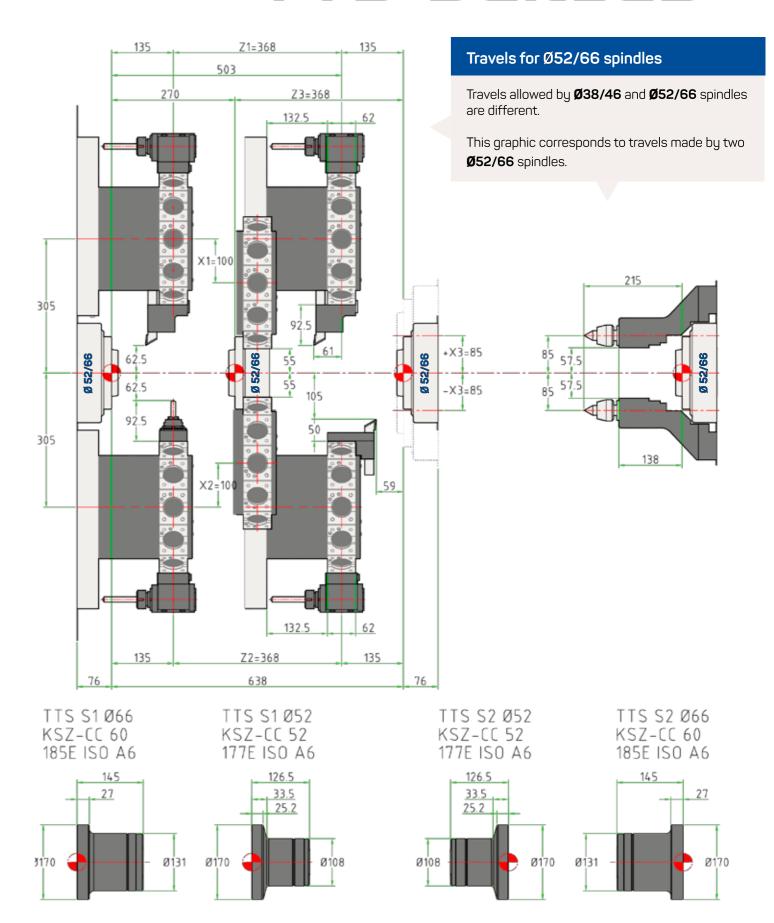
The CNC detects impacts through monitorisation of the motors' forces and following errors. With an overload the axes and spindles are stopped to prevent further damages.



