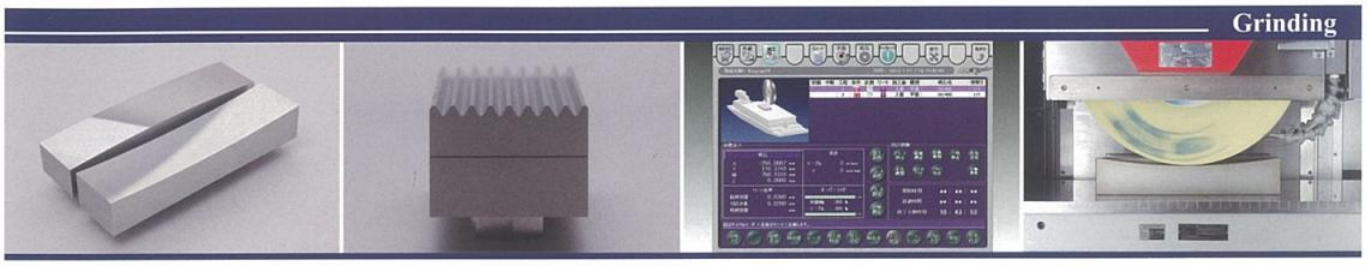
SOLUTION

TECHSTER

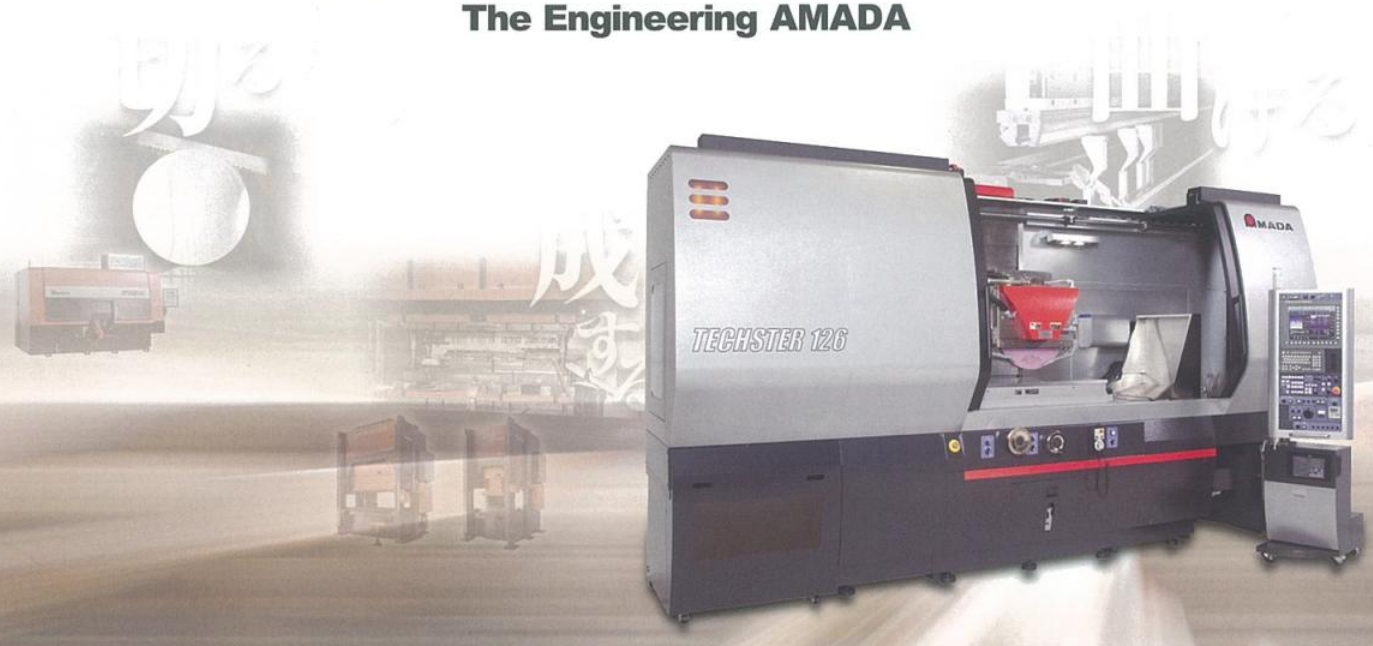
Forming surface grinder

SERIES

TECHSTER-52 / 64 / 84 / 104 / 106 / 126



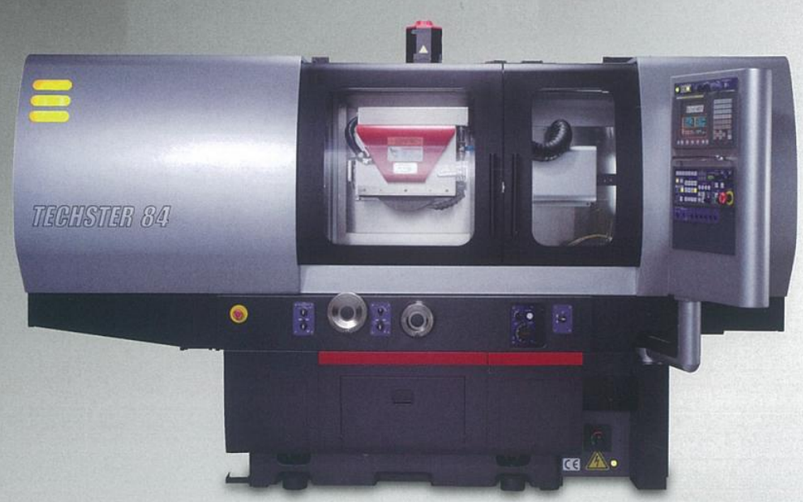
The Engineering AMADA



AMADA

Striving for superior grinding accuracy and easier operation, our forming and surface grinders continue to evolve.

The TECHSTER Series has been upgraded to “forming and surface grinders”. This is a rich lineup with a wide range of new functions and capabilities.
Grinding at maximum efficiency is realized through new features such as in-machine measurement (developed at AMADA), as well as our interactive software and dressers. Additionally, we have begun transforming The “TECHSTER” Series from surface grinding to multi processing.



