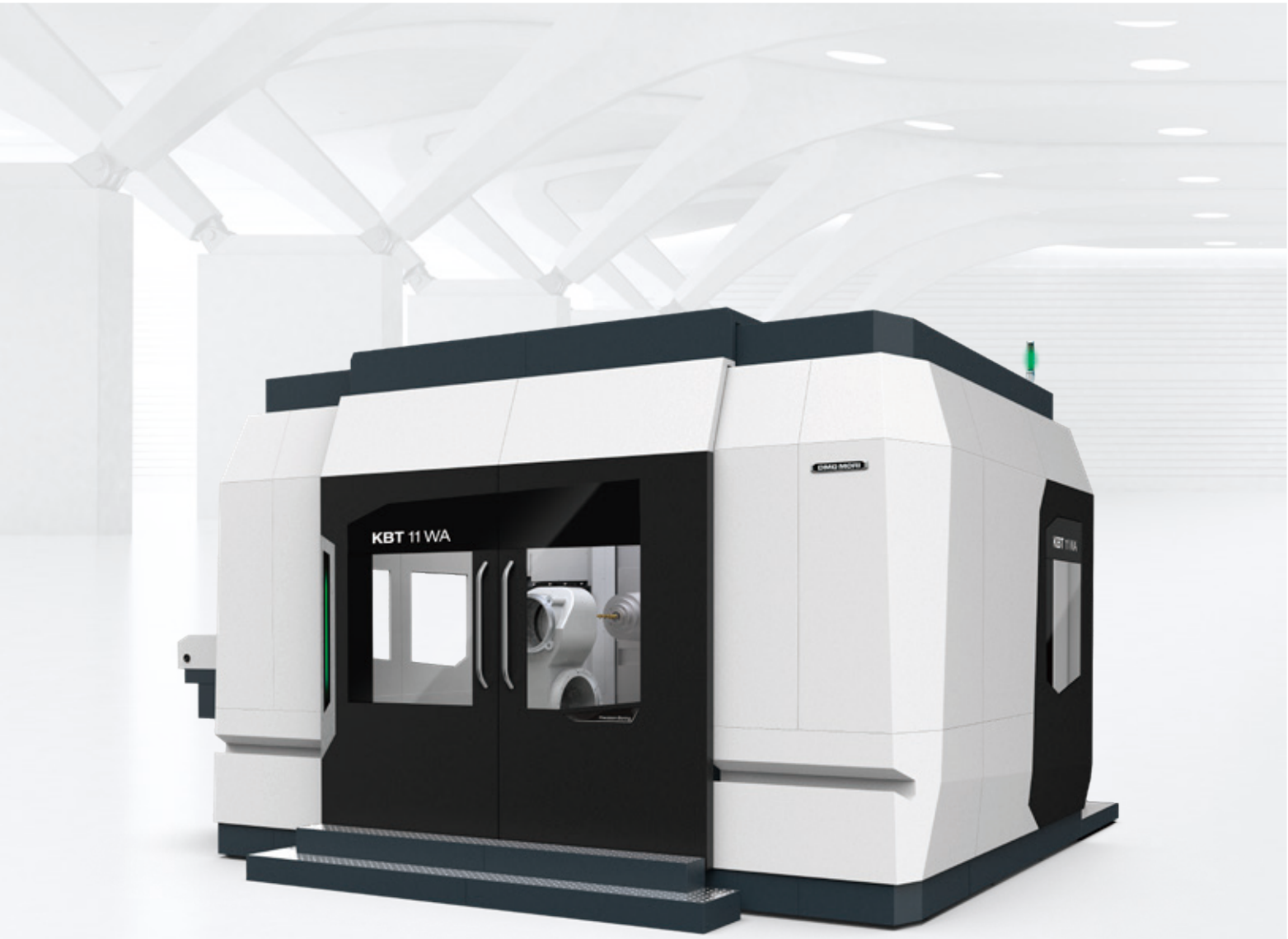
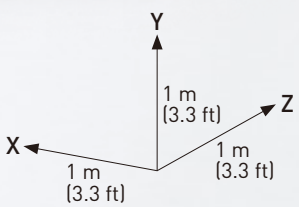
DMG MORI

KBT 11
KBT 13
KBT 15

CNC Horizontal Boring and Milling Machine

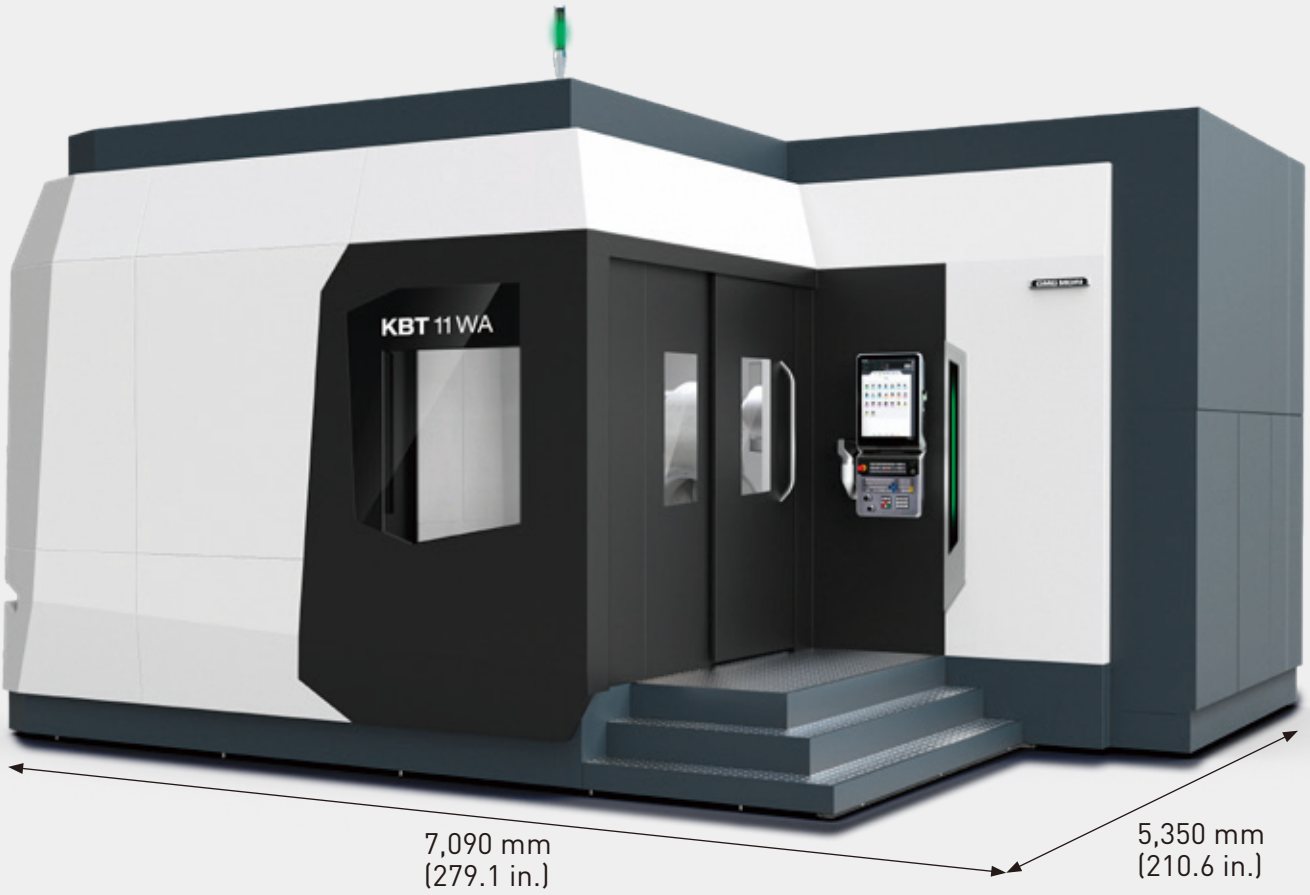
KBT Series

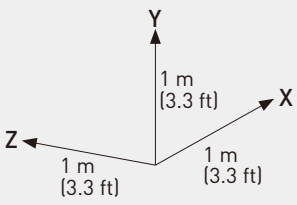




Ultimate Precision and Rigidity for Large Workpiece Machining

From aerospace, automobiles and semiconductors to medical care and energy, our technology has opened up the possibilities in various fields.
We will continue to shape the future with evolving technology, consistently striving for superior precision and quality.





● Machine size varies depending on model and specifications.

DMG MORI

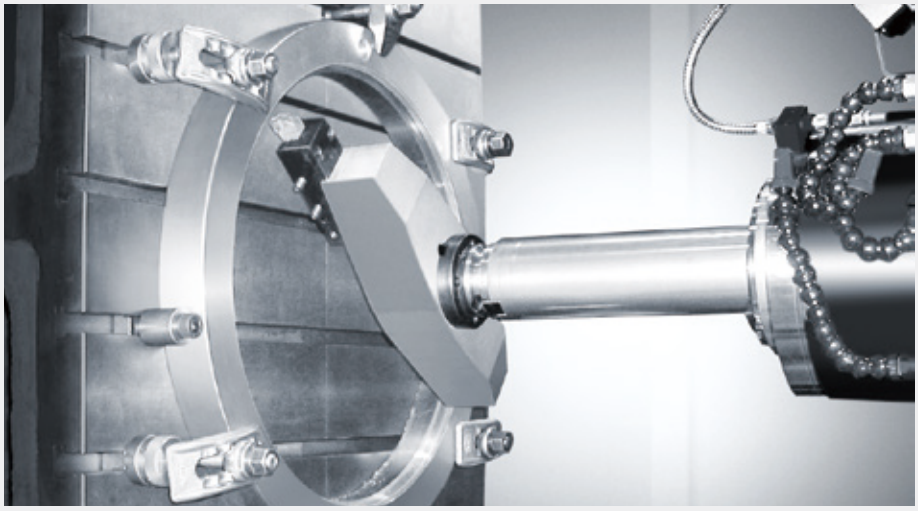
PRECISION BORING

Leading Company in CNC Horizontal Boring & Milling Machines

Horizontal boring and milling machines are primarily used in finishing operations to enlarge a machined hole to a specified size. They are especially effective for precision drilling.
DMG MORI Precision Boring (formerly KURAKI), founded in 1938 in Nagaoka City, Niigata Prefecture, joined the DMG MORI Group in 2024, and is a leading manufacturer of horizontal boring and milling machines with a history of over 80 years.
We have earned a high reputation by consistently meeting our customers' evolving needs and advancing our technologies. Our machines come in various sizes to accommodate different models and specifications.

Benefits of Horizontal Boring & Milling Machines

+ Exceptional rigidity and torque, surpassing that of universal machining centers
+ Unique dual spindle structure
+ Versatile machining capabilities, including milling and tapping



● Figures in inches were converted from metric measurements.

