CNC
TURNING
CENTER
JG SERIES

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CNC
TURNING CENTER

JG SERIES

A pioneer in a new area who provides products cross E-generation

BLACK SMITH JG SERIES

CNC TURNING CENTER

1 2

JG-100 / JG-150

JG-1 SERIES

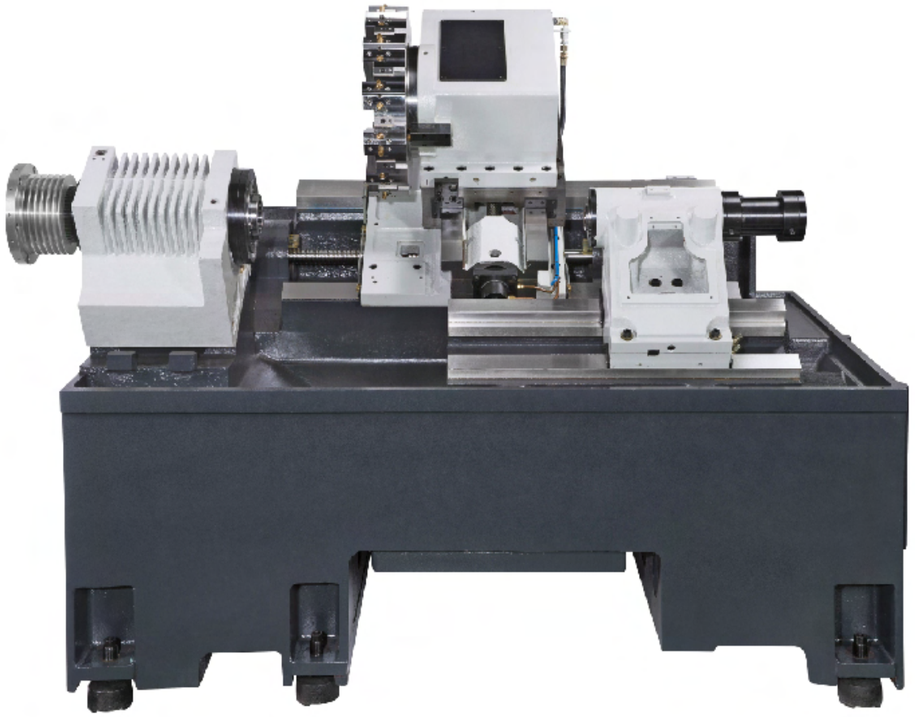
The JG series CNC turning center, designed and developed by Black Smith, has been recognized by domestic and foreign users due to its extremely high precision and efficiency.

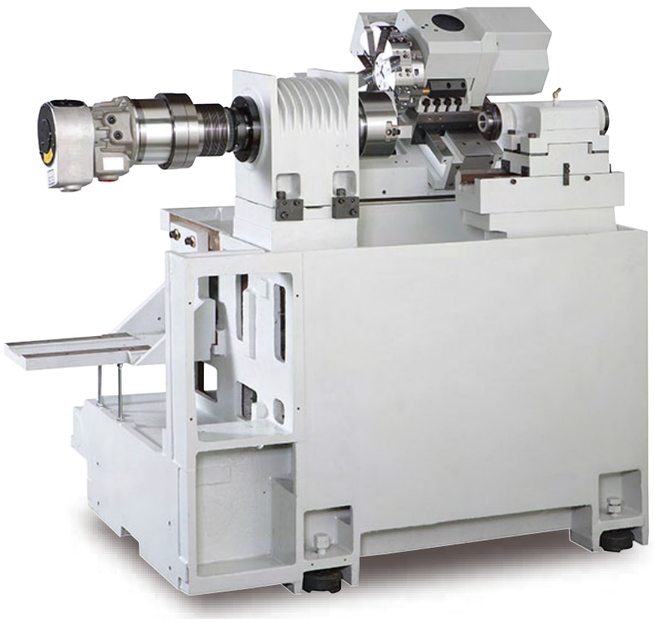
The JG series is designed with a 30° slant structure, featuring no deformation, maximum stability, and easy chip evacuation. The structure design complies with ergonomic principles for user-friendly operation. The JG-CS series is a turning milling complex machine, allowing turning, milling, drilling, and tapping operations to be accomplished with a single setup of the workpiece.

It is the best choice for high efficiency machining.

JG - 100

The spindle is directly covered in the headstock casting and is precision ground for better stability.