TECHSTER-84
Full cover

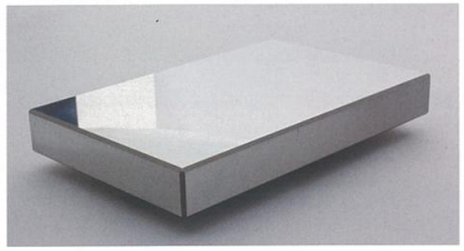
Forming surface grinder

TECHSTER SERIES

Examples of typical part processing

Mirror finish plate
Material: SKD11 HRC60
Size: 300×200×30mm

●TECHSTER-104
Grinding wheel type: D1500
Grinding wheel size: ϕ355×15×ϕ127mm

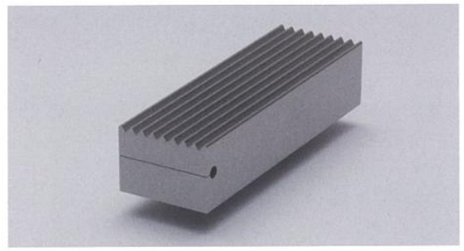


Measurement data

Surface roughness Rz	μm	0.089

Profile formed wheel
Material: SKD11 HRC60
Size: 130×40×30mm

●TECHSTER-126
Grinding wheel type: F16A80HH12V
Grinding wheel size: ϕ510×50×ϕ127mm

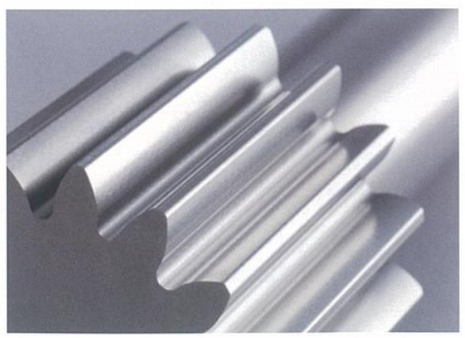


Measurement data

Contour accuracy	mm	±0.002
Groove pitch accuracy	mm	Accumulated ±0.0015

Gear shape punch (Processing with small diameter wheel)
Material: YXR3 HRC58 ~ 60
Size: ϕ51×50mm Gear groove depth 6.75mm