Toughness and High-accuracy Realized by Proven Technology

Firmly united highly rigid cast bed and column

+ Consistent vibration control and high positioning accuracy even during extended machining
+ High-accuracy machining of heavy workpiece enabled by hardened and ground square slideways and large-diameter ball screws

Positioning accuracy

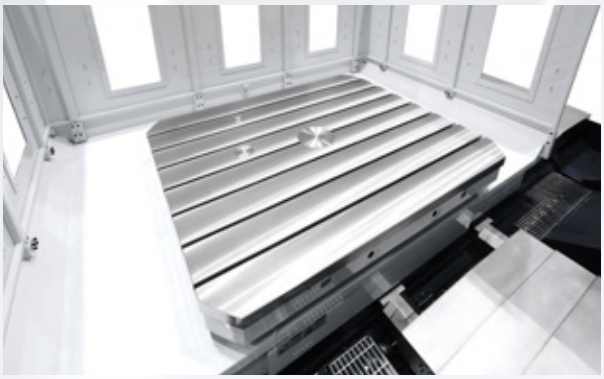
• Common to all models

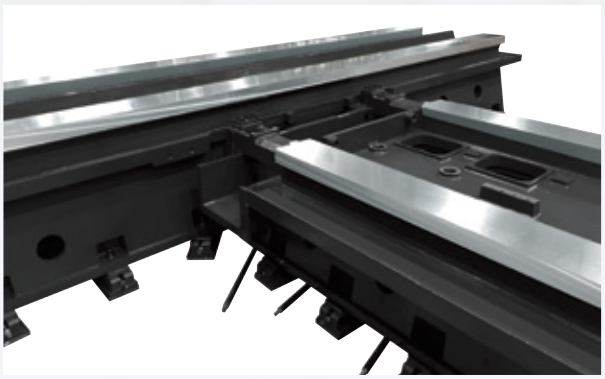
		Positioning accuracy	Repeatability
X-axis	mm (in.)	±0.005 (0.0002)	±0.003 (0.0001)
Y-axis	mm (in.)	±0.005 (0.0002)	±0.003 (0.0001)
Z-axis	mm (in.)	±0.005 (0.0002)	±0.003 (0.0001)
W-axis	mm (in.)	±0.010 (0.0004)	±0.005 (0.0002)

Indexing accuracy

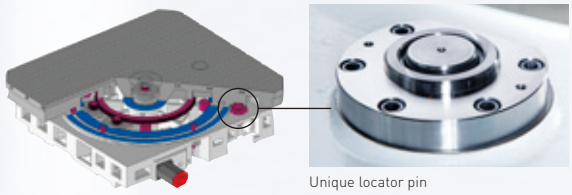
		Indexing accuracy	Repeatability
Every 90°	in.	±2	±1.5
Optional Angle	in.	±5	±3

Unique table structure





+ Table bed and column bed united to improve entire machine rigidity and prevent vibration
+ Long-lasting static accuracy of squareness



Unique locator pin

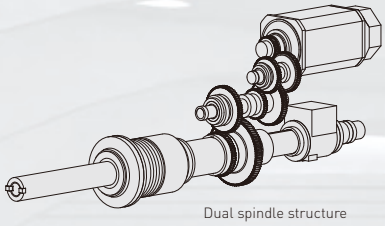
+ Rotary table enabling highly accurate indexing in increments of 0.0001°
+ Original locator pin for maintaining higher accuracy every 90°
+ Powerful hydraulic T-bolt clamp and backplate realizing high speed and high accuracy with double-pinion gear drive

Dual Spindle Structure for Outstanding Rigidity

The outer milling spindle and inner boring spindle (W-axis) rotate together in a dual structure. Supported by large-diameter bearings at three points, the W-axis provides high rigidity and damping. This design ensures stable machining, even with large W-axis overhang, making it perfect for working on large and deep workpieces.

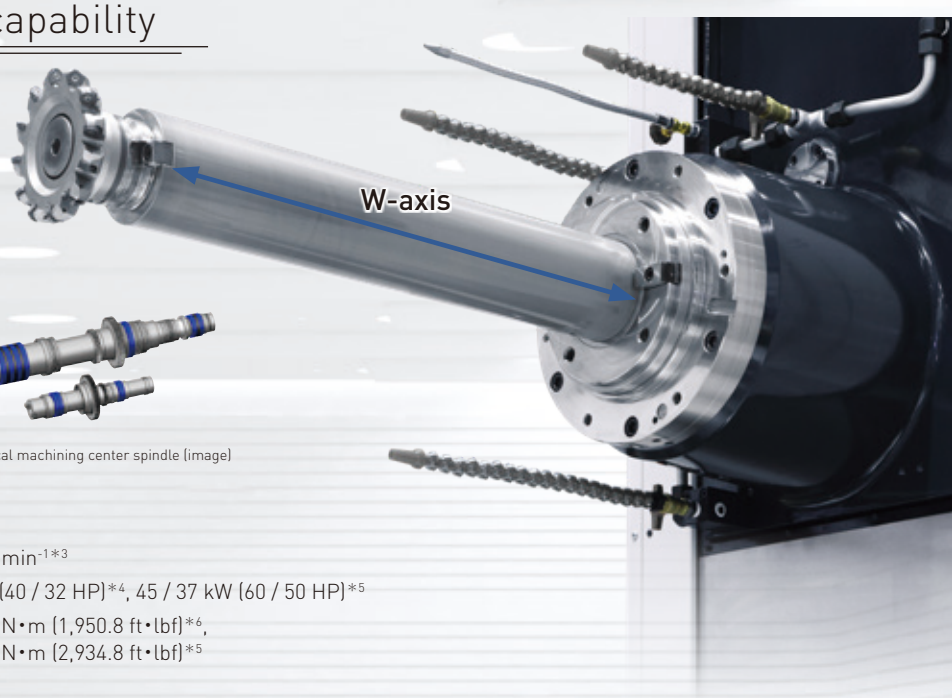
Spindle structure / cutting capability

+ Adopting unique three point contact large-diameter bearings
+ Overwhelming heavy-duty cutting capability achieved by highly rigid dual spindle structure in which the boring spindle and milling spindle integrally rotate



Dual spindle structure

Typical machining center spindle (image)

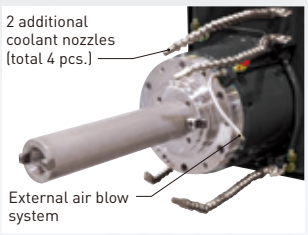


No. 50 taper spindle

+ Max. spindle speed: 5,000 min^{-1}*1, 4,000 min^{-1}*2, 2,500 min^{-1}*3
+ Spindle output: 26 / 22 kW (34.7 / 30 HP)*1, 30 / 24 kW (40 / 32 HP)*4, 45 / 37 kW (60 / 50 HP)*5
+ Max. spindle toque: 2,365 N•m (1,744.3 ft•lbf)*1, 2,645 N•m (1,950.8 ft•lbf)*6, 3,342 N•m (2,464.9 ft•lbf)*3, 3,979 N•m (2,934.8 ft•lbf)*5

*1 KBT 11 A, KBT 11 W A, KBT 11Z, KBT 11EZ *2 KBT 13 A, KBT 13 E A *3 KBT 15 A
*4 KBT 13 A, KBT 15 A *5 KBT 13 E A *6 KBT 13 A

Spindle-related accessories*



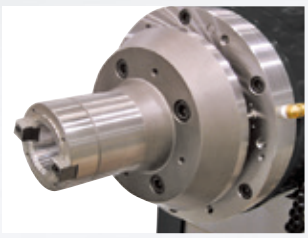
+ Additional coolant nozzles and oil mist nozzle

● Customizable to meet customer requirements

+ Positioning block adaptable to various attachments (Spindle nose end face)

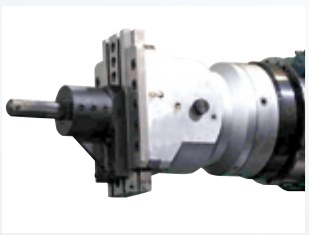
Attachments*

Extension Head L220 mm (8.7 in.)



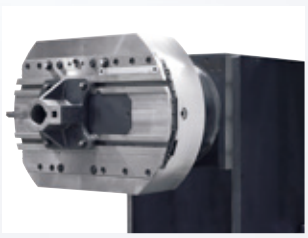
Also available for ATC

NC Contouring Head



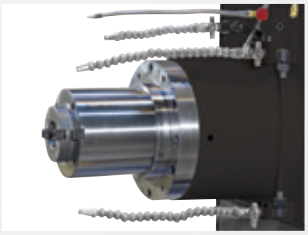
U-axis Stroke
ZX200: 38 mm (1.5 in.)
ZX300: 75 mm (3.0 in.)
ZX420: 102 mm (4.0 in.)
ZX700: 127 mm (5.0 in.)

Facing Head (Manual operation)



For ø 110 mm (4.3 in.)
Facing head Dia.: 600 mm (23.6 in.)
<Slide stroke: 140 mm (5.5 in.)>
For ø 130 mm (5.1 in.), 150 mm (5.9 in.)
Facing head Dia.: 650 mm (25.6 in.)
<Slide stroke: 250 mm (9.8 in.)>

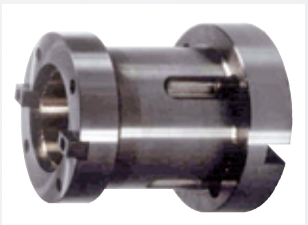
Milling Spindle Extension 200 mm (7.9 in.)



Vertical Milling Attachment

For KBT 11 L=350 mm (13.8 in.), 600 mm (23.6 in.)
For KBT 13 / 15 L=400 mm (15.7 in.), 700 mm (27.6 in.)

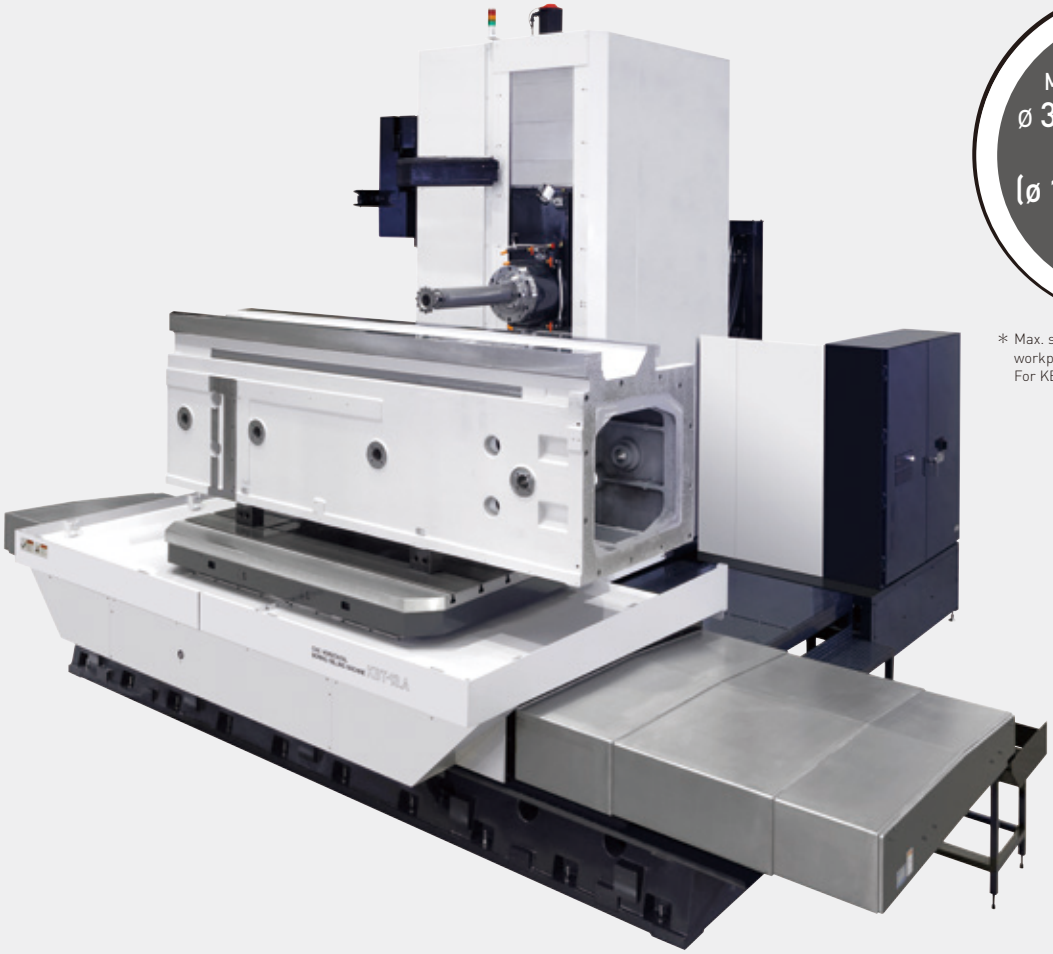
Extension Sleeve L200 mm (7.9 in.)