JG-200 / JG-200L / JG-250 / JG-250L

JG-2 SERIES

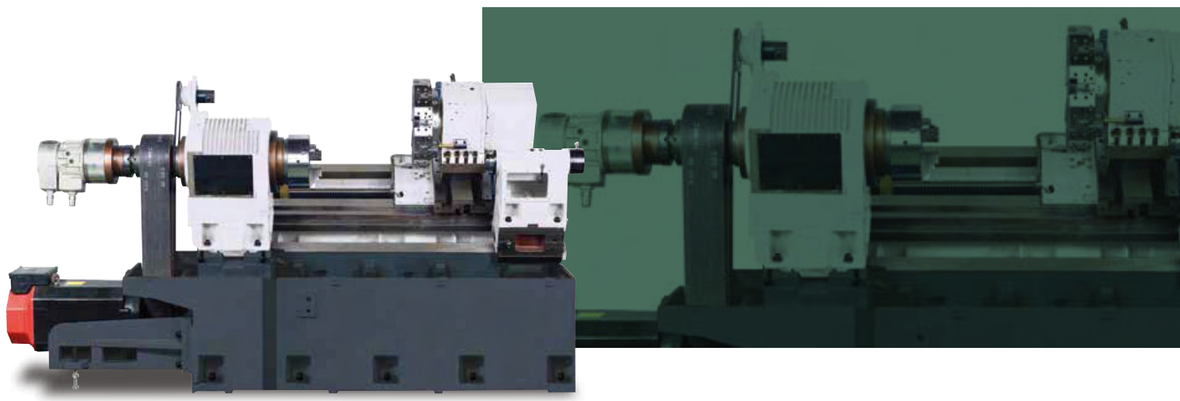
3 4

JG-300 / JG-300L

JG-3 SERIES

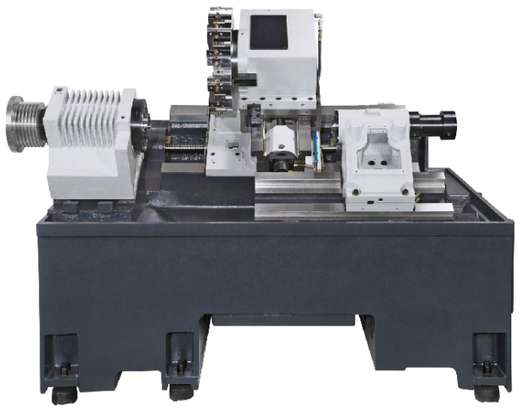
JG-200 / JG-200CS

The spindle is directly covered in the headstock casting and is precision ground for better stability.
To suit workpiece sizes, a selection of standard A2-6 spindle or A2-8 spindle with larger bore is available.



JG-300

The spindle is mounted in the headstock cartridge for convenient dismantling and maintenance.



JG-200CS / JG-200LCS / JG-250CS / JG-250LCS

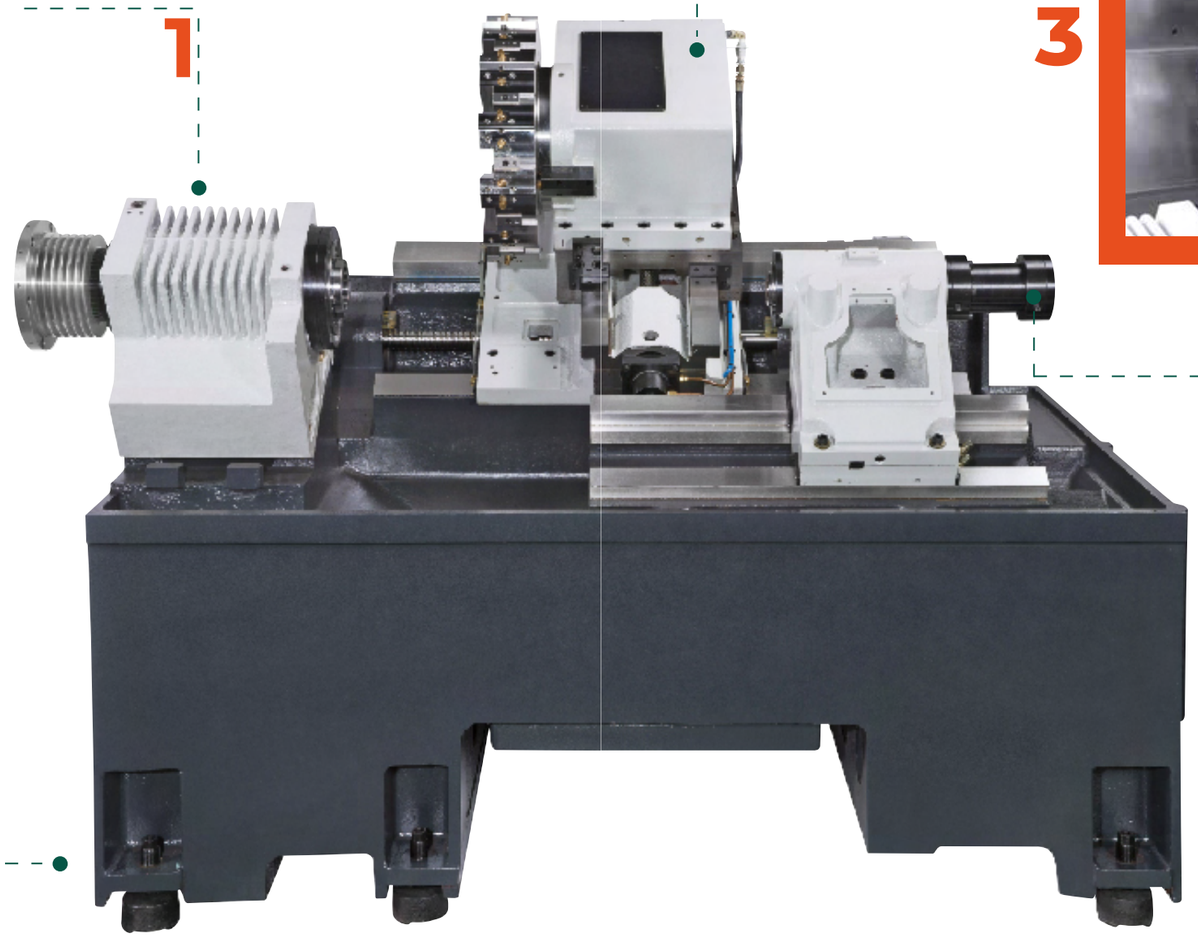
JG-CS SERIES
(include milling axis)

Combines C-axis control and a live turret to become a turning and milling compound center. Multiple tasks can be processed on a single workpiece by a single machine, which can avoid errors due to the movement of the workpiece between machines and also saves processing time and manpower.