●TECHSTER-126
Grinding wheel type: RZ80J
Grinding wheel size: ϕ100×20×ϕ25mm

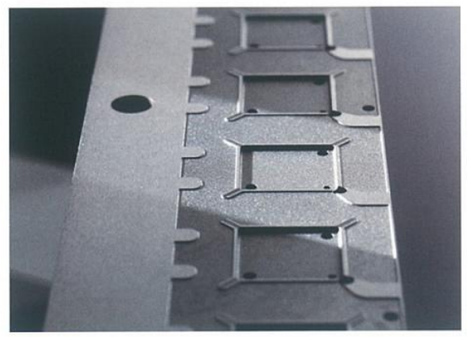


Measurement data

Shape accuracy	mm	0.005

Injection mold (only at flat surface section)
Material: ASP23 HRC59 ~ 64
Size: 230×40×15mm

●TECHSTER-52
Grinding wheel type: D1500
Grinding wheel size: ϕ180×6×ϕ50.8mm



Measurement data

Surface roughness μm	Ra	0.0118
	Rz	0.0983

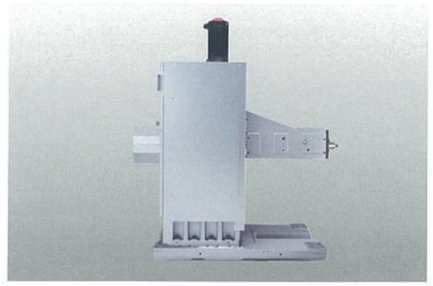
TECHSTER-104/106/126 New technologies

1 High precision, long unattended accuracy

AMADA's original design structure enables high precision grinding

❶ Frame structure

- C-shaped column structure prevents the grinding wheel head from overhanging.
- Integrated T-shaped bed structure features high rigidity and low center of gravity.
- Overhang-free V-V slideway enables high straightness accuracy across the entire table.



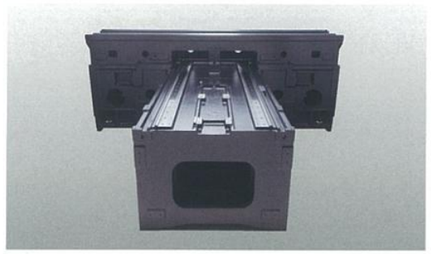
C-shaped column structure

❷ High precision guideway

- The vertical axis with linear guideway minimum increment of 0.1 μm enables high grade mirror finish.

❸ Also applicable to heavy duty grinding

- The high output spindle enables heavy duty grinding.



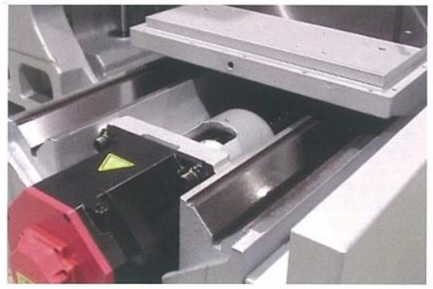
Integrated T-shaped bed structure

2 Environment-friendly non-hydraulic ECO machine

From hydraulic drive to ball screw drive

The industry's first standard provision of traverse ball screw drive of table

- This non-hydraulic drive has enables low noise and environmental friendliness.
- Elimination of the necessity of any hydraulic unit has drastically reduced power consumption.
- This high speed and high precision drive has drastically shortened total processing time.



Traverse ball screw drive of table

3 Machine design provides both operability and safety

Operator-friendly machine

❶ Easy programming

- Programming using original graphical software.

❷ Cover type options

- Full cover design features environment-friendliness.
- Open cover design features operability.

TECHSTER-126 Full cover

4 Diverse applications enabled by original system

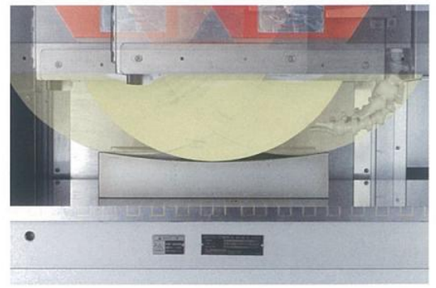
Newly developed capabilities

❶ Multi-forming grinding

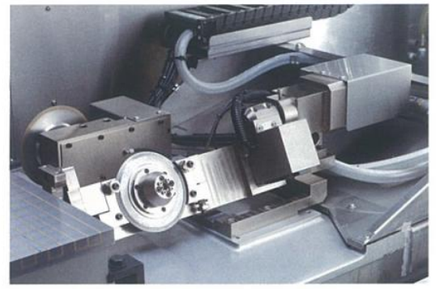
- Multi-function processing including tapering and crowning has been realized.