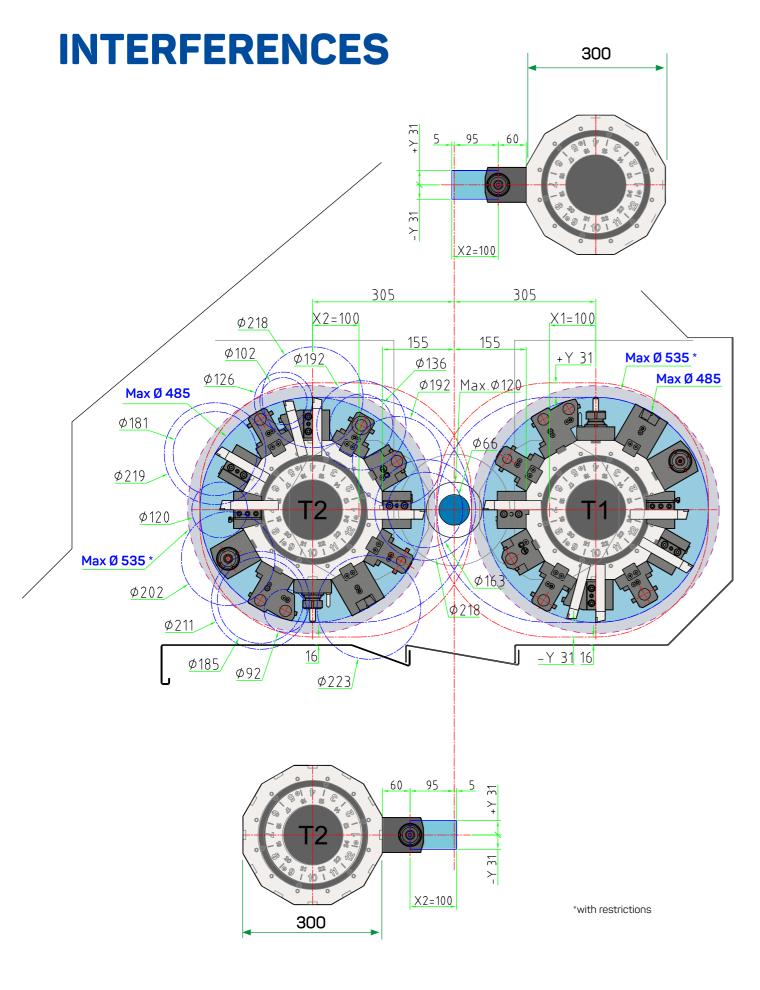
## **TRAVELS**

## TTS SERIES

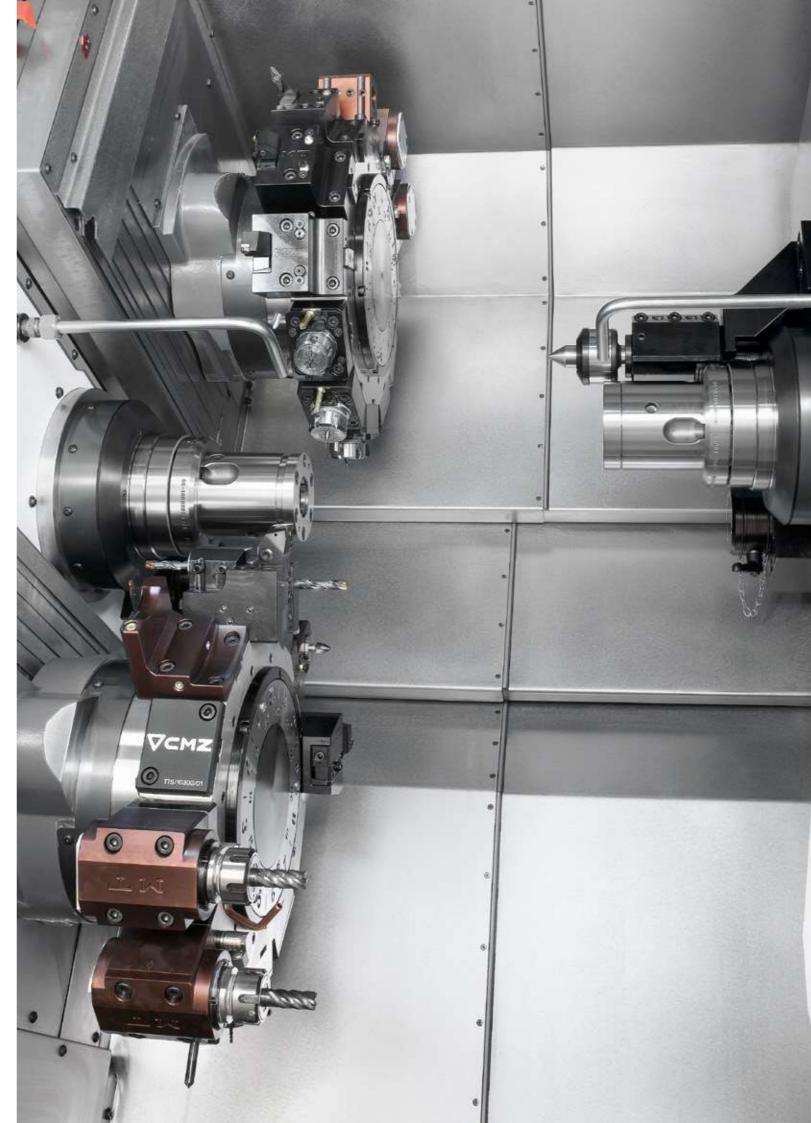




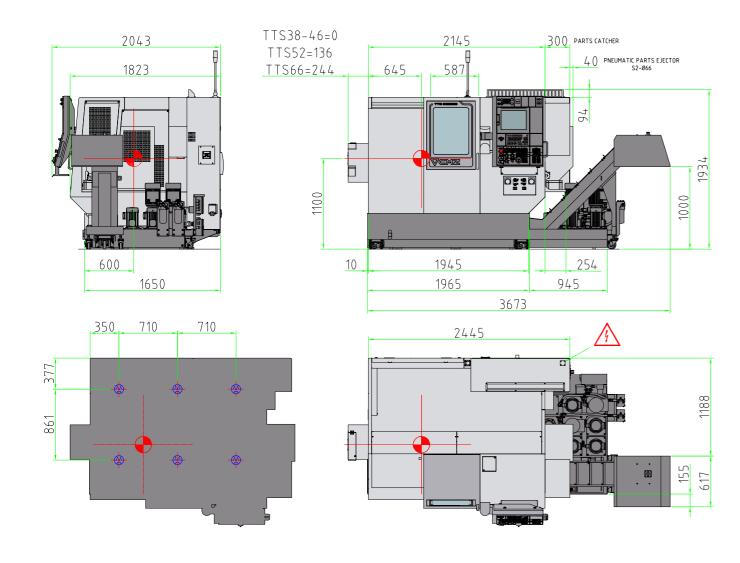








## **DIMENSIONS**





## TECHNICAL SPECIFICATIONS

		TTS-38-38		TTS-46-46		TTS-52-52		TTS-66-66					
	TECHNICAL DATA	T1-T2	T1M-T2M	T1Y-T2Y	T1-T2	T1M-T2M	T1Y-T2Y	T1-T2	т1М-Т2М	T1Y-T2Y	T1-T2	T1M-T2M	T1Y-T2Y
	Maximum diameter of swinging allowed (mm)	240		240		240			240				
	Maximum turning diameter (mm)	120		120		120		120					
GENERAL DATA	Distance between spindle nose and tailstock centre (mm)	404			404		423		423				
	Distance between centres (mm)	600			600		638		638				
	X1_X2-axis travel (mm)	100			100		100		100				
	· ·	+85			+85		+85		+85				
	X3-axis travel (mm)	-85			-85		-85		-85				
	Z1_Z2-axis travel (mm)	368			368		368		368				
	Z3-axis travel (mm)	368			368			368			368		
		+31		+31		+31				+31			
	Y-axis travel (mm)	-		-31	-		-31	-		-31	-	-	-31
	Fast feedrate X (m/min)		18			18			18			18	
	Fast feedrate Z (m/min)	30		30		30		30					
	Fast feedrate Y (m/min)	18		18		18		18					
	Axis acceleration	1g=9,8 m/s2		1g=9,8 m/s2		1g=9,8 m/s2		1g=9,8 m/s2					
SPINDLE	Maximum speed (rpm)	6000		5000		4500		4000					
	Bearing outside diameter (mm)	125		140		150		170					
	Bearing inside diameter (mm)	80			90			100			110		
	Spindle nose	ASA 5" A2			ASA 5" A2			ASA 6" A2			ASA 6" A2		
	Spindle inside diameter (mm)	44,5			55,5			61			72,5		
	Drawtube bore (mm)	38			46			52			66		
	Chuck diameter (mm)	140			165			175/210			210		
	Maximum bar diameter (mm)	38			46		52		66				
	Spindle power (kW) (max./S2 25%/ S1)	17,2 / 12 / 8			17,2 / 12 / 8		17,2 / 12 / 8		17,2 / 12 / 8				
	Turning torque (Nm) (max./S3 25%/ S1)	66,1 / 57,5 / 46			66,1 / 57,5 / 46		66,1 / 57,5 / 46		66,1 / 57,5 / 46				
TAILSTOCK	Morse taper	CM3		CM3		CM3		СМЗ					
	Tailstock travel (mm)	368		368		368		368					