Live turret is driven by an AC servomotor to provide ample power in the form of torque, to complete tough processing.

HIGH PRECISION
HIGH STABILITY

HIGH PRECISION
SMOOTH MOTIONS



1 2 3 4

1 SPINDLE

Carburized by heat treatment and accurately ground to imbue the spindle with high accuracy and durability.

Use of NSK bearings enhances the high rigidity of the spindle, lower the possibility of thermal deformation, and improves accuracy performance.

Suitable for both high-speed precision turning and low-speed heavy turning.

2 BED

The structural parts are manufactured from high quality Meehanite cast iron to ensure material uniformity and stability, high frequency heat treated and precision ground.

The JG-1 series is designed with 30° slant saddle. Models over JG-2 series are designed with slant bed. The base and saddle are one-piece fabricated in combination with internal ribbing to reinforce structural rigidity.

3 SERVO TURRET

The tool disk rotation and indexing are driven by a servomotor, featuring fast motions and high positioning accuracy.

Highly rigid structure that exhibits outstanding stability in heavy cutting.

Fast tool change with dependable performance without tool change error.

High positioning and repeatability accuracy.

4 TAIL STOCK

Strong, can be micro-adjusted.

Ensures positioning accuracy.

Models over JG-2 series are all equipped with programmable tailstock, which is positioned by using a high pressure clamping mechanism for high rigidity.

C-AXIS
LIVE TURRET

The C-axis function of the spindle in combination with the use of German Sauter power turret can be controlled directly from the controller. This allows the machine to perform milling, drilling, and tapping operations.

• C-axis indexing accuracy: 0.001 °

• C-axis is equipped with an encoder to ensure high orientating accuracy

• C-axis utilizes a disk brake for fast positioning of the spindle

VDI VS. BMT FEATURES

COMMON FEATURES

1. The tool disk rotation and indexing are driven by servomotor, featuring bi-directional tool selection for fast positioning. This provides a reduction in tool change time.
2. Powerful turret clamping force. The 3-piece Hirth coupling is actuated by hydraulic power, which enables the turret to achieve outstanding dependability and stability.
3. The tool disk is clamped by low power drive combined with circular T-shaped block, which reduces the effect on the tool disk in case an accidental collisipon occurs.

VDI

BMT

ADVANTAGES OF VDI TURRET

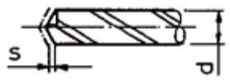
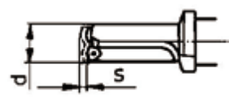
1. Suitable for light cutting.
2. Tool holders are tightened conveniently and fast. Simply tighten one screw to match with the rack, which allows its face and the taper pin to contact the turret tightly.
3. Once the tool holder is mounted, it is necessary to calibrate straightness until the desired accuracy is abtained.

ADVANTAGES OF BMT TURRET

1. Higher rigidity. Suitable for heavy cutting.
2. The tool holder is tightened to the turret through surface, the tool holder is directly fitted into the keyway of the turret, then tightened through four screws and the positioning key.
3. The straightness of the tool holder is the keyway accuracy of the turret, therefore it is not necessary to calibrate straightness.

CUTTING TEST

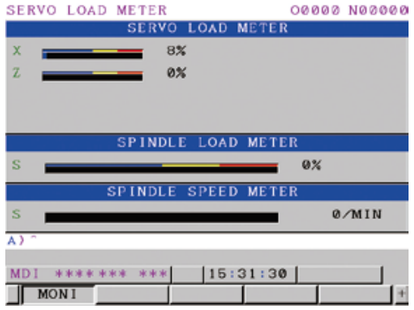
Material: St 60 steel

HSS DRILL BIT		d x s /U	16 mm x 0.20 mm
DRILL BIT FOR SHORT HOLE		d x s /U	20 mm x 0.12 mm
TAPPING		d x P	M14 x 2 mm M20 x 1.5 mm
MILLING CUTTER		a x e x s	20 mm x 12 mm x 40 mm/min
DISK MILLING CUTTER		a x e x s	D=63 10 mm x 10 mm x 40 mm/min

ADVANCED FUNCTIONS
OF CONTROLLER

9 10

RIGOROUS INSPECTION
AND TEST



AXES AND SPINDLE LOAD DISPLAY

This function allows the operator to check the curret load status on the spindle and axes.
In case load exceeds a set value, the machine will stop immediately and an alarm will occur.