* Option

Large Workpiece Machining with Minimal Interference Risk

The boring spindle (W-axis) can be extended, enabling deep drilling on large workpieces with high accuracy and efficiency. This reduces the risk of spindle interference compared to moving the column (Z-axis) back and forth.

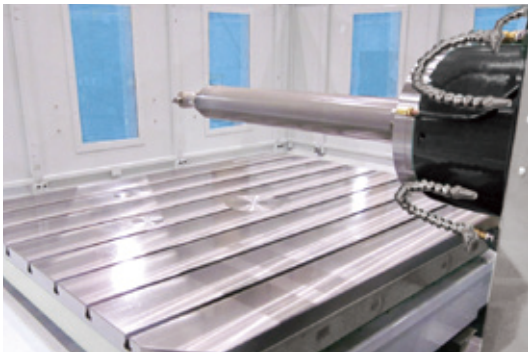


Max. workpiece size*
ø 3,200 × 3,100 × 2,400 mm
(ø 125.9 × 122.0 × 94.4 in.)

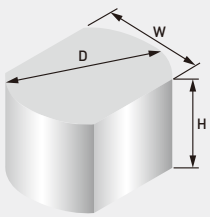
* Max. swing of workpiece × width of workpiece × workpiece height
For KBT 13B A, KBT 13 EB A, KBT 15B A.

KBT 13 A:
W-axis stroke 810 mm (31.9 in.) **Standard**

KBT 15 A:
W-axis stroke 910 mm (35.8 in.) **Standard**



Max. workpiece size



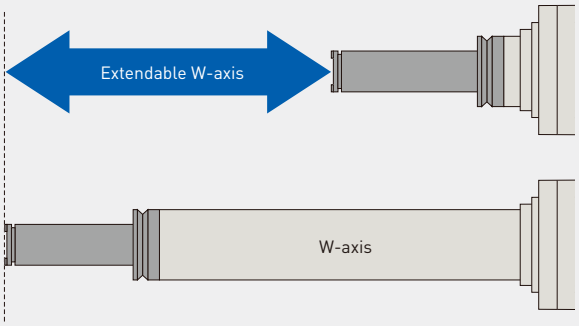
mm (in.)

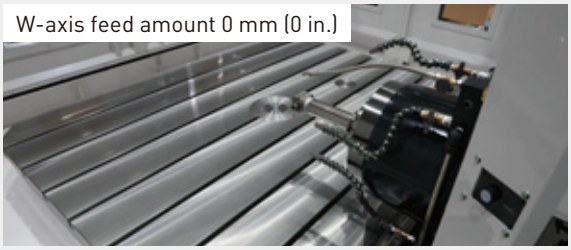
	D	W	H
KBT 11 A	ø 2,000 (ø 78.7)	2,000 (78.7)	1,600 (62.9)
KBT 11W A	ø 2,200 (ø 86.6)	2,200 (86.6)	1,600 (62.9)
KBT 11Z	ø 2,400 (ø 94.4)	2,400 (94.4)	1,900 (74.8)
KBT 11EZ	ø 2,400 (ø 94.4)	2,400 (94.4)	1,900 (74.8)
KBT 13 A	ø 2,650 (ø 104.3)	2,500 (98.4)	2,100 (82.6)
KBT 13E A	ø 2,650 (ø 104.3)	2,500 (98.4)	2,100 (82.6)
KBT 13B A	ø 3,200 (ø 125.9)	3,100 (122.0)	2,400 (94.4)
KBT 13EB A	ø 3,200 (ø 125.9)	3,100 (122.0)	2,400 (94.4)
KBT 15 A	ø 2,650 (ø 104.3)	2,500 (98.4)	2,100 (82.6)
KBT 15B A	ø 3,200 (ø 125.9)	3,100 (122.0)	2,400 (94.4)

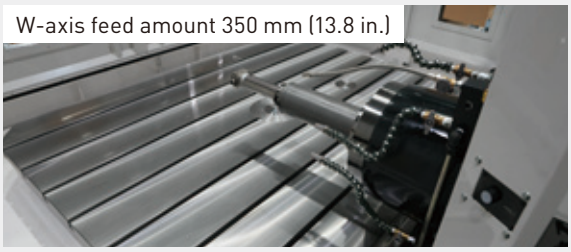
● Without APC specification

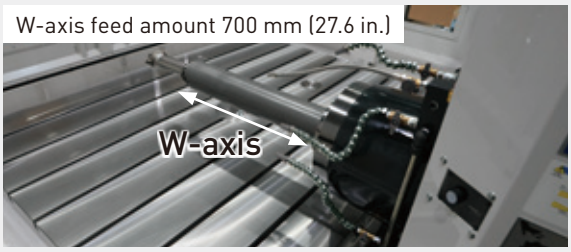
Extendable W-axis for better access to the workpiece

+ Reduced interference risk between workpiece and spindle with extendable W-axis
+ Enabling deep machining with standard tool by boring spindle (W-axis) feed





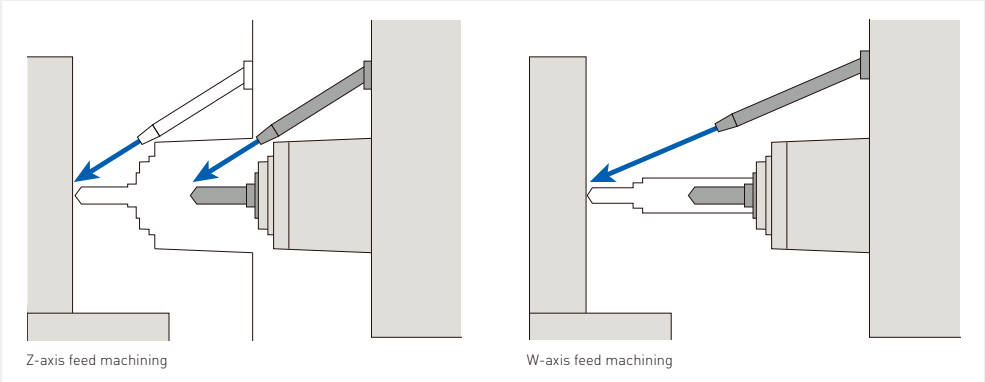




W-axis feed machining

+ As the workpiece does not move, coolant can be supplied to the machining point at all times
+ Enabling reduction of coolant splash to surrounding area, efficient cooling of machining point, and quick chip removal

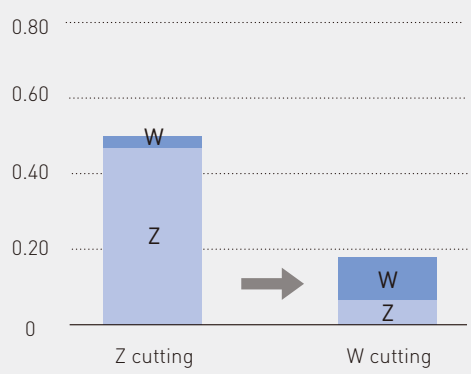
Highly accurate and efficient drilling / tapping / reaming



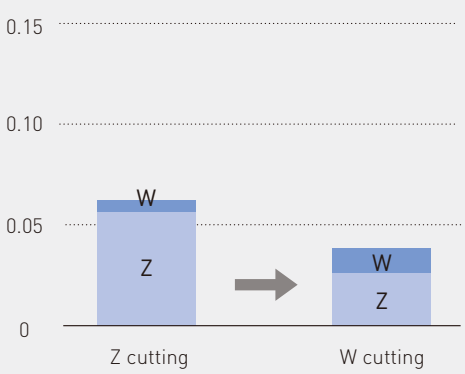
Reducing machining power consumption and load on machine

+ Reducing power consumption by 1/3 in drilling cycle and by 1/2 in tapping cycle

G83 Peck drill Power Consumption (kWh)



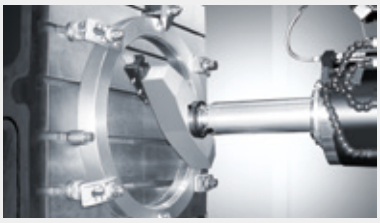
G84 Rigid tap Power Consumption (kWh)



Diverse Machining Variations for Giving a Shape to Any Requests

Machining examples

Powerful processing capability



Large-diameter boring
ø 624 mm (ø 24.6 in.) <W=350 mm (13.8 in.)> /
Material: S55C

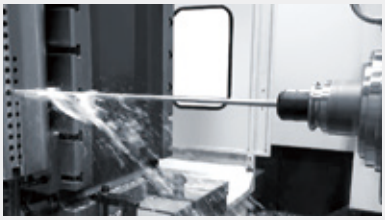
Deep-hole drilling
ø 110 mm (ø 4.3 in.) fullcut drill /
Material: S55C

Tapping
M100 / Material: S55C

Highly efficient die & mold machining

Profiling (mold)
Highly efficient rough machining of highly tough material (40HRC)
ø 63 (ø 2.5 in.) high feed cutter

Profiling (mold)
Semi-finishing of highly tough material (40HRC)
ø 16 (ø 0.6 in.) ball end mill

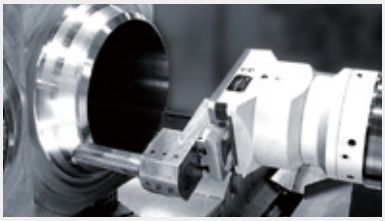


MC gun drilling
ø 16 (ø 0.6 in.) machine gun drill /
drilling depth: 800 mm (31.5 in.)