❷ Dressing

- AMADA's new NC swivel rotary dresser provides unmatched form consistency & control, enhancing a broad range of dressers (optional).
- The 2 kinds of interactive macro software and external programming system WAPS allow processing of various shapes and various patterns.
- The swivel rotary dresser has realized high accuracy of the dressed shape by employing the normal control that dresses a grinding wheel while swiveling the dresser head.



Crowning



Rotary dresser and NC swivel rotary dresser

5 On-machine measurement resulting in stable processing

Grind a workpiece to size without handling the workpiece. The setup time is drastically reduced.

Since a work can be measured on the machine without being unloaded, the work hours and processing time are drastically reduced.
Digital measurement reduces measurement errors caused by operators, enabling high precision processing with less variation.

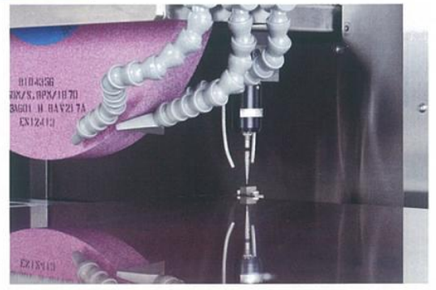
❶ Dimension measurement using touch probe and automatic compensation processing

- The 2-direction (vertical and cross) type* and 1-direction (only vertical) type are selectable.
- When the auto measurement deviates from the target dimensions, compensation grinding is automatically executed, wholly unattended.
- The 2-direction type allows execution only in the measurement cycle.

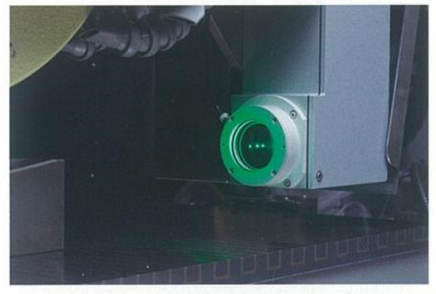
* The 2-direction type requires the "pattern grinding" software.

❷ Shape measurement using CCD camera

- Optimization through measurement of irregular shape at forming processing
- High accuracy chartless measurement based on comparison between the CAD data and image data



Touch probe type on-machine measurement



CCD camera (shape measurement)

TECHSTER-64/84 New technologies

1 Environment-friendly **non-hydraulic** ECO machine

From hydraulic drive to ball screw drive

The industry's first standard provision of traverse ball screw drive of table

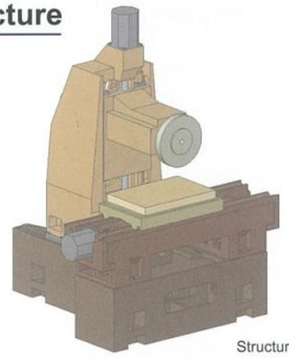
- This non-hydraulic drive enables low noise and environmental friendliness.
- Elimination of the necessity of any hydraulic unit has drastically reduced power consumption.
- This high speed and high precision drive has drastically shortened total processing time.

TECHSTER-84 Open cover

2 High rigidity and high operability realized

Our proprietary 3-face independent column structure

- The proper design based on the structure analysis ensures highly rigid structure. This structure bears even high load cutting.
- Minimum floor space in the class. Since even while the machine is operating, any unit does not protrude, and therefore any surplus space is not necessary.
- The overhang-free traverse V-V slideway structure ensures high straightness accuracy.
- The proprietary column structure improves the table accessibility. The operability of works including the work loading/unloading operation is considerably improved.



Structure analysis

3 Conversational easy operation

Widely applicable to a wide range of processing from surface grinding to forming

- TECHSTER-64 and 84 use canned cycles with easy conversational data input. They cover various grinding cycles and dressing cycles including surface grinding, creep feed grinding, pattern grinding, contouring, multi-work processing and crowning (including options).
- The traverse and cross positions of surface grinding can be easily set only by pressing the button at two places according to the dog-less opposite-corner position teaching.