	Max. force (kgf)	400		400		400		400					
TURRET	Number of positions (Number of index positions)	24		24		24		24					
	Section of tools (mm)	20x20		20x20		20x20		20x20					
	Indexing time (S)	0,1 S		0,1 S		0,1 S			0,1 S				
	Interlocking force at 45 bar (kgf)		3200		3200		3200			3200			
DRIVEN	Number of driven tools	-	12	2	-	12		- 12		- 12		2	
	Turning speed (rpm)	-	120	00	-	120	000	-	120	000	-	- 12000	
	Power (kW) (max./S1)	-	13,2	/ 10	-	13,2	2 / 10	-	13,2	/ 10	-	- 13,2 / 10	
	Maximum torque (Nm) (max./S1)	-	26,8/	19,1	-	- 26,8/19,1		- 26,8/19,1		- 26,8/19,1		/ 19,1	
	Maximum speed (rpm)	6000		5000		4500		4000					
	Bearing outside diameter (mm)	125		140		150		170					
	Bearing inside diameter (mm)	80		90		100		110					
SUBSPINDLE	Spindle nose	ASA 5" A2		ASA 5" A2		ASA 6" A2		2	ASA 6" A2				
	Spindle inside diameter (mm)	44,5		55,5		61		72,5					
	Drawtube bore (mm)	38		46		52		66					
	Chuck diameter (mm)	175 / 210		210		175 / 210		210					
	Chuck bore (mm)	38		46		52		66					
	Power (kW) (max./ S3 25%/ S1))	17,2 / 12 / 8		17,2 / 12 / 8		17,2 / 12 / 8		17,2 / 12 / 8					
MISCELANEOUS	Turning torque (Nm) (max./S3 25%/ S1)  Coolant tank (litres)	66,1 / 57,7 / 46		66,1 / 57,7 / 46 280		66,1 / 57,7 / 46 280		66,1 / 57,7 / 46 280					
	Hydraulic oil tank (litres)	18		18		18		18					
	Lubrication oil tank (litres)		4		4		4		4				
	Installed power (kVA)	45	45	45	45	45	45	45	45	45	45	45	45
	Functioning voltage	400 V 50 Hz ±5% [230 V 50 Hz ±5%]		400 V 50 Hz ±5% [230 V 50 Hz ±5%]		400 V 50 Hz ±5% [230 V 50 Hz ±5%]		400 V 50 Hz ±5% [230 V 50 Hz ±5%]					
	Maximum environmental temperature (°C)	35°C		35°C		35°C		35°C		0,0]			
	Total weight (kg)	6600			6600		6800			6900			
	Dimensions	2445x2043x1934		2445x2043x1934		2445x2043x1934			2445x2043x1934				
	Internal volume (m³)	1			1			1				1	
(a) a				n planmant of control of			anniforting lune 1						