Unique machining technologies

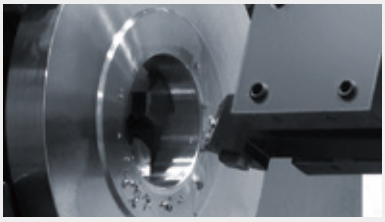
Continuous rotary machining
Rotary cutting by rotating the rotary table is enabled as standard

W-axis (boring spindle) feed machining

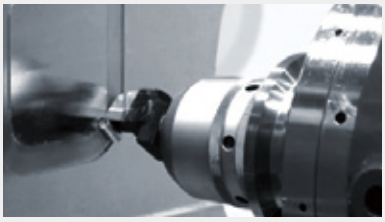


U-axis contouring / facing head machining

Machining using Cs control



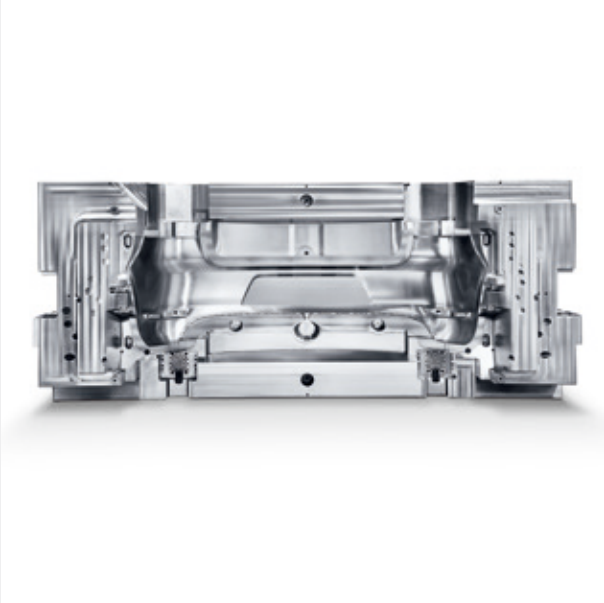
Cs control facing



Cs control spring neck machining
Carbide tool
Material: SUS3040

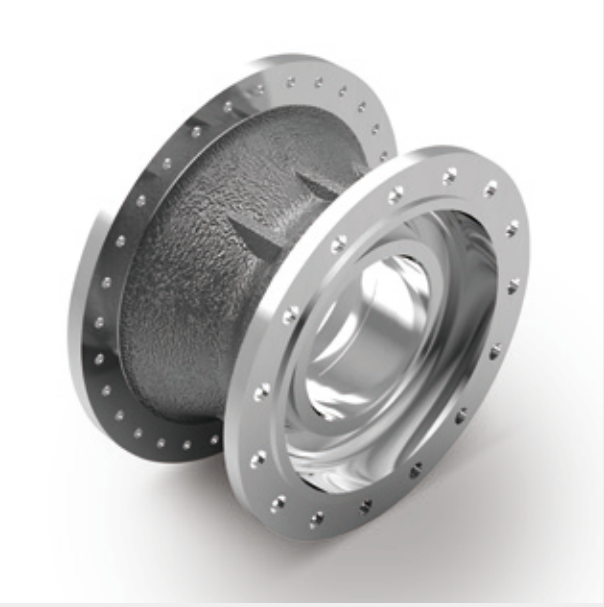
Cs control slotter machining
13-square high-speed steel tool
Material: FCD

Target workpieces



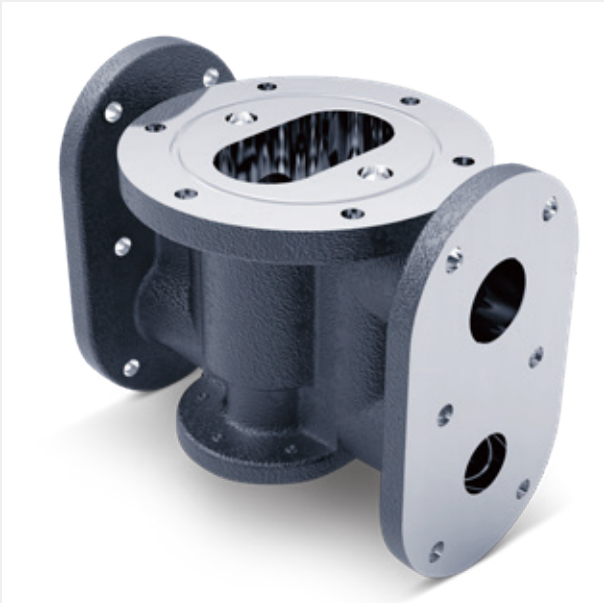
Tools / Die & mold making

Mold for car bumper
800 × 1,500 × 800 mm (31.5 × 59.1 × 31.5 in.) <Carbon steel>



Construction machinery

Housing
ø 600 × 800 mm (ø 23.6 × 31.5 in.) <Gray cast iron>



Boats & Ships

Gear housing
800 × 1,000 × 600 mm (31.5 × 39.4 × 23.6 in.) <Gray cast iron>

Industrial machinery

Planet carrier
ø 1,500 × 800 mm (ø 59.1 × 31.5 in.) <Carbon steel>

Rich Lineup to Meet Wide Range of Needs

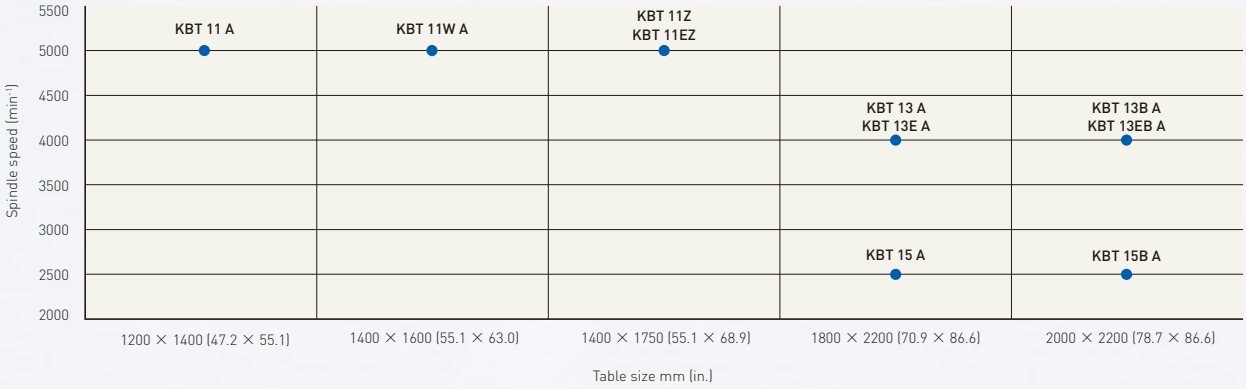
Spindle diameter 110 mm (4.3 in.)
Standard machine

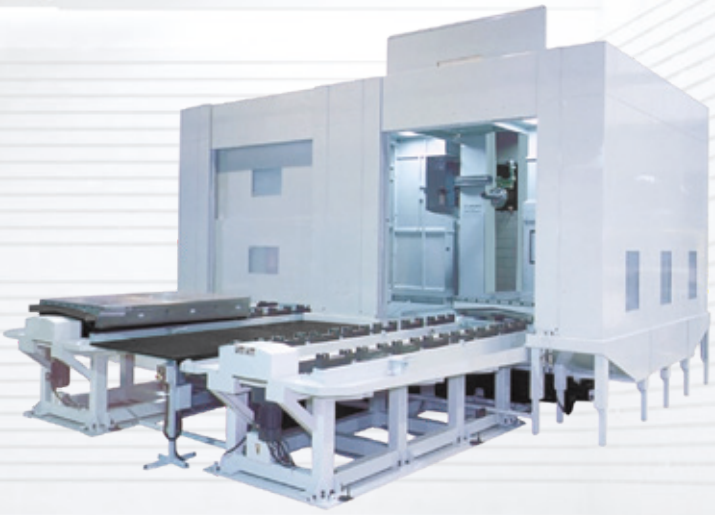
KBT 11 Series
KBT 11 A / KBT 11W A / KBT 11Z / KBT 11EZ

Spindle diameter 130 mm (5.1 in.)
Best-selling machine

KBT 13 Series
KBT 13 A / KBT 13E A / KBT 13B A / KBT 13EB A

KBT Series lineup chart map





Spindle diameter 150 mm (5.9 in.)
Strong machine

KBT 15 Series
KBT 15 A / KBT 15B A

APC (Automatic pallet changer)*

+ Allowing external setup
+ Enabling automation / labor reduction
+ Increasing actual run hour by long-time operation

Main specifications

			Saddle traverse type		Column traverse type				
			KBT 11 A	KBT 11W A	KBT 11Z KBT 11EZ	KBT 13 A KBT 13E A	KBT 13B A KBT 13EB A	KBT 15 A	KBT 15B A
Boring spindle dia.		mm (in.)	110 (4.3)	110 (4.3)	110 (4.3)	130 (5.1)	130 (5.1)	150 (5.9)	150 (5.9)
Max. spindle speed		min^{-1}	5,000	5,000	5,000	4,000	4,000	2,500	2,500
Working surface		mm (in.)	1,200 × 1,400 (47.2 × 55.1)	1,400 × 1,600 (55.1 × 63.0)	1,400 × 1,750 (55.1 × 68.9)	1,800 × 2,200 (70.9 × 86.6)	2,000 × 2,200 (78.7 × 86.6)	1,800 × 2,200 (70.9 × 86.6)	2,000 × 2,200 (78.7 × 86.6)
Table maximum loading capacity		kg (lb.)	5,000 (11,000)	6,500 (14,300)	10,000 (22,000)	15,000 (33,000)	25,000 (55,000)	15,000 (33,000)	25,000 (55,000)
Travel	X-axis travel <table longitudinal>	mm (in.)	1,700 (66.9)	2,000 (78.7)	2,500 (98.4)	3,000 (118.1)	3,000 (118.1)	3,000 (118.1)	3,000 (118.1)
	Y-axis travel <spindle vertical>	mm (in.)	1,500 (59.1)	1,500 (59.1)	1,800 (70.9)	2,000 (78.7)	2,300 (90.6)	2,000 (78.7)	2,300 (90.6)
	Z-axis travel <table cross / column cross>	mm (in.)	1,150 (45.3)	1,450 (57.1)	1,200 (47.2)	1,300 (51.2)	1,600 (63.0)	1,300 (51.2)	1,600 (63.0)
	W-axis travel <spindle axial>	mm (in.)	500 (19.7)	500 (19.7)	500 (19.7)	800 (31.5)	800 (31.5)	900 (35.4)	900 (35.4)

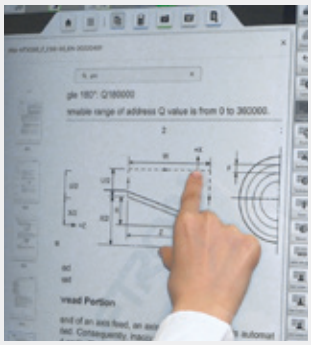
* Option

ERGO*line* X:
Stress-free, Efficient and Ergonomic

The refined ergonomic design ensures easy usage down to the smallest detail. The dustproof and waterproof design (IP54 rating) is ideal for factory environments and realizes comfortable and safe operation. (CE Marking acquired for European safety standards)

1 Large touch screen
Superior visibility and intuitive operation.

+ Equipped with an electrostatic touch screen also used in smartphones
+ All necessary information displayed on one screen for higher work efficiency
+ Blue light filter to relief eye strain
+ Can also be operated with touch pen*



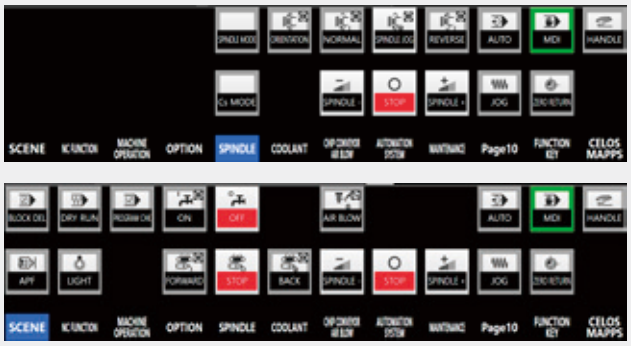
Electrostatic touch panel

Can also be operated with gloves on

* Option

2 HYBRID BAR
Only displays the buttons that are necessary for the current operation.
Prevents errors and improves workability.

+ Switches displayed buttons automatically to suit your current operation
+ LCD panel with comfortable push sensation
+ Synchronized with open programs on the touch screen



Example of displayed buttons

3 Hardware buttons that are easy to press
Ideal for program input where accuracy is required.

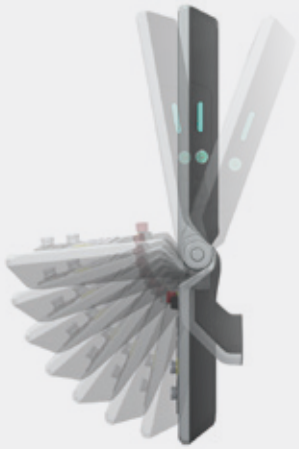
+ Dustproof, waterproof and durable design
+ With button design and position optimized for smooth inputs

4 SMART*key*
Easily switch access levels based on the operator's skill.

+ Card type access key with excellent portability
+ Set access level just by plugging in the SMARTkey

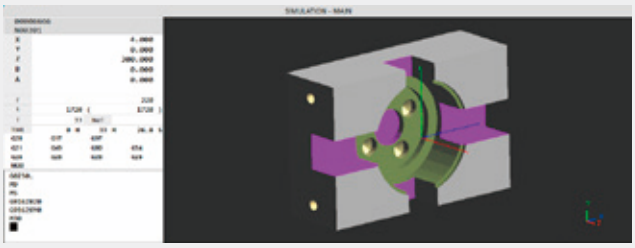
5 Top and bottom panels with freely adjustable angles
Operate the machine in your most comfortable position by adjusting the panel angles.