DYNAMIC GRAPHIC SIMULATION FOR WORKPIECE

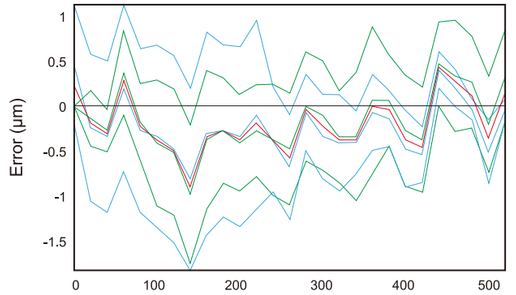
This is an optional function. When executing programs, the tool cutting path will be displayed so that the operator can compare it with the workpiece graphics.

MANUAL GUIDE İ

This optional function provides a guide for the operator to prepare daily machining jobs. With this function, the operator can set up machining programs, preparation before application, workpiece measurement, and check machining conditions all-in-one display.

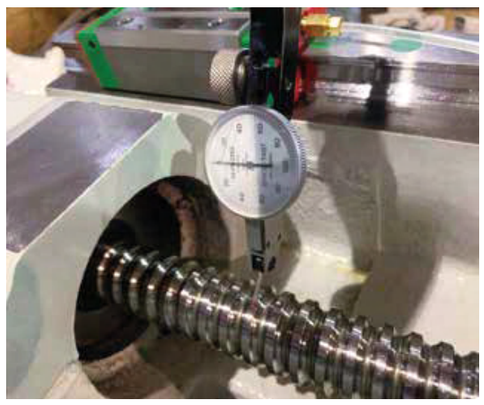
Apart from a thorough implementation of strict in-process quality control throughout the manufacturing process, each Black Smith machine is also subject o final inspection and testing by our expert quality control personnel before shipment. Inspection items include temperature growth, noise, cutting test, dynamic and static accuracy inspection, laser inspection for repeatability accuracy of ball screws, and ball bar test for the machine's positioning and repeatability accuracy. As such, outstanding quality, performance, and dependability of Black Smith CNC turning centers can be assured.

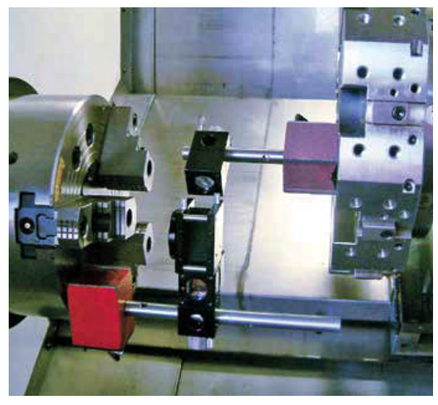
ACCURACY AND REPEATABILITY



ISO 230-2 1997 Analysis Plot-Linear — Target (mm)

Machine Name:	**Mcan Dcv.M:** 1.317	**Rcvcrsal B:** 0.467
Serial No.:	**Sys. Dev.E:** 1.433	**Accuracy A+:** 2.668
Date: 10:10 Sep 14 2020	**Repeat. R+:** 1.617	**Accuracy A-:** 2.917
Axis:	**Repeat. R-:** 2.227	**Accuracy A :** 2.917

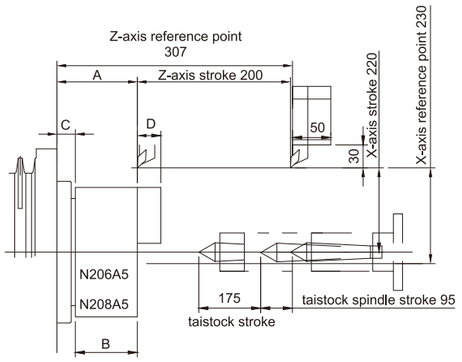




TOOL STROKE
DIAGRAM

T12
TOOL INTERFACE
DIAGRAM

JG-1 Series



Unit: mm

MODEL	CHUCK SPECIF	A	B	C	D
JG-100	N206A5	105	81	24	37
JG-150	N208A5	121	91	30	38

Unit: mm

MODEL	CHUCK SPECIF	A	B	C	D	E	F	G
JG-200	N208A6	630	530	350	370	380	94	39
JG-200L	N208A6	880	800	650	370	380	94	39
JG-250	N210A8	630	530	350	370	380	104	44
JG-250L	N210A8	880	800	650	370	380	104	44

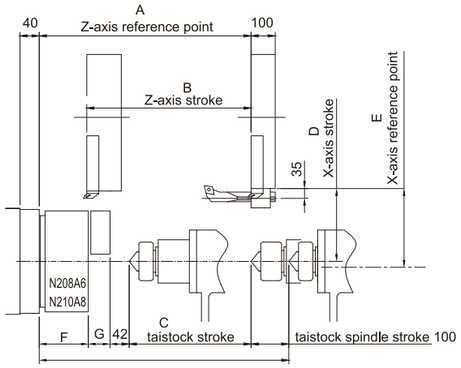
Unit: mm

MODEL (VDI -40)	CHUCK SPECIF	A	B	C	D	E	F	G
JG-200CS	N208A6	520	420	350	330	360	94	39
JG-200LCS	N208A6	770	700	650	330	360	94	39
JG-250CS	N210A8	520	420	350	330	360	104	44
JG-250LCS	N210A8	770	700	650	330	360	104	44