(\*) Approximate weights.

Due to constant development of our products all specifications given here in are subject to change without notice.

## CMZ, THE POWER OF A MANUFACTURER

CMZ has been manufacturing machine tools for more than 75 years. Being part of an ever-changing sector has forced us to reinvent ourselves, renew and improve our production processes.

We continuously strive to produce the best CNC lathes we can. Built with a focus on precision and performance at a competitive price, we produce strong, reliable machines that offer longevity and continued machining accuracy. **Practically all of our parts are produced at the various manufacturing plants within our group**. This has helped us to acquire a very broad and professional vision of the product.

Together with more than **350 people** and **32,000 square metres** of facilities, we deliver almost **three machines per day** to customers throughout Europe.

## **HEADQUARTERS**

#### **CMZ HEADQUARTERS**



CENTRAL SERVICES | TECHNICAL ASSISTANCE SERVICE Zaldibar – Spain

#### **CMZ Germany**



COMMERCIAL OFFICE | TECHNICAL ASSISTANCE SERVICE Stuttgart - Germany

#### **CMZ France**



COMMERCIAL OFFICE | TECHNICAL ASSISTANCE SERVICE | SHOWROOM Vaulx Milieu - France

#### **CMZ UK**



COMMERCIAL OFFICE | TECHNICAL ASSISTANCE SERVICE
Rugby - United Kingdom

#### **CMZ** Italy



COMMERCIAL OFFICE | TECHNICAL ASSISTANCE SERVICE | SHOWROOM Milan – Italy



European official distributors: Switzerland, Sweden, Finland, Norway, The Netherlands, Denmark, Austira...

## MANUFACTURING PLANTS

#### **CMZ ASSEMBLY PLANT 1**



CNC lathes Assembly plant 5,500 m2 | Zaldibar – Spain

#### CMZ ASSEMBLY PLANT 2 | SEUNER



CNC lathes Assembly plant 10,000 m2 | Mallabia - Spain

#### **CAFISUR**



Sheet metal plant 15,000 m2 | Cádiz - Spain

#### **NEOPREC**



New machining plant 10,000 m2 | Mallabia - Spain

#### **MECANINOR**



Machining plant 4,900 m2 | Elorrio – Spain

#### **PRECITOR**



Machining plant 970 m2 | Elorrio - Spain

#### **MEYDI**



Assembly plant for electrical cabinets 1,250 m2 | Zaldibar - Spain



Expansion of our machining plant, Precitor.



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