+ Upper panel: Front 10°, Back 20°
+ Lower panel: 0 to 84°
(adjustable in 7 steps at 12° each)



6 Complex machining simulations are processed in high speed.

+ 6 GB program storage area



Drawing simulation

Stress-Free Operation
Ensuring Comfortable Setup Work

MAPPS Guidance

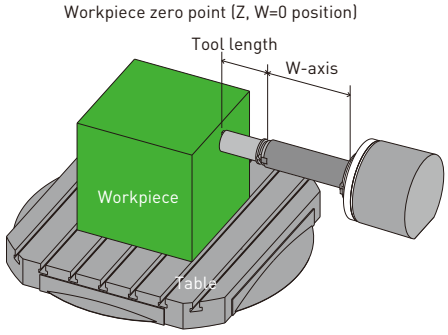
Manual pulse generator

Handwheel mode: Feed rate synchronized with the rotation of the manual pulse generator

+ Easy guidance-based creation of machining programs
+ G-code / M-code application and usage is easy to understand with images
+ Frequently used programs can be saved for quick access

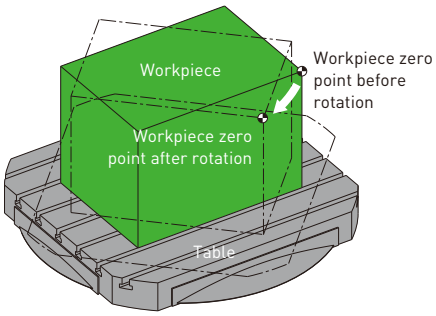
Z-, W-axis auto coordinate system setting and tool length compensation function (G143)

+ Automatically setting Z-axis / W-axis coordinate systems including W-axis feed amount
+ Enabling tool length offset as with machining center



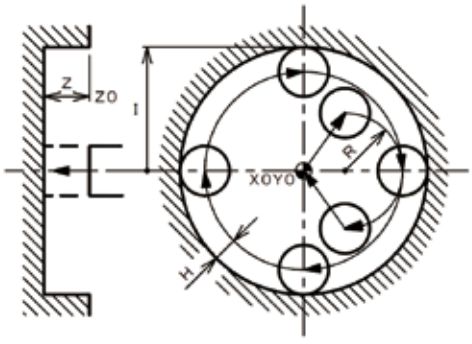
Workpiece zero point automatic calculating function by B-axis rotation (G111)

+ Automatically setting work coordinate system shifted before and after B-axis rotation
+ Improving work efficiency by omitting measurement / input works for each B-axis rotation

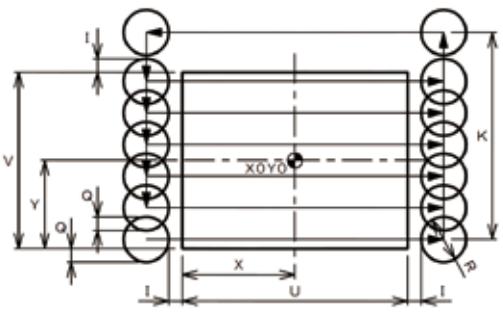


Macro Pattern Cycle

+ A set of 40 patterns of macro programs is available, including drilling, side face machining, planing, and pocket machining



G65 P8042 I□ R□ F□ H□ Z□



G65 P8052 X□ Y□ Z□ U□ V□ I□ K□ R□ Q□ F□

Centering function

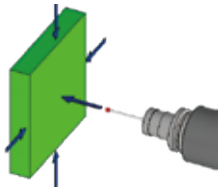
3 types selectable according to each scene
All calculated values are automatically input to the work coordinate system

+ Guided Centering function (standard): Measuring through manual pulse generator
+ Setup Assistant (option): Measuring through NC screen operation
+ Measuring Pro (option) for automated measurement

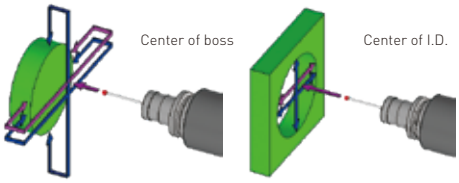
● The Guided Centering function does not come with a touch sensor; customers must provide their own centering tool.

Guided Centering function (standard)

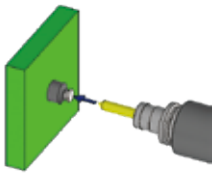
Setup Assistant



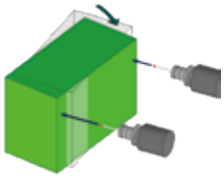
Plane measurement



Measurement between two points



Tool offset



B-axis offset

Monitoring / Efficiency function

Tool-specific load monitor

+ Load monitoring function (standard)
+ Up to 1,024 registerable programs

Energy Saving

+ Automatically shifts to energy-saving mode after a specified time
+ Execute warm-up programs at a specified day and time

Energy-saving mode setting screen

Energy Monitoring

+ Monitors energy consumption over time and per machining program
+ Analyzes energy consumption during machining

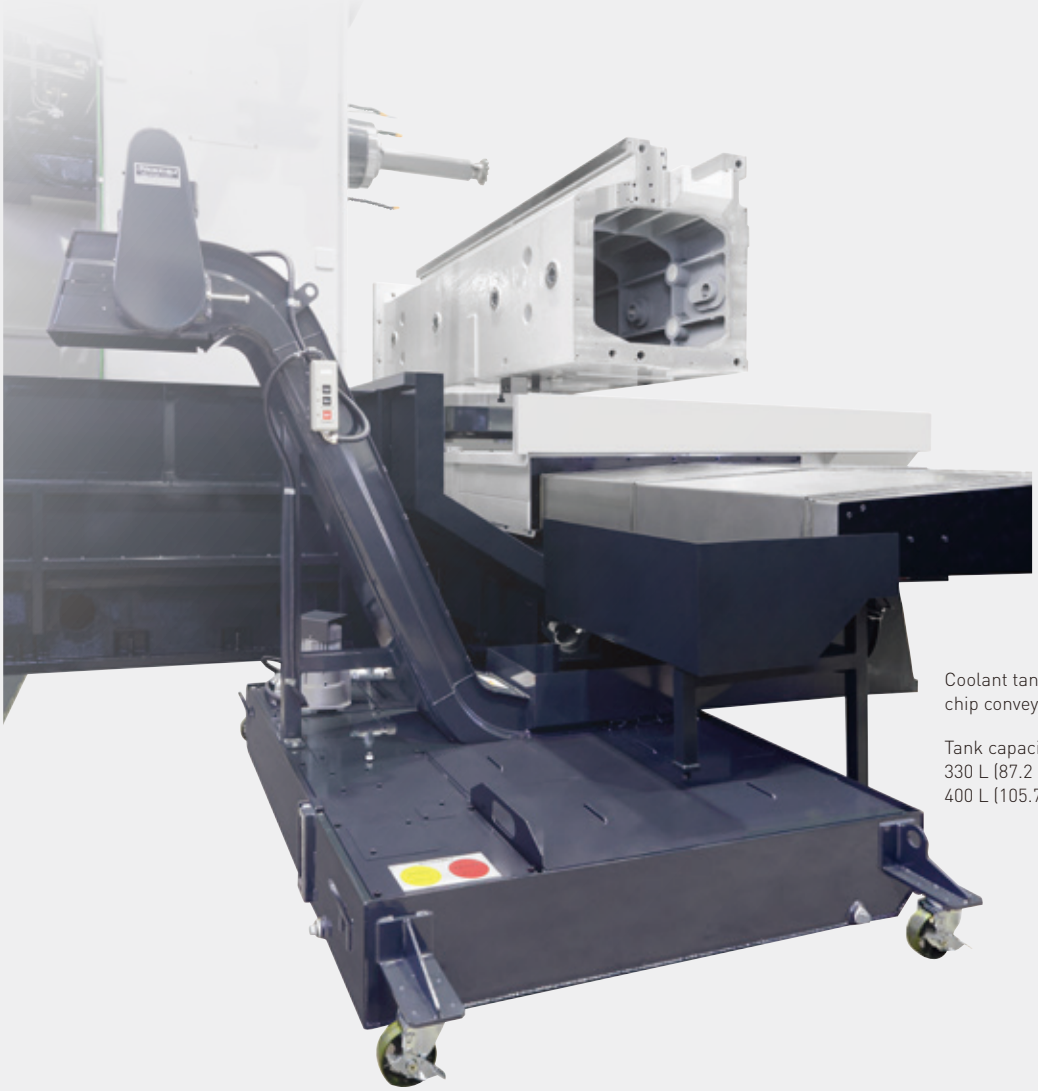
Energy consumption over time

AI Contour Control II Cutting Function (+High Speed Processing)*

+ Optimized acceleration / deceleration for corners and circular interpolation by selecting the suitable machining mode

* Option

Effective Prevention of Chip, Coolant, and Mist Troubles



Coolant tank with lift-up type chip conveyor (without pit)

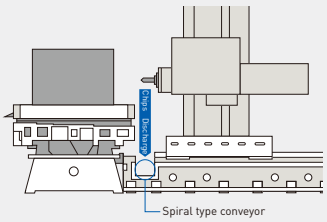
Tank capacity:
330 L (87.2 gal.) <KBT 11 A / 11W A>
400 L (105.7 gal.) <KBT 11Z / 13 / 15>

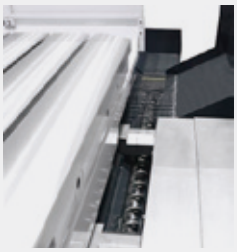
Spiral chip conveyor

+ Spiral chip conveyor aligned parallel to the X-axis
+ Smooth chip disposal in combination with coolant unit

Superior chip disposal

+ Immediately removing machining heat and resolving machine troubles by smooth chip discharge





Through-Spindle*

Various types available to suit different applications

+ Through-spindle coolant
+ Through-spindle mist
+ Through-spindle air

* Option
● Through-spindle coolant interface is included as standard

*zero-sludge*COOLANT *pro**

Access here for the video

The newly developed vertical coolant tank is compact in size, energy-saving and offers high capacity.
This makes it the optimal coolant solution for continuous operation of highly productive automation systems.