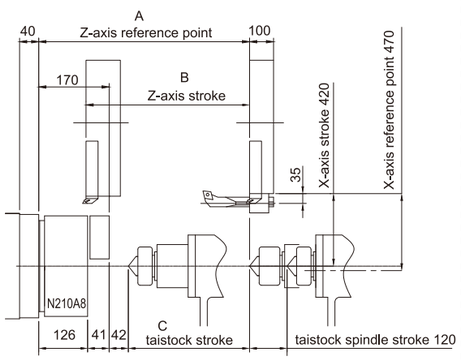
Unit: mm

MODEL (BMT65)	CHUCK SPECIF	A	B	C	D	E	F	G
JG-200CS	N208A6	490	420	350	330	400	94	39
JG-200LCS	N208A6	740	700	650	330	400	94	39
JG-250CS	N210A8	490	420	350	330	400	104	44
JG-250LCS	N210A8	740	700	650	330	400	104	44

JG-2 Series



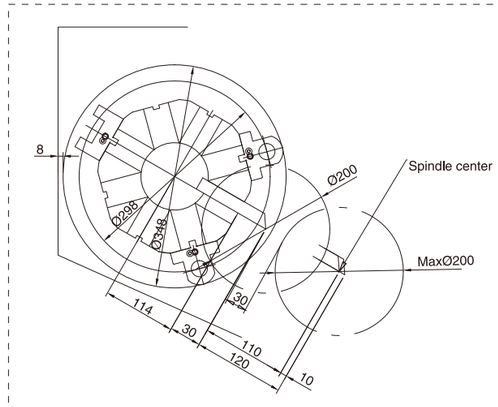
JG-3 Series



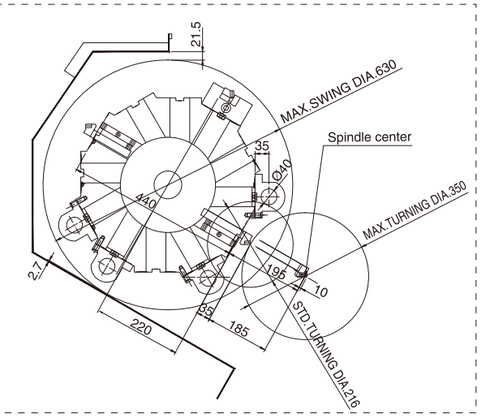
Unit: mm

MODEL	CHUCK SPECIF	A	B	C
JG-300	N210A8	686	560	500
JG-300L	N210A8	1126	1000	760

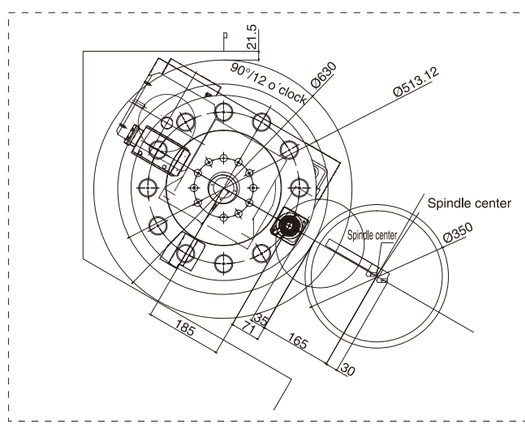
T8 JG-1 Series



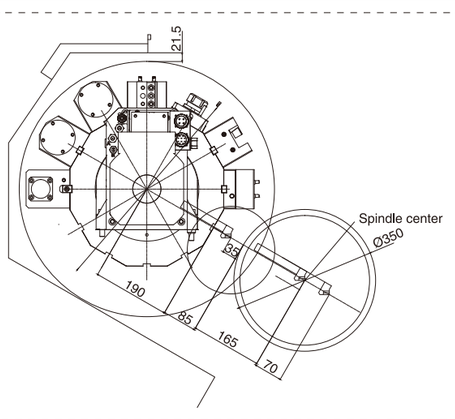
T12 JG-2 Series



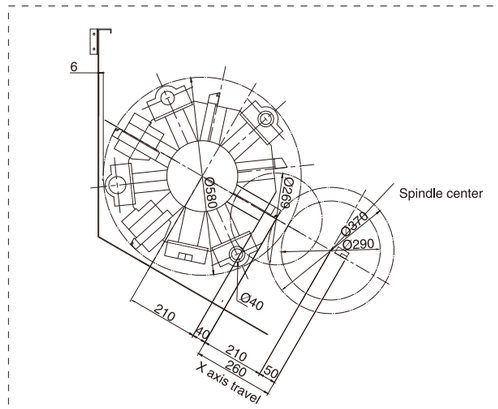
T12 JG-CS Series VDI-40



T12 JG-CS Series BMT-65

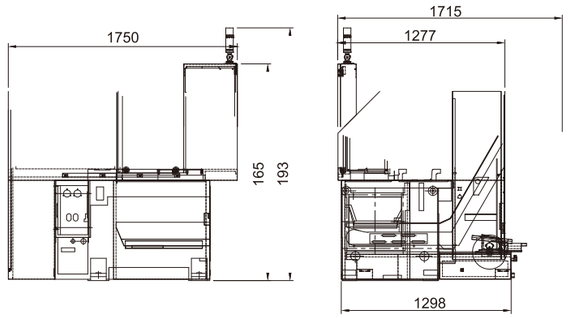


T10 JG-3 Series

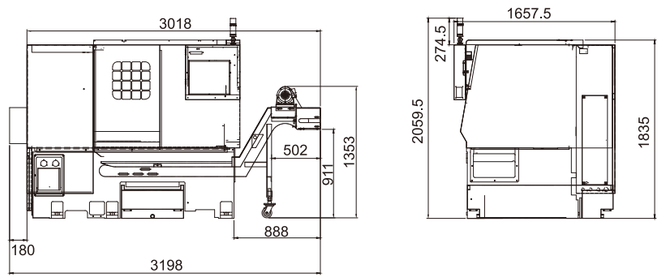


OUTLINE DIMENSIONAL
DRAWING

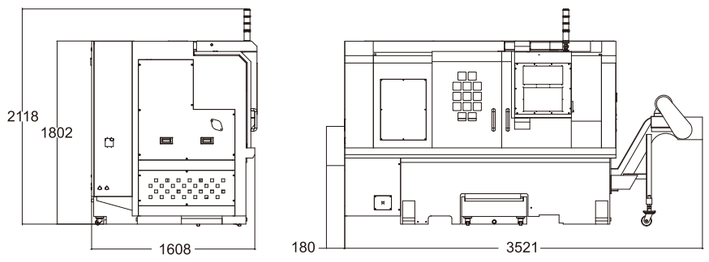
