



STAR TN & TS SERIES

Smart CNC Solutions

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Turning Center



BRILLIANT INNOVATION SOPHISTICATED TECHNOLOGY

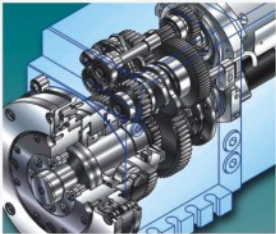
Heavy-Duty Cast Iron Base – PLUS, Quality Components

Nearly all Star Family Lathes have a heavy-duty cast base with “true align” slant bed design. The machine bed, head stock, turret and tailstock are aligned on the same plane. This unique design feature reduces heat build-up and resulting thermal expansion. The net result is a higher precision machine tool.

There are multiple benefits to having a lathe that combines such a large sized “vibration damping” solid, cast base – PLUS, properly aligned and balanced components. Some of these benefits include: 1) Smoother slide surface operation 2) Higher speed and accuracy 3) Fewer machine adjustments and lower maintenance costs 4) Shortened machine warm-up time, and 5) Lower power consumption.

Additional resulting efficiencies from the “true align” design are greater rigidity and smoother operation – which provides a variety of benefits. You can expect to produce highly accurate parts with extremely fine surface finishes.

The Foundation for Success



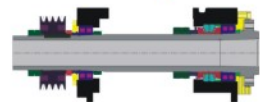
Turret Features

Bi-directional indexing high speed 8/12 station static tools type or 12 stations driven tools type turret provides optimal tool change efficiency and speed. VDI and BMT standard are available in this series.



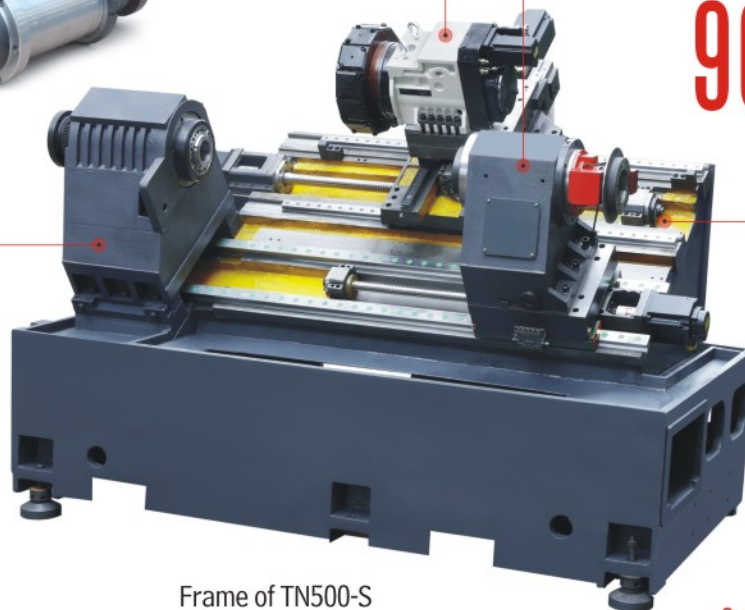
Sub-spindle & Automatic Tailstock

This efficient tailstock provides a combination of rigidity, accuracy and rapid set-up times on sub spindle or servo automatic tailstock solutions. Z-MaT smartly designed an economic automatic tailstock. The tail stock body is positioned by a hydraulic traction bar on LM guideway.



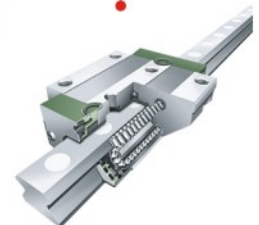
Rigid Headstock and Spindle

Different types and size spindles are available on one model which adds extreme flexibility and optimized machining performance according to the target workpieces of customer.



Frame of TN500-S

90% reduction in set-up time, compared to manual tailstock lathes.