Innovative Vertical Coolant Tank

1. For continuous unmanned operation over long periods

+ Use of innovative large-capacity vertical coolant tank
+ Coolant capacity: 1,320 L (348.5 gal.)
  <30% more than previous model>
+ Hybrid cleaning method against chip accumulation

2. Coolant tank with less cleaning

+ The deep vertical tank automatically separates oil and sludge by weight
+ The efficient collection of sludge and oil extends coolant life and significantly reduces the tank cleaning frequency

* Option

*zero*FOG*1

Mist collection efficiency of 99.97% or more*2

CLEAN

+ Air quality comparable to household air purifiers
  Mist collection efficiency over 99.97% for 0.3 µm particles
+ Stable collection performance realized by filter clogging monitoring and automatic motor control*3

COMPACT

+ Attachable to the machine body*4.
  No additional floor space necessary.
  Unified design concept with the machine

High maintainability

+ Frequent filter cleaning no longer necessary.
  Automatic cleaning of the primary filter prevents filter clogging
+ Notification of filter exchange timing

ENERGY-SAVING

+ Contribution to SDGs: less energy consumption and carbon emission

*zero*FOG

Access here for the video

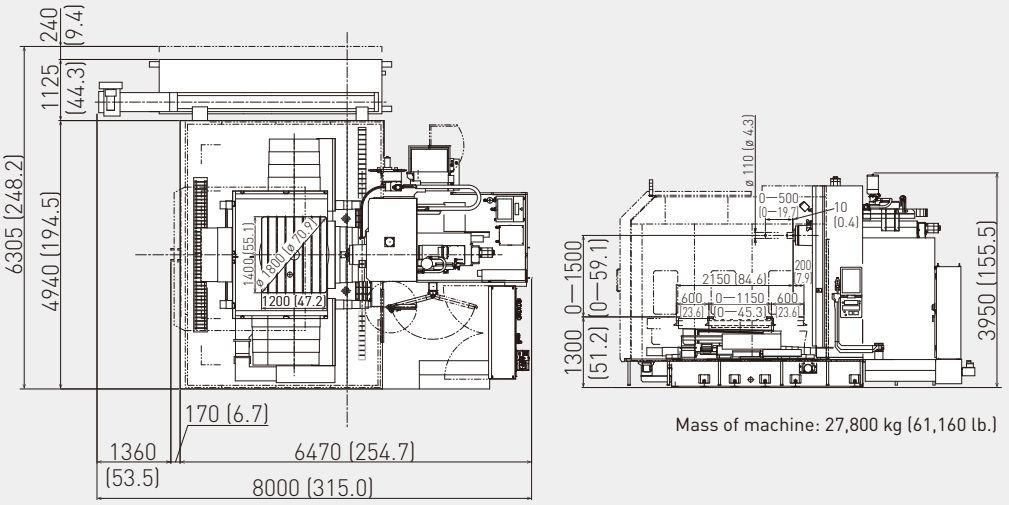
*1 Option
*2 *zero*FOG collects fine particles of 0.3 µm.
*3 Airflow may decrease depending on operating conditions such as mist concentration, oil type, and machining details.
*4 The method of mounting on the machine varies depending on the model and specifications.

Machine Size

KBT 11 Series (Without APC specification)

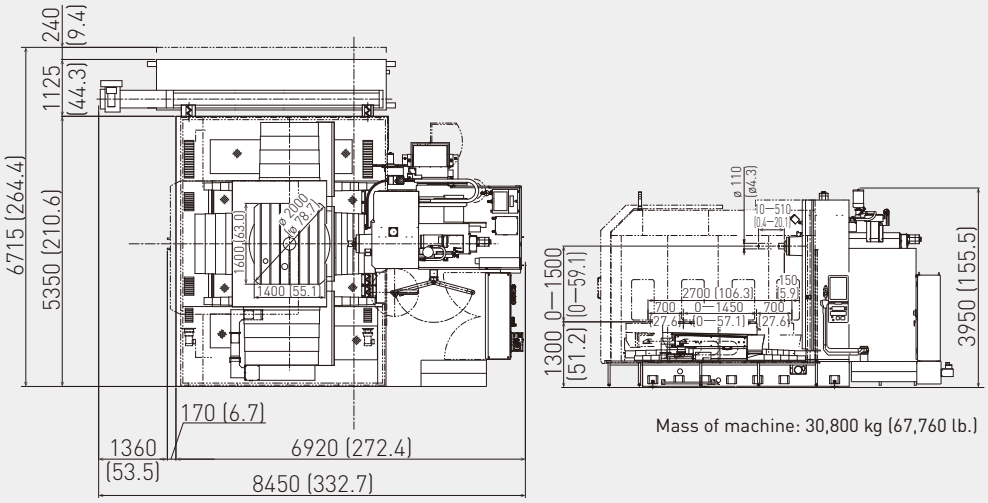
mm (in.)

KBT 11 A



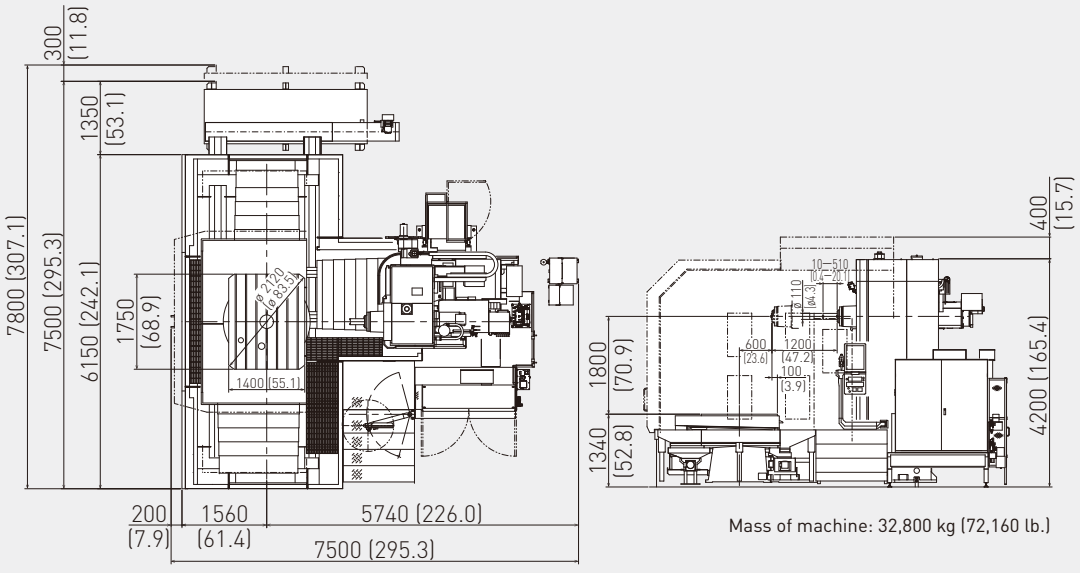
mm (in.)

KBT 11W A



mm (in.)

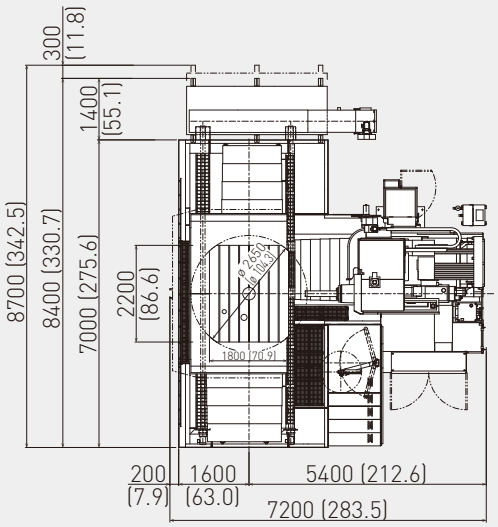
KBT 11Z / 11EZ

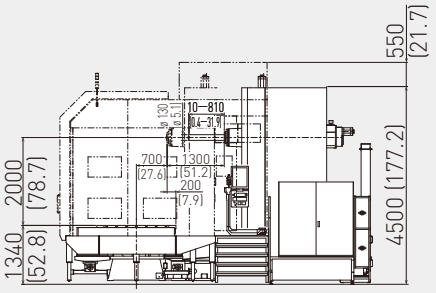


KBT 13 / KBT 15 Series (Without APC specification)

mm (in.)

KBT 13 A / 13E A / 15 A

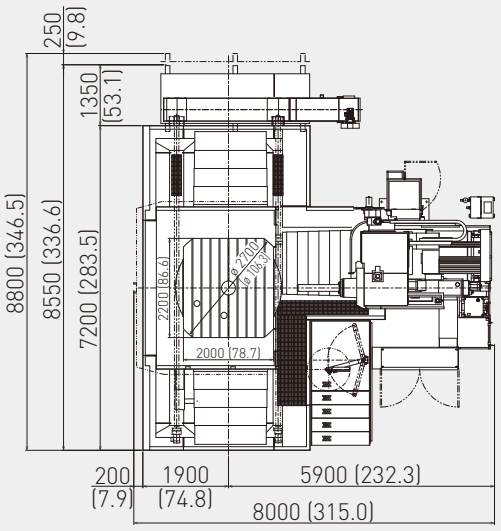


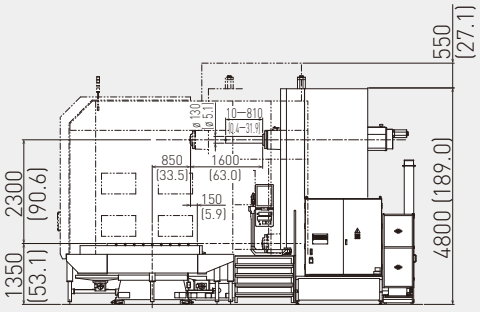


Mass of machine: 41,500 kg (91,300 lb.) <KBT 13 A>
42,500 kg (93,500 lb.) <KBT 13E A / 15 A>

mm (in.)

KBT 13B A / 13EB A / 15B A





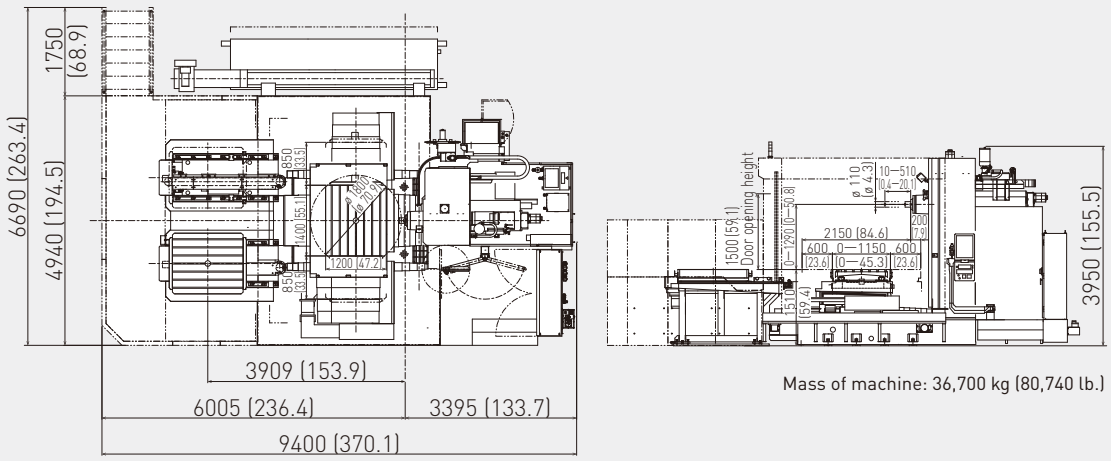
Mass of machine: 50,000 kg (110,000 lb.)

Machine Size

KBT 11 / KBT 13 / KBT 15 Series (APC specification)

mm (in.)