JG-100 / JG-150



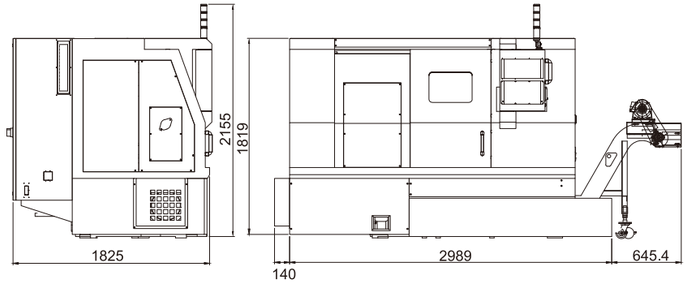
JG-200(CS) / JG-250(CS)



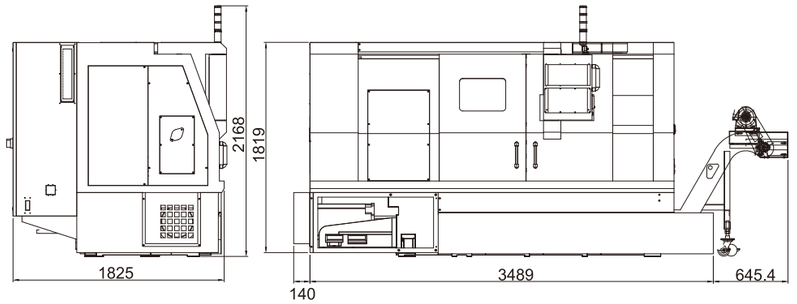
JG-200L(CS) / JG-250L(CS)



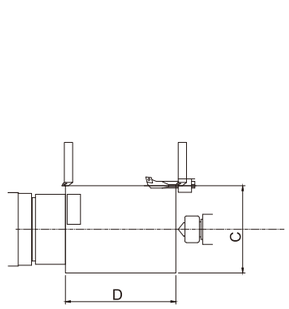
JG-300

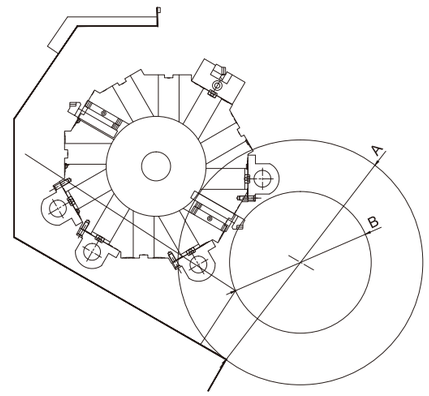


JG-300L



DRAWING OF
MACHINING CAPACITY





MODEL	JG-100	JG-150	JG-200	JG-200L	JG-250	JG-250L
Max. swing over bed A	380	380	560	560	560	560
Max. swing over cross slide B	110	110	170	170	170	170
Max. turning diameter C	200	200	350	350	350	350
Max. turning length D	170	150	470	750	470	750

MODEL	JG-200CS	JG-200LCS	JG-250CS	JG-250LCS	JG-300	JG-300L
Max. swing over bed A	560	560	560	560	670	670
Max. swing over cross slide B	170	170	170	170	270	270
Max. turning diameter C	350	350	350	350	400	400
Max. turning length D	(VDI) 400 or (BMT) 388	(VDI) 650 or (BMT) 635	(VDI) 400 or (BMT) 388	(VDI) 650 or (BMT) 635	490	950