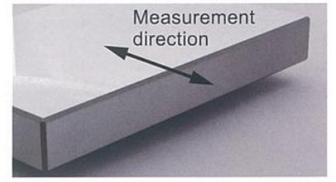
TECHSTER-64 Open cover

TECHSTER-52 New technologies

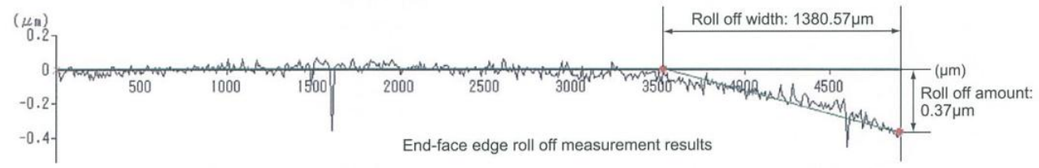
1 High rigidity, high output and high speed reciprocation

Highly efficient saddle-type compact surface grinder

- The highly rigid spindle with integrated quill has realized mirror finish with less "roll off."
- The 3.7-kW spindle motor largest in the industry is mounted as the standard provision (inverter employed as the standard provision).
- Consistent, long lasting grinding is enabled by the V-V slideway for table stroking.
- The hydraulic servo valve for the traverse drive system enables high speed reciprocation.
- Highly efficient processing by means of grinding wheel of 50.8 mm in bore and 255 mm maximum in O.D.



Material: SKD11
Grinding wheel type: D1500
Surface roughness Rz: 0.0610μm



End-face edge roll off measurement results

Multi-forming surface grinder

- TECHSTER-52 is a multi-forming surface grinder with the simple NC unit mounted.
- Control by the 2 NC axes, cross and vertical axes, and 1 table traverse axis.
- TECHSTER-52 use canned cycles with easy conversational data input. They cover various grinding cycles and dressing cycles including surface grinding, creep feed grinding, pattern grinding, contouring and multi-work processing (including options).
- It is also applicable to the touch probe-type on-machine measurement system (optional).

TECHSTER-52

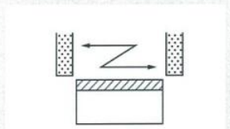
Original software

Grinding cycle program patterns

GRINDING CYCLES

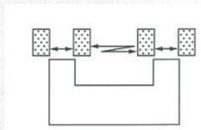
Various grinding programs including contouring and creep feed grinding can be easily set.

Surface grinding



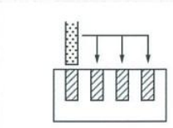
Standard

Traverse grinding while jumping



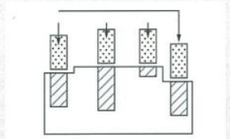
Standard

Equal-depth slot grinding



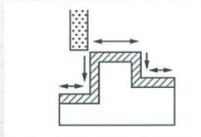
Standard

Unequal-depth slot grinding



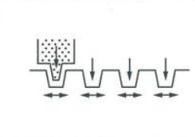
Standard

Pattern grinding



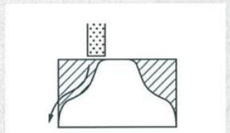
Optional

Trapezoidal slot grinding



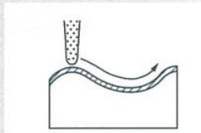
Optional

Pattern contouring



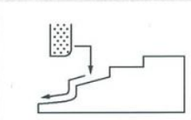
Optional

Contouring



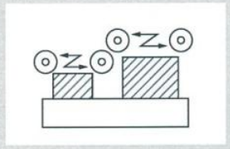
Optional

Stepped grinding



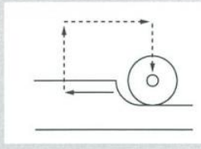
Optional

Multi-work grinding



Optional

Creep feed grinding



Optional (Hydraulic drive only for 52)

Turning-axis grinding

Optional

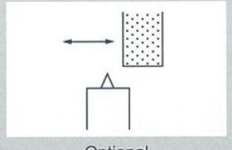
Other functions including ●Table position setting function (standard) and ●Table speed stroke switchover (optional) are available.