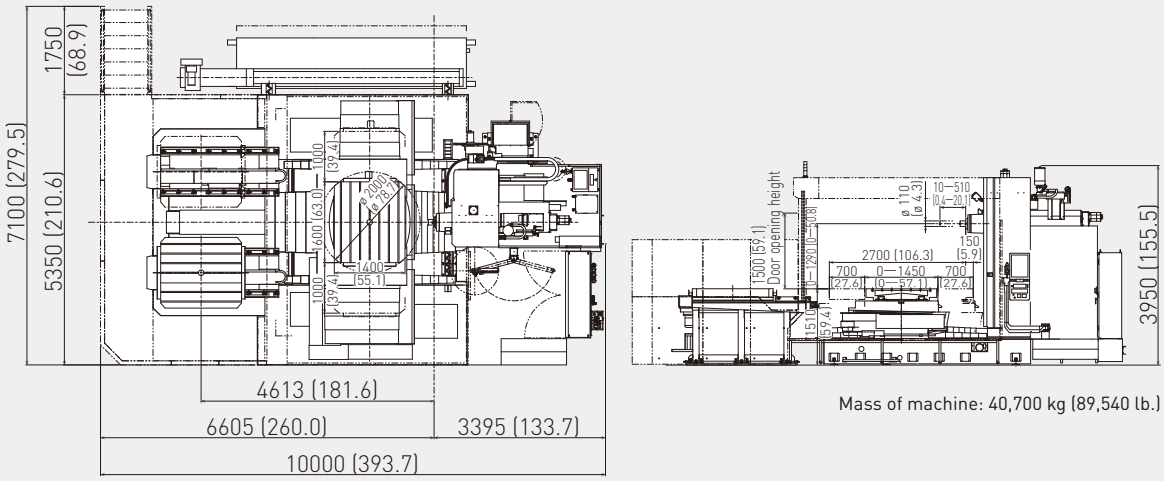
KBT 11 AP



Mass of machine: 36,700 kg (80,740 lb.)

mm (in.)

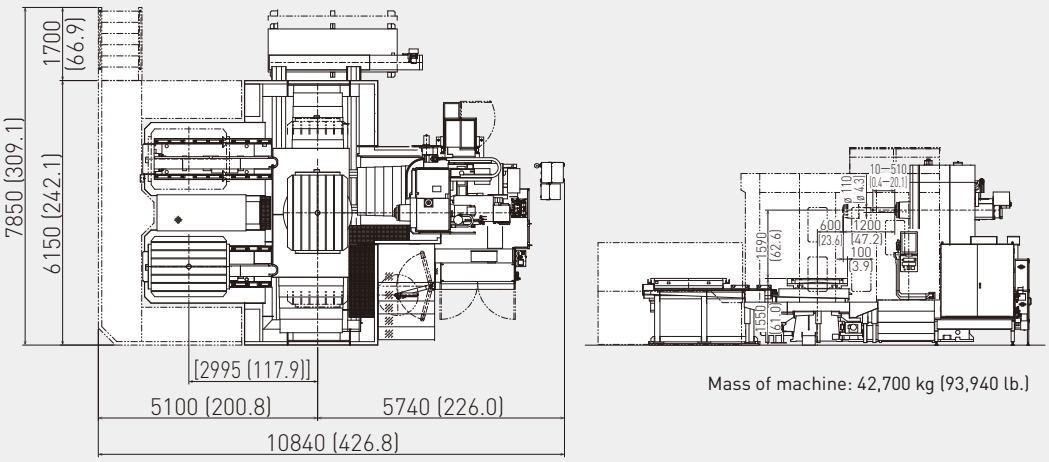
KBT 11W AP



Mass of machine: 40,700 kg (89,540 lb.)

mm (in.)

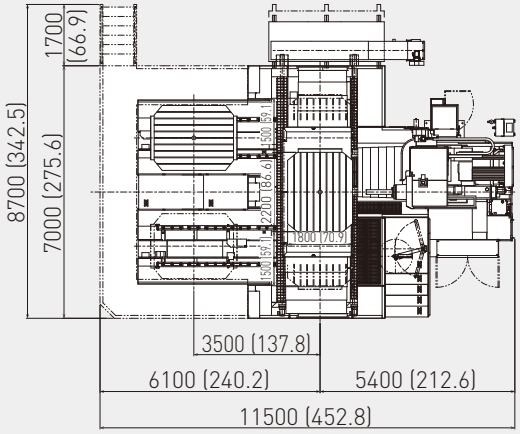
KBT 11Z P / 11EZ P

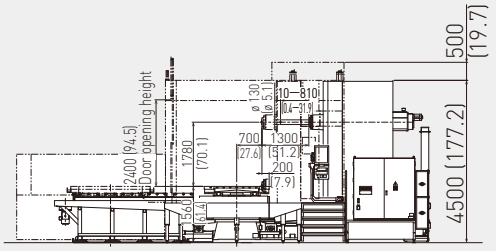


Mass of machine: 42,700 kg (93,940 lb.)

mm (in.)

KBT 13 AP / 13E AP / 15 AP

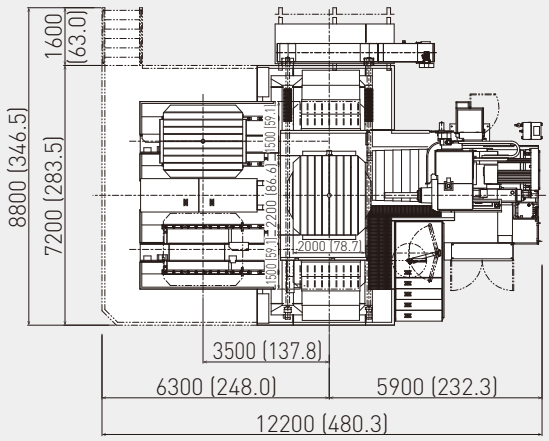


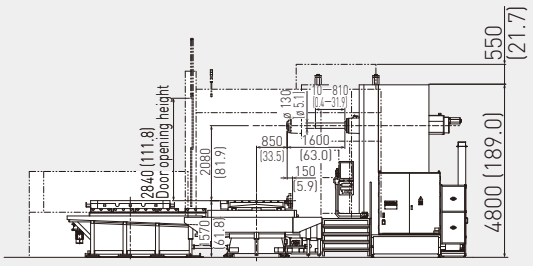


Mass of machine: 56,900 kg (125,180 lb.) <KBT 13 AP>
57,900 kg (127,380 lb.) <KBT 13E AP / 15 AP>

mm (in.)

KBT 13B AP / 13EB AP / 15B AP





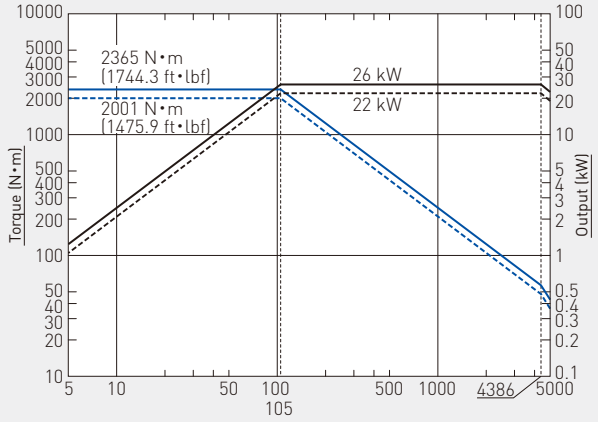
Mass of machine: 63,300 kg (139,260 lb.)

Torque / Output diagram

Torque <30 min> Torque <cont> Output <30 min> Output <cont>

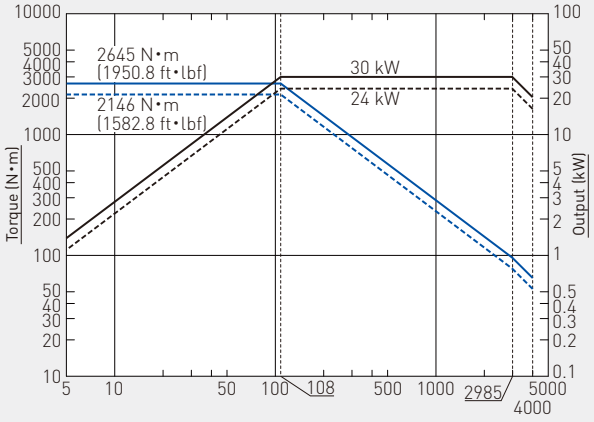
KBT 11 A, KBT 11 W A, KBT 11Z, KBT 11EZ

5,000 min^{-1} // 26 / 22 kW (34.7 / 30 HP)



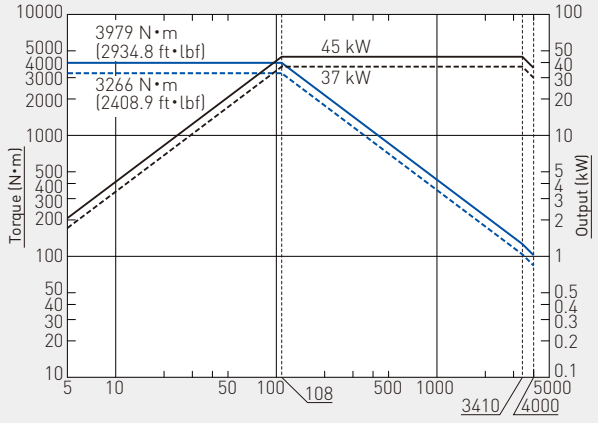
KBT 13 A

4,000 min^{-1} // 30 / 24 kW (40 / 32 HP)



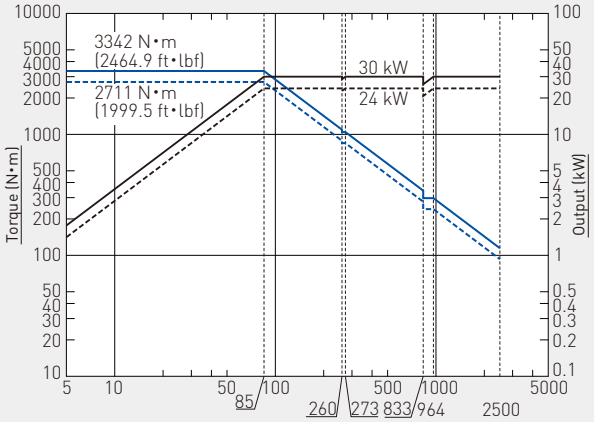
KBT 13 E A

4,000 min^{-1} // 45 / 37 kW (60 / 50 HP)



KBT 15 A

2,500 min^{-1} // 30 / 24 kW (40 / 32 HP)



Machine Specifications

			KBT 11 A	KBT 11W A	KBT 11Z	KBT 11EZ
Structure type			Saddle traverse type		Column traverse type	
Travel						
X-axis travel <table longitudinal>		mm (in.)	1,700 (66.9)	2,000 (78.7)	2,500 (98.4)	
Y-axis travel <spindle vertical>		mm (in.)	1,500 (59.1)		1,800 (70.9)	
Z-axis travel <table cross>		mm (in.)	1,150 (45.3)	1,450 (57.1)	—	
Z-axis travel <column cross>		mm (in.)	—		1,200 (47.2)	
W-axis travel <spindle axial>		mm (in.)	500 (19.7)			
Distance from table top to spindle center		mm (in.)	0—1,500 (0—59.1)		0—1,800 (0—70.9)	
Distance from table center to spindle nose		mm (in.)	400—1,550 (15.7—61.0)	550—2,000 (21.7—78.7)	600—1,800 (23.6—70.9)	
Table						
Table work space		mm (in.)	1,200 × 1,400 (47.2 × 55.1)	1,400 × 1,600 (55.1 × 63.0)	1,400 × 1,750 (55.1 × 68.9)	
Table maximum loading capacity		kg (lb.)	5,000 (11,000)	6,500 (14,300)	10,000 (22,000)	
Table top profile			22 mm (0.9 in.) 7T slots			
T-slot pitch		mm (in.)	160 (6.3)	190 (7.5)		
Table auto. Indexing <every 90° index. by locator pin>			0.0001°			
Spindle head						
Boring spindle diameter		mm (in.)	110 (4.3)			
Spindle speed <for every 1 min^{-1}>		min^{-1}	5—5,000			
Spindle speed range		step	3			
Spindle taper			7/24 Taper No.50 (BBT50 BIG-PLUS spindle system dual contact is available)			
Feed						
Rapid traverse	X-, Y-, Z-axis	m/min (ipm)	15 (590.6)			18 (708.7)
	W-axis	m/min (ipm)	10 (393.7)			
Feed rate		mm/min (ipm)	1—8,000 (0.04—315.0)			1—12,000 (0.04—472.4) 1—8,000 (0.04—315.0) <W-axis>
Table revolution <B-axis>		min^{-1}	2.0			
Automatic Tool Changer (ATC)						
Tool shank			MAS BT50			
Pull stud			MAS P50T-1 (45°)			
Tool storage capacity		pc	40			
Max. tool diameter (vacant adjacent pots)		mm (in.)	125 (4.9) [240 (9.4)]			
Max. tool length		mm (in.)	400 (15.7)		600 (23.6)	
Max. tool weight		kg (lb.)	25 (55)		30 (66)	
Tool selection system			Fixed address, shortcut rotation at random			
Motors						
Spindle motor <30 min / cont>		kW (HP)	AC26 / 22 (34.7 / 30)			
Voltage						
Electric power supply <Not incl. opt>		kVA	60		66	68
Air pressure source pressure		MPa (psi)	0.5 (72.5)			
Air pressure source flow <Not incl. opt>		NL/min	1,000 <atm>			1,200 <atm>
Dimensions						
Machine height		mm (in.)	3,950 (155.5)		4,600 (181.1)	
Floor space <Not incl. opt>		mm (in.)	6,065 × 8,000 (238.8 × 315.0)	6,475 × 8,450 (254.9 × 332.7)	7,500 × 7,500 (295.3 × 295.3)	
Machine weight <Incl. NC unit>		kg (lb.)	27,800 (61,160)	30,800 (67,760)	32,800 (72,160)	