Cylindrical Roller
Linear Motion Guideway

Base and bed are

One-piece square casting

monoblock design

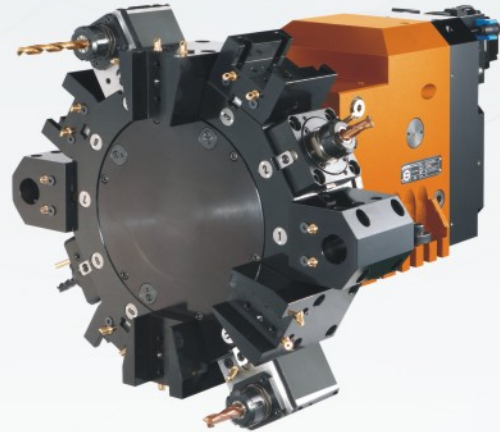
DRIVEN TOOL POWER TURRET FEATURES



Powerful Driven Tool Turret

Standard with 12-station driven tool turret, it features bi-directional indexing and non-lifting. The high quality, high speed power turret provides optimal tool change efficiency and speed.

Robust construction of internal elements ensures smooth transmission of high torque and speed. Only the tool in position gets drive. Motorized Cam operated mechanism ensures positive engage and disengage movements of the clutch for the driven tool. All drive elements are grease lubricated and properly sealed to prevent coolant entry.



BMT Standard

The BMT "Base Mounted Turret" holder will mount solidly to the face of the turret with 4 socket head cap screws, and is located and further secured with locating keys present on the turret face. These keys eliminate the need for indicating the toolholder to straighten it. Operator does not need to adjust the straightness for BMT toolholder, overall precision is based on the precision of the toolholder, and which is not adjustable.



SPINDLE & TURRET FEATURES

Combined Speed and Rigidity

Different size direct mount spindles, cartridge type spindles and built-in motor spindles are standard according to exact models. With modular design production, each model has various spindle options to create the perfect balance of speed and rigidity.

The headstock and main spindle are manufactured then assembled and tested in a clean room. Heavy duty type spindle is supported by a double-row tapered cylindrical roller bearing plus angular ball bearing and double-row cylindrical roller bearing in the rear. It is a perfect marriage of speed and rigidity.

C Axis Motion

PMSM (spindle permanent magnet synchronous motor) type Direct Driven Spindle provides high-precision C axis motion that is fully interpolated with X and Z Motion.

Direct Driven Spindle

Electrical spindle (Built-in motor) offers higher torque, better overload capability and high speed acceleration which shortens cycle time and increases productivity better than a traditional belt driven spindle. The machine is running with less vibration and less noise, together with better accuracy. It represents a new generation of turning center.

Overload protection and **oil coolant** are standard features to guarantee long term stability.

Built-in Motor Spindle



Direct Mount Spindle



Cartridge Type Spindle



Belt driven Spindle
 Direct Driven Spindle

30% 70%

Overload Torque

25% 75%

C axis accuracy

60% 40%

Brake and position time

80% 20%

Noise and vibration

BMT AND VDI TECHNOLOGY

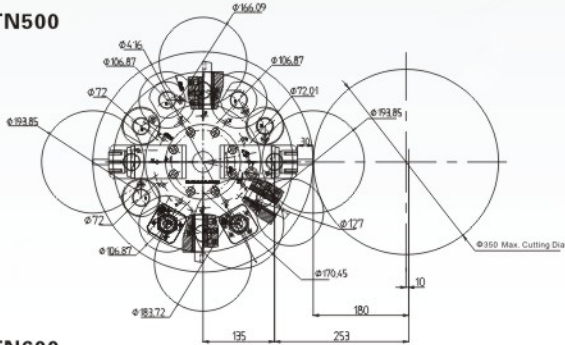
VDI Technology

The VDI system is a quick change clamping system for each tool holder within the tool disc. Tool changes can therefore be performed within seconds, rather than minutes as with the traditional Block Bolt on system.