Dressing cycle program patterns

DRESSING CYCLES

Various dressing programs, applicable to pattern dresses for wheel forming processing as well as straight dresses, can be created.

Straight dress

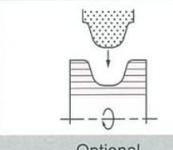


Optional

Profile dress/pattern dress

Optional

Rotary dress



Optional

In addition,●Slot dress (optional) and ●Overhead dress (optional: only for 52 and 64) are available.

Other functions

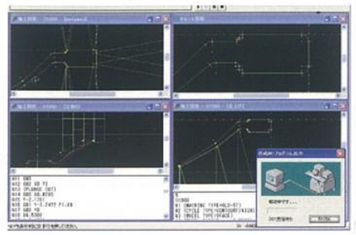
Standard: ●Grinding wheel data (for 10 wheels), ●Stroke limit setting, ●Simple s instruction, ●Running operation and ●Power-saving management.
Optional: ●Indication of working hours

Wide variety of options

All models

WAPS-WIN (software)

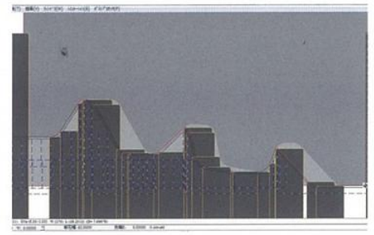
- The know how of forming grinding have been put under software control to enhance the value of the machine to the maximum.
- The rough, moderate and fine programs for contouring can be created.
- This software is also applicable to the turning-axis grinding.

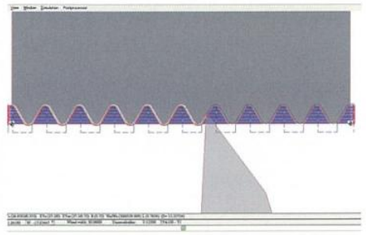


All models

WAPS-D (software)

- This software enables highly efficient forming processing using various forming dressers.
- This software imports CAD data and automatically creates the rough and finishing wheel forming data.
- When the shape of grinding wheel is changed, the redressing function of this software allows recognizing the residual grinding allowance and processing only the required amount, thus making forming processing efficient.





※TECHSTER-52 and 64 need the MDI panel specifications.

All models

Full automatic balancer

- The grinding wheel can be automatically balanced only by one-touch operation.

All models

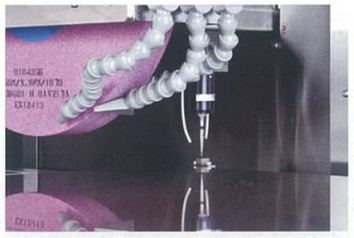
Precision filtration equipment

- The full-automatic precision filtration system enables a high performance machine to show 100% of its potential capacities.

All models

Touch probe-type on-machine measurement

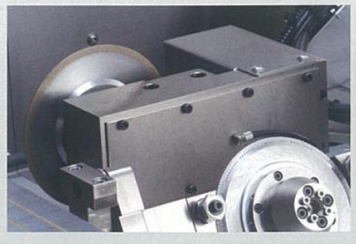
- During automatic operation by the fixed cycle, the work is processed to the specified dimensions, and then it is measured and reprocessed by automatic compensation.
- The 2-direction type and 1-direction type are available.



All models

Rotary dresser

- A dresser for forming grinding wheels.
- A flat or round dresser is attached.
- Effective for improving the efficiency of rough dressing.



84/104/106/126

NC swivel rotary dresser

- Grinding wheels of various shapes including tapered, straight and even round shapes are formed very precisely.

104/106/126

CCD camera (shape measurement)

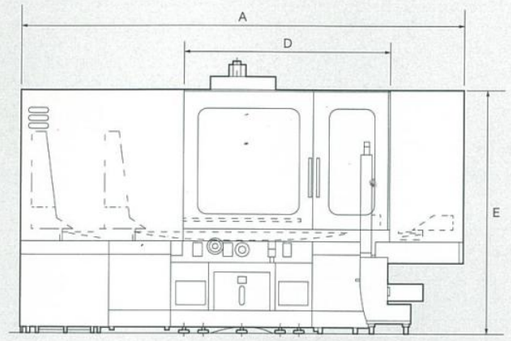
- Shape measurement on the machine is enabled. Since the work can be measured on the machine without being unloaded, the number of processes is reduced and the mounting error resulting in the measurement error can be prevented.