MACHINE
SPECIFICATIONS

MODEL	Unit	JG-100	JG-150	JG-200	JG-200L	JG-250	JG-250L	JG-200CS	JG-200LCS	JG-250CS	JG-250LCS	JG-300	JG-300L
CAPACITY (#1)													
Max. swing over bed	mm	380		560				560				670	
Max. swing over cross slide	mm	110		170				170				270	
Max. turning diameter	mm	200		350				350				400	
Max. turning length	mm	170	150	470	750	470	750	(VDI)400 or (BMT)388	(VDI)650 or (BMT)635	(VDI)400 or (BMT)388	(VDI)650 or (BMT)635	490	950
Bar diameter	mm	42	52	52		75		52		75		75	
STROKE													
X-axis	mm	220+10		370+10				(VDI)330+30 or (BMT)330+70				420+50	
Z-axis	mm	200	200	530	800	530	800	420	700	420	700	560	1000
C-axis	mm	N/A		N/A				360°				N/A	
SPINDLE													
Spindle nose		A2-5		A2-6		A2-8		A2-6		A2-8		A2-8	
Spindle bore	mm	56	61	65		91		65		91		91	
Hole diameter of spindle bearing	mm	80	85	100	100	130	130	100	100	130	130	130	130
Max. spindle speed	RPM	6000	4000	4000				4000				2500	
Max. speed of milling spindle	RPM	N/A		N/A				(controllerα) 4000 or (controllerß) 3000				N/A	
TURRET													
Turret type		Servo turret		Servo turret				Live turret (German Sauter: VDI 40 or BMT65)				Servo turret	
Turret capacity		8		12				12				10	
Square tool shank	mm	20		25				25				25	
Round tool shank	mm	20		40				40				40	
Center height	mm	63		150				100				125	
Indexing time (tool-tool)	sec	0.8		0.8				0.8				0.8	
Total indexing time for 180°	sec	1.3		1.5				1.5				1.5	
TAILSTOCK													
Tailstock stroke	mm	175		350	650	350	650	350	650	350	650	500	760
Tailstock quill stroke	mm	95		100				100				120	
Tailstock sleeve taper		MT#4		MT#5				MT#5				MT#5	
LATHE													
Slideway type		Box way		Box / Linear way				Box / Linear way				Box way	
Bed		30° slant		30° slant				30° slant				30° slant	
Chuck size	inch	6	8	8		10		8		10		10	
Coolant tank capacity	L	90		150	210	150	210	150	210	150	210	264	325
BALL SCREW													
X-axis		R25 x P10		R32 x P10				R32 x P10				R32 x P8	
Z-axis		R25 x P10		R40 x P12				R40 x P12				R40 x P12	
FEED													
Rapid traverse rate	m/min	X:20, Z:20		X:20, Z:24				X:20, Z:24				X:20, Z:24	
MOTOR													
Fanuc controller		0i-TF (plus) ß6	0i-TF (plus) ß8	0i-TF (plus) ß12				0i-TF (plus) αP15 or ßP22				0i-TF (plus) αP30	
Spindle motor	KW	5.5/7.5	7.5/11	11/15				(αP15)7.5/9 or (ßP22)11/15				15/18.5	
Feed motor	KW	X:1.2, Z:1.2		X:1.8, Z:2.5				X:1.8, Z:2.5				X:3.0, Z:4.0	
Turret motor	KW	0.75		1.2				0.5				1.2	
Milling spindle motor	KW	N/A		N/A				3				N/A	
MACHINE DIMENSIONS / WEIGHT (#2)													
L x W x H (Not incl. warning lamp)	cm	175 x 172 x 166		320 x 165 x 183	370 x 160 x 180	320 x 165 x 183	370 x 160 x 180	320 x 165 x 183	370 x 160 x 180	320 x 165 x 183	370 x 160 x 180	377 x 182 x 182	427 x 182 x 182
Pallet size (L x W)	cm	230 x 190		258 x 229	283 x 229	258 x 229	283 x 229	258 x 229	283 x 229	258 x 229	283 x 229	418 x 229	465 x 229
Net weight	kg	2400		4100	4500	4100	4500	4100	4500	4100	4500	5350	5900

#1 Machining capacity has reserved the thickness of jaw, tool, and tool retracting space.
#2 Machine dimensions and weight include chip conveyor.

※ Custom machine designs are available upon request.
※ Machine design, specifications, dimensions, and machine structure are subject to change.

STANDARD ACCESSORIES

MODEL	JG-1 Series	JG-2 Series	JG-CS Series	JG-3 Series
LED work light	•	•	•	•
3-color warning lamp	•	•	•	•
Heat exchanger for electrical cabinet	•	•	•	•
Auto volumetric lubricator	•	•	•	•
Full enclosure	•	•	•	•
Telescopic guards	•	•	•	•
Tailstock	• Manual	• Programmable	• Programmable	• Programmable
Hydraulic chuck (With 1 set hard jaw and 3 sets of soft jaw)	•	•	•	•
Tapered sleeve (one each)	• MT#2&3	• MT#2&3	• MT#2&3	• MT#2&3
I.D. sleeve (one each)	• Ø6, 8, 10, 12, 20	• Ø8, 10, 12, 16, 20, 25, 32	• Ø8, 10, 12, 16, 20, 25, 32	• Ø10, 12, 16, 20, 25, 32
“U” sleeve (one each)	• Ø12, 16, 20	• Ø16, 20, 25, 32	• Ø16, 20, 25, 32	• Ø20, 25, 32
Facing tool holder	• 2 pcs.	• 2 pcs.	• 1 pc.	• 2 pcs.
O.D. tool holder	-	-	• 1 pc.	-
I.D. tool holder	• 4 pcs.	• 3 pcs.	• 3 pcs.	• 3 pcs.
U shaped deep hole tool holder	• 2 pcs.	• 1 pc.	• 1 pc.	• 2 pcs.
Chip conveyor (with cart)	• Back type	• Side type	• Side type	• Side type
Tool box and foundation pads	•	•	•	•