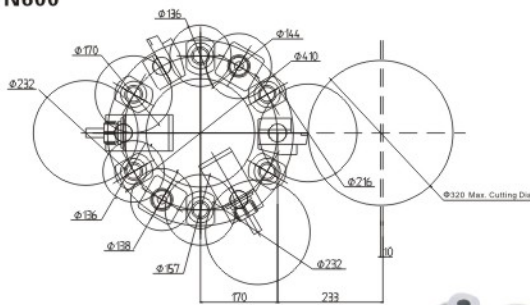


Tool Interference Diagram

TN500



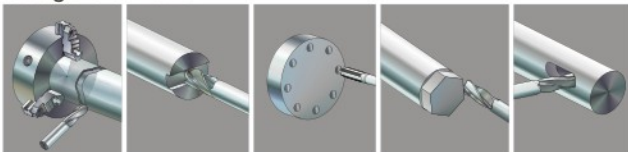
TN600



Note:

- I. The codes in [e.g. C1 (30 20)] is purchasing codes. Written in Blue color is for VDI30, written in red color is for VDI40.
- II. ★ mark means that the tool holders often used for general workpiece, we recommend customer to buy together with machine.
- III. ☆ mark means that the tool holders occasionally used for some workpiece.
- IV. * mark means that option size is available, please contact our sales representative for details.
- V. There are more different VDI standard toolholders, you may get from your closest local market or consult Z-MAT's sales reps. for further details.

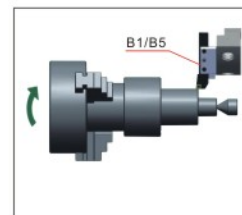
Usage Scenario



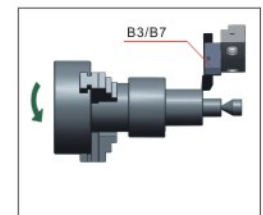
VDI30/12-STATION

VDI40/12-STATION

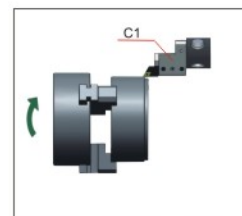
	<ul style="list-style-type: none"> ★ [ATH-30ER25-80] ER25 ★ [ATH-40ER32-80] ER32 * Compact size is option
0 degree live tool holder on Axial(Face)direction	
	<ul style="list-style-type: none"> ★ [RTH-30ER25-80] ER25 ★ [RTH-40ER32-80] ER32 * Compact size is option
90 degree live tool holder on Radial(OD) direction	
	<ul style="list-style-type: none"> ★ [B1 (30 20 40)] [B5 (30 20 40)] □20 ★ [B1 (40 25 44)] [B5 (40 25 44)] □25 *B5 is extra length design
Application of OD turn and face	
	<ul style="list-style-type: none"> ★ [C1 (30 20)] □20 ★ [C1 (40 25)] □25
Application of ID Bore and face	
	<ul style="list-style-type: none"> ★ [Z2 30] ★ [Z2 40]
Plug to seal VDI hole	
	<ul style="list-style-type: none"> ★ [E2 (30x32)] Φ32 ★ [E2 (40x32)] Φ32 *Other sizes option
Boring Bar tool holder	
	<ul style="list-style-type: none"> ☆ [E1 (30x32)] Φ32 ☆ [E1 (40x32)] Φ32 *Other sizes option
Through Coolant Boring tool holder	
	<ul style="list-style-type: none"> ☆ [E4 (30x25)] ER25 ☆ [E4 (40x25)] ER25 ☆ [E4 (30x32)] ER32 ☆ [E4 (40x32)] ER32 ☆ [E4 (30x40)] ER40 ☆ [E4 (40x40)] ER40
Er Collet tool holder	
	<ul style="list-style-type: none"> ☆ [B3 (30 20 40)] [B7 (30 20 40)] □20 ☆ [B3 (40 25 40)] [B7 (40 25 40)] □25 *B7 is extra length design
Application of OD turn and face	
	<ul style="list-style-type: none"> ☆ [C3 (30 20)] □20 ☆ [C3 (40 25)] □25
Application of ID Bore and face	



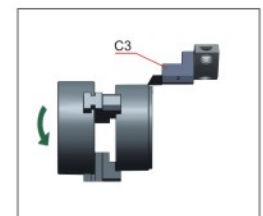
Spindle Rotation clockwise application of OD Turn and Face