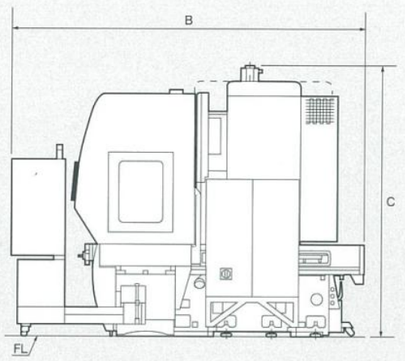
■Specifications

Model				TECHSTER-104	TECHSTER-106	TECHSTER-126
Type				TS-104	TS-106	TS-126
Capacity	NC control axis			Simultaneous 2-axis + traverse 1 axis		
	Standard chuck size (L x W x H)		mm	1000 × 400 × 100	1000 × 600 × 100	1200 × 600 × 100
	Stroke (Traverse/Cross)		mm	1200/460	1300/660	1500/660
	Height table to spindle C/L		mm	750		850
	Loading capacity (chuck included)		kg	1000	1500	
Reciprocation (right to left)	Feed rate		m/min	3～40		
	Reciprocation speed (15 mm stroke)		min^{-1}	120		
	Drive system			Ball screw drive and direct drive		
Cross	Feed rate (jog feed)		mm/min	0～400、500、2000、5000		
	Handle feed	Per revolution	mm	0.01、0.1、1.0、10.0		
		Per graduation	mm	0.0001、0.001、0.01、0.1		
	Minimum input increment		mm	0.0001		
	Position detection / scale resolution		μm	Linear scale / 0.05 (OP)		
	Drive system			Ball screw drive and direct drive		
Vertical	Feed rate (jog feed)		mm/min	100、2000		
	Handle feed	Per revolution	mm	0.01、0.1、1.0、4.0		
		Per graduation	mm	0.0001、0.001、0.01、0.04		
	Minimum input increment		mm	0.0001		
	Position detection / scale resolution		μm	Linear scale / 0.05 (OP)		
	Drive system			Ball screw drive and direct drive		
Wheel	Size (OD x width x bore)		mm	φ355×38～50×φ127	φ405×38～50×φ127	φ510×38～50×φ127
	Spindle speed		min^{-1}	300～2500	300～2000	300～1500
	Motor		kW-P	7.5-4		11-6
Power requirement			kVA	29		33
Mass of machine			kg	7500	11000	12500

Model				TECHSTER-52	TECHSTER-64	TECHSTER-84
Type				TS-52	TS-64	TS-84
Capacity	NC control axis			Single 2-axis + traverse 1 axis (Simultaneous 2-axis + traverse 1 axis:OP)	Simultaneous 2-axis + traverse 1 axis	
	Standard chuck size (L x W x H)		mm	500 x 200 x 85	600 x 400 x 85	800 x 400 x 100
	Stroke （Traverse/Cross）		mm	600/250	780/450	1000/450
	Height table to spindle C/L		mm	500		
	Loading capacity (chuck included)		kg	150	350	500
Reciprocation (right to left)	Feed rate		m/min	1～30		3～40
	Reciprocation speed (15 mm stroke)		min^{-1}	150	120	
	Drive system			Hydraulic cylinder	Ball screw drive and direct drive	
Cross	Feed rate (jog feed)		mm/min	0～400、500、1000	0～400 500、1000、2000、3000	0～400、500、2000、5000
	Handle feed	Per revolution	mm	0.01、0.1、1.0、4.0	0.01、0.1、1.0、10.0	
		Per graduation	mm	0.0001、0.001、0.01、0.04	0.0001、0.001、0.01、0.1	
	Minimum input increment		mm	0.0001		
	Position detection / scale resolution		μm	Linear scale / 0.05 (OP)		
	Drive system			Ball screw drive and direct drive		
Vertical	Feed rate (jog feed)		mm/min	100、1000	100、2000	
	Handle feed	Per revolution	mm	0.01、0.1、1.0、4.0		
		Per graduation	mm	0.0001、0.001、0.01、0.04		
	Minimum input increment		mm	0.0001		
	Position detection / scale resolution		μm	Linear scale / 0.05 (OP)		
	Drive system			Ball screw drive and direct drive		
Wheel	Size (OD x width x bore)		mm	φ255×6.4～25×φ50.8	φ355×38～50×φ127 (50Hz) φ305×38～50×φ127 (60Hz)	φ355×38～50×φ127
	Spindle speed		min^{-1}	500～5000	1500 (50Hz) 1800 (60Hz)	300～2500
	Motor		kW-P	3.7-2	3.7-4	7.5-4
Power requirement			kVA	13	14	23
Mass of machine			kg	2400	4000	5000