OPTIONAL ACCESSORIES

MODEL	JG-1 Series	JG-2 Series	JG-CS Series	JG-3 Series
Auto door	•	•	•	-
Auto bar feeder	•	•	•	•
Parts catcher	•	•	•	-
Air conditioner for electrical cabinet	•	•	•	•
Tool probe	•	•	•	•
Oil skimmer	•	•	•	•
Oil mist collector	•	•	•	•
Live tool holder 0° / 90°	-	-	•	-

TOOL PROBE

The use of a tool probe may reduce the tool setting time and machine downtime that results from manual tool setting and inspection.
It not only effectively enhances process control, but also improves workpiece quality. Select from detachable, manual pull-down, or automatic measuring arm.

PART CATCHER

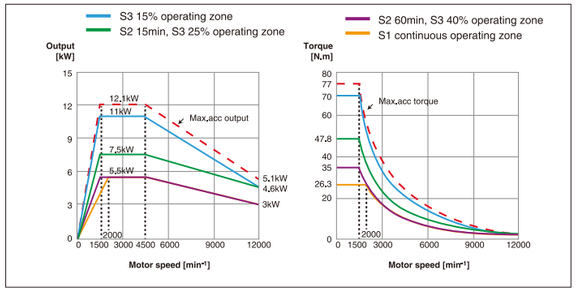
The part catcher is controlled by programs to catch the finished parts, avoiding parts collision, and reducing the possibility of catching failure.
Suitable for continuous turning.

AUTO BAR FEEDER

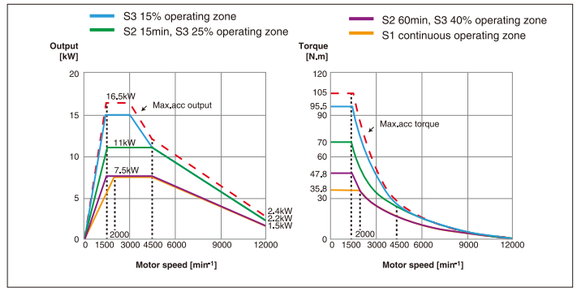
Materials could be kept feeding while the previous workpiece is done which could save manpower and increase productivity.
Easy operating and maintaining.

SPINDLE TORQUE OUTPUT DIAGRAM

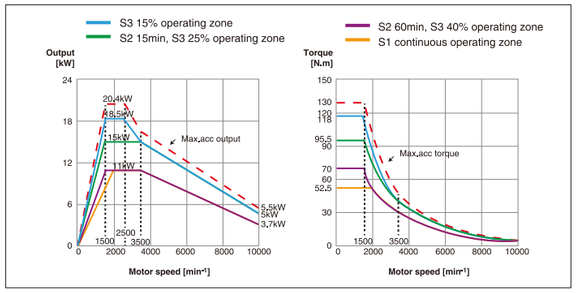
βiI 6



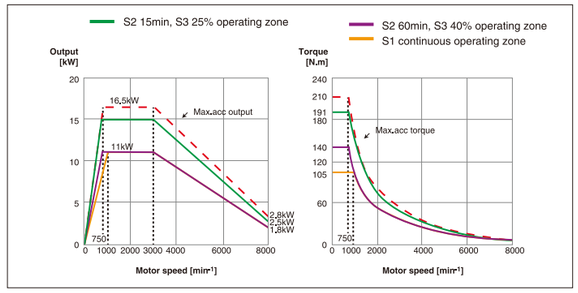
βiI 8



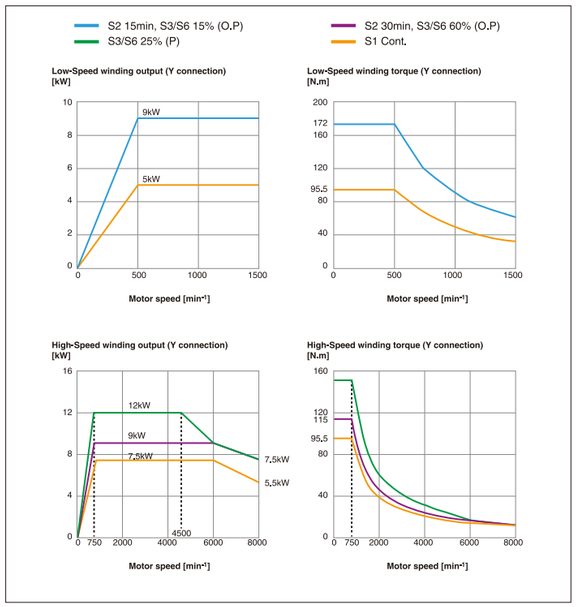
βiI 12



βiIp 22



αiIp 15



αiIp 30