Spindle Rotation Anticlockwise application of OD Turn and Face



Spindle Rotation clockwise application of Face and ID Bore



Spindle Rotation Anticlockwise application of Face and ID Bore

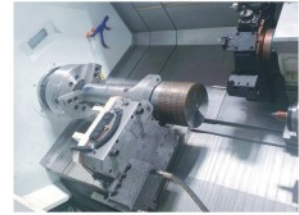
Machine Characteristics

TN and TS are turning centers able to flexibly handle various workpieces. The models feature Belt-Driven or Direct Driven Spindle (Built-in Motor) that achieves high speed with great rigidity, and outstanding C axis accuracy. 12-station Power turret enables operators to perform machining of workpieces from simple to complex shaped components with one set up operation.

TS are models without a tailstock for a more compact and economic design to satisfy short or disc type workpiece. The models can satisfy a wide range of users from beginners of shop production to group corporation with experienced technicians.

Standard Features

- Hydraulic 3-jaw Chuck
- 12-station Power Turret
- Automatic Lubrication System
- Automatic Coolant System
- Tailstock (TN Series)
- Work and Alarm Light



Optional Features

- Tool Setter
- Chip Conveyor
- Live Tool Holders
- Different Chucks And Collets
- Different CNC Systems
- Bar Feeder
- Steady Rest
- Static or Live tools under Turret (TS400, TS500)



Specifications

Unit	TN500	TN500-650	TN600	TN700	TS400	TS500	TS600	
Capacity								
Chuck size	inch	8	8	10,*12	15	6	8	10
Max. length of workpiece	mm	370,*500	650,*1000,*1600	700,*850,*1350	1300	320	320	400
Max. swing dia. over bed	mm	Φ500	Φ600	Φ600	Φ650	Φ400	Φ550	Φ600
Max. swing dia. over slide	mm	Φ280	Φ460	Φ350	Φ500	Φ200	Φ320	Φ400
Spindle								
Spindle bore	mm	Φ66	Φ66	Φ86	Φ105	Φ55	Φ66	Φ86
Max. dia. of through-hole	mm	Φ52	Φ52	Φ75	Φ91	Φ46	Φ52	Φ75
Spindle nose	-	A2-6	A2-6	A2-8	A2-8	A2-5	A2-6	A2-8
Max. spindle speed	rpm	4000	4000	3000	1800	5000	4000	3000
Main motor power	kW	22/30	22/30	37/45	Belt: 22/18.5	11/15	22/30	45/37
Axis								
X axis travel	mm	260	230	280	280	280	250	280
Z axis travel	mm	400,*550	650,*1000	750,*1000,*1500	1300	320	320	400
X/Z axis rapid traverse	m/min	20/20	20/20	20/20	15/20	20/20	20/20	20/20
Turret								
No. of tool stations	pcs	12	12	12	12	12	12	12
Tool shank size		VDI30,*BMT45	BMT45	BMT55,*VDI40	BMT65	VDI30,*BMT40	VDI30,*BMT45	VDI40,*BMT55
Max. speed of driving tool	rpm	4000,*6000	4000,*6000	4000,*5000	4000,*5000	4000,*6000	4000,*6000	4000,*5000
Tailstock								
Type of tailstock	-	Hydraulic,*HPT	SST,*SPT	Hydraulic,*SPT,*HPT	SST-LM,*SPT	-	-	-
Taper of tailstock quill	-	MT4	MT3	MT5	MT5	-	-	-
Travel of tailstock	mm	100-500	100-650,*1000	100-750,*1000	100-1300	-	-	-
Others								
Power capacity	kVA	28	28	45	45	25	25	40
Overall dimension(L×W×H)	mm	2500×1700×1850	3100×1900×2300	3200×1920×2130	4550×2270×2550	2500×1600×1900	2600×1750×2050	2700×1720×2120
Weight(about)	kg	4500	5200	5900	10500	2500	4000	4800

Note: "*" means optional. "LM" means linear motion guideway. Tailstock: "Hydraulic" means automatic hydraulic driven tailstock sleeve. "HPT" means linear motion guide way, automatic hydraulic driven body move tailstock. "SST" means small spindle hydraulic tailstock. "SPT" means servo programmable tailstock.



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