■Dimensions



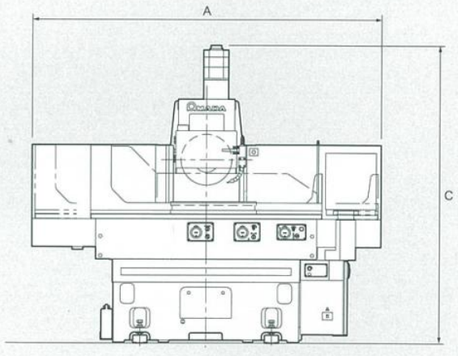


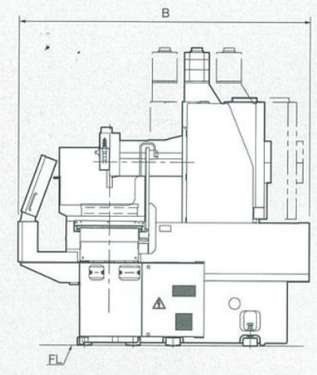
• TECHSTER-104/106/126

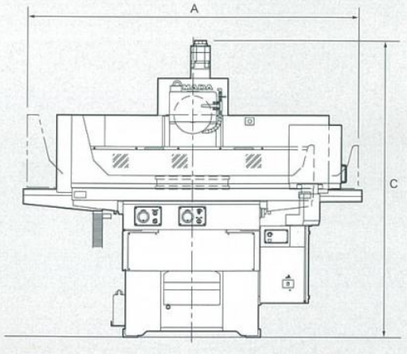
		TECHSTER		
		104	106	126
A. Full width	mm	3850	4150	4550
B. Depth	mm	3330	3630	3630
C. Overall height	mm	2495	2580	2780
D. Opening	mm	1555	1915	2115
E. Cover height	mm	2190	2390	2490
Floor space	m^2	12	15	16

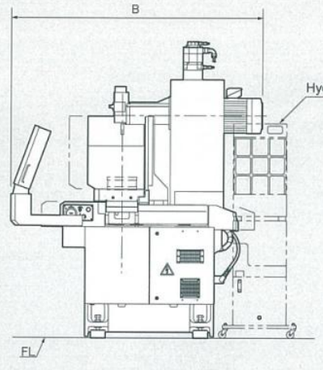
• TECHSTER-64/84

		TECHSTER	
		64	84
A. Full width	mm	2440	3380
B. Depth	mm	2040	2615
C. Overall height	mm	2075	2075
Floor space	m^2	5	9









• TECHSTER-52

		TECHSTER
		52
A. Full width	mm	2240
B. Depth	mm	1695
C. Overall height	mm	2000
Floor space	m^2	4

Before using this product,
please read the operator's manual carefully and follow all applicable instructions.

● **When using our products, safety equipment is required depending on the task.**

Specifications, appearance and equipment are subject to change without notice for improvement.

* The products in the catalog may be subject to the provisions of foreign exchange and foreign trade law. When exporting equipment subject to such controls, permission pursuant to regulation is required. Please contact our business representative in advance when exporting products overseas.
* The example grinding performance data in this catalog can be affected by temperature, grinding materials, grinding tool and grinding conditions etc. Please note that such data is not guaranteed.
* Please use the machine model name with a hyphen such as TECHSTER-126, when applying for administration applications.
* For Japan domestic market. For any inquires, please contact local AMADA MACHINE TOOLS branch office.

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AMADA head office is certified and registered of ISO14001.

Inquiry

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