- BIG-PLUS is a trademark registered by BIG DAISHOWA SEIKI CO LTD.
- Catalog information last updated in July 2024.

Machine Specifications

		KBT 13 A	KBT 13E A	KBT 13B A	KBT 13EB A	KBT 15 A	KBT 15B A
Structure type		Column traverse type					
Travel							
X-axis travel <table longitudinal>	mm (in.)	3,000 (118.1)					
Y-axis travel <spindle vertical)	mm (in.)	2,000 (78.7)		2,300 (90.6)		2,000 (78.7)	2,300 (90.6)
Z-axis travel <column cross>	mm (in.)	1,300 (51.2)		1,600 (63.0)		1,300 (51.2)	1,600 (63.0)
W-axis travel <spindle axial>	mm (in.)	800 (31.5)				900 (35.4)	
Distance from table top to spindle center	mm (in.)	0—2,000 (0—78.7)		0—2,300 (0—90.6)		0—2,000 (0—78.7)	0—2,300 (0—90.6)
Distance from table center to spindle nose	mm (in.)	700—2,000 (27.6—78.7)		850—2,450 (33.5—96.5)		700—2,000 (27.6—78.7)	850—2,450 (33.5—96.5)
Table							
Table work space	mm (in.)	1,800 × 2,200 (70.9 × 86.6)		2,000 × 2,200 (78.7 × 86.6)		1,800 × 2,200 (70.9 × 86.6)	2,000 × 2,200 (78.7 × 86.6)
Table maximum loading capacity	kg (lb.)	15,000 (33,000)		25,000 (55,000)		15,000 (33,000)	25,000 (55,000)
Table top profile		22 mm (0.9 in.) 7T slots		22 mm (0.9 in.) 9T slots		22 mm (0.9 in.) 7T slots	22 mm (0.9 in.) 9T slots
T-slot pitch	mm (in.)	225 (8.9)		200 (7.9)		225 (8.9)	200 (7.9)
Table auto. Indexing <every 90° index. by locator pin>		0.0001°					
Spindle head							
Boring spindle diameter	mm (in.)	130 (5.1)				150 (5.9)	
Spindle speed <for every 1 min^{-1}>	min^{-1}	5—4,000				5—2,500	
Spindle speed range	step	4		4		3	
Spindle taper		7/24 Taper No.50 (BBT50 BIG-PLUS spindle system dual contact is available)					
Feed							
Rapid traverse X-, Y-, Z-, W-axis	m/min (ipm)	10 (393.7)					
Feed rate	mm/min (ipm)	1—6,000 (0.04—236.2)					
Table revolution <B-axis>	min^{-1}	1.0					
Automatic Tool Changer (ATC)							
Tool shank		MAS BT50					
Pull stud		MAS P50T-1 (45°)					
Tool storage capacity	pc	40					
Max. tool diameter (vacant adjacent pots)	mm (in.)	125 (4.9) (240 (9.4))					
Max. tool length	mm (in.)	600 (23.6)					
Max. tool weight	kg (lb.)	30 (66)					
Tool selection system		Fixed address, shortcut rotation at random					
Motors							
Spindle motor <30 min / cont>	kW (HP)	AC30 / 24 (40 / 32)	AC45 / 37 (60 / 50)	AC30 / 24 (40 / 32)	AC45 / 37 (60 / 50)	AC30 / 24 (40 / 32)	
Voltage							
Electric power supply <Not incl. opt>	kVA	61	79	61	79	61	
Air pressure source pressure	MPa (psi)	0.6 (87.0)				0.5 (72.5)	
Air pressure source flow <Not incl. opt>	NL/min	800 <atm>				400 <atm>	
Dimensions							
Machine height	mm (in.)	5,050 (198.8)		5,350 (210.6)		5,050 (198.8)	5,350 (210.6)
Floor space <Not incl. opt>	mm (in.)	8,400 × 7,200 (330.7 × 283.5)		8,550 × 8,000 (336.6 × 315.0)		8,400 × 7,200 (330.7 × 283.5)	8,550 × 8,000 (336.6 × 315.0)
Machine weight <Incl. NC unit>	kg (lb.)	41,500 (91,300)	42,500 (93,500)	50,000 (110,000)		42,500 (93,500)	50,000 (110,000)

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- Catalog information last updated in July 2024.

		KBT 11 AP	KBT 11W AP	KBT 11Z P / 11EZ P	KBT 13 AP / 13E AP / 15 AP	KBT 13B AP / 13EB AP / 15B AP
Structure type		**Saddle traverse type**		**Column traverse type**		
Main specifications						
X-axis travel <table longitudinal>	mm (in.)	1,700 (66.9)	2,000 (78.7)	2,500 (98.4)	3,000 (118.1)	
Y-axis travel <spindle vertical>	mm (in.)	1,290 (50.8)		1,590 (62.6)	1,780 (70.1)	2,080 (81.9)
Z-axis travel <table cross>	mm (in.)	1,050 (41.3)	1,450 (57.1)	—		
Z-axis travel <column cross>	mm (in.)	—		1,200 (47.2)	1,300 (51.2)	1,600 (63.0)
W-axis travel <spindle axial>	mm (in.)	500 (19.7)			800 / 800 / 900 (31.5 / 31.5 / 35.4)	800 / 900 (31.5 / 35.4)
Distance from table top to spindle center	mm (in.)	0—1,290 (0—50.8)		0—1,590 (0—62.6)	0—1,780 (0—70.1)	0—2,080 (0—81.9)
Table work space	mm (in.)	1,200 × 1,400 (47.2 × 55.1)	1,400 × 1,600 (55.1 × 63.0)	1,400 × 1,750 (55.1 × 68.9)	1,800 × 2,200 (70.9 × 86.6)	2,000 × 2,200 (78.7 × 86.6)
Table maximum loading capacity	kg (lb.)	3,500 (7,700)	4,500 (9,900)	5,500 (12,100)	10,000 (22,000)	15,000 (33,000)
Max. swing of workpiece	mm (in.)	ø 2,000 (ø 78.7)	ø 2,200 (ø 86.6)	ø 2,400 (ø 94.4)	ø 3,200 (ø 125.9)	
Max. width of workpiece	mm (in.)	1,400 (55.1)	1,600 (62.9)	2,300 (90.5)	2,200 (86.6)	
Max. workpiece height	mm (in.)	1,400 (55.1)		1,700 (66.9)	1,900 (74.8)	2,200 (86.6)
Table auto. Indexing <every 90° index. by locator pin>		0.0001°				
Boring spindle diameter	mm (in.)	110 (4.3)			130 / 130 /150 (5.1 / 5.1 / 5.9)	
Spindle Max. speed <for every 1 min^{-1}>	min^{-1}	5,000			4,000 / 4,000 / 2,500	
Table revolution <B-axis>	min^{-1}	2.0			1.0	
Machine weight	kg (lb.)	36,700 (80,740)	40,700 (89,540)	42,700 (93,940)	56,900 / 57,900 / 57,900 (125,180 / 127,380 / 127,380)	63,300 (139,260)

● Catalog information last updated in July 2024.

Numerical Control Unit Specifications

FANUC F31iB5 Plus

●: Standard
○: Option

		F31iB5 Plus
Controlled axes		
Controlled axes	X, Y, Z, W, B	●
Simultaneously controlled axes	5 axes	●
Additional axis control	2 axes	○
Program input		
Least input increment	X , Y , Z, W: 0.001 mm (0.0001 in.) B: 0.0001°	●
Max. programmable dimension	±9 digits	●
Absolute / Incremental programming	G90 / G91	●
Decimal point programming / Calculator type decimal point programming		●
Inch / Metric conversion	G20 / G21	●
Polar coordinate command	G15 / G16	○
Interpolation functions		
Positioning	G00	●
Linear interpolation	G01	●
Circular interpolation	G02 / G03	●
Helical interpolation	G02 / G03 (circular + linear)	●
Involute interpolation	G02.2 / G03.2	○
Cylindrical interpolation	G07.1	○
Smooth interpolation	G05.1*1	○
Smooth tolerance control+	G05.1*1	○
Conical / Spiral interpolation		○
3D circular interpolation	G02.4 / G03.4	○
Feed functions		
Feed per minute / Feed per revolution	G94 / G95	●
Dwell	G04 (0—99,999.999 seconds)	●
Rapid traverse override	F0—100% (20 steps)	●
Feed rate override	0—200% (10% increments, 20 steps)	●
Exact stop, Exact stop mode	G09 / G61	●
Manual pulse generator	1 unit × 1, × 10, × 50, × 100 (per pulse)	●
Thread cutting, Synchronous cutting	G33	○
Program storage & editing		
UPS program	Capacity: 1 GB Program no.: 980	●
Program editing	Creation, deletion, edit, search, etc.	●
Expanded program editing	Replacement, copy, transfer, etc.	●
Background editing		●
Program file name	32 characters	●
Program number	4-digits	●
Program search		●
Sequence number	N8 digits	●
Sequence number search		●
Main program / Sub program	Sub program calls can be nested up to ten levels	●

●: Standard
○: Option

		F31iB5 Plus
Operation display		
LCD / MDI panel	Color LCD Touch panel	●
Clock function		●
Run hour & Parts count display		●
Load meter display		●
Alarm message display		●
Alarm history display		●
Operation history display		●
Periodic maintenance screen		●
Maintenance information screen		●
Erase LCD screen display		●
Synchronous drawing		●
3D cutting simulation		●
Machining time stamp function		○
Data input / output functions		
USB memory input / output		●
Embedded Ethernet	Supporting 100 Mbps	●
Fast data server + Memory card for data server*2*3	Files up to 10 MB in size can be edited	○
Tool compensation		
Tool length offset	G43/ G44	●
Tool radius offset	G41 / G42	●
Tool offset pairs	64 pairs	●
Additional tool offsets	Total 99 / 200 / 400 / 499 / 999 pairs	○
Tool offset memory C	D/H code, geometry / wear	●
Tool length measurement		●
Tool position offset	G45 / G46 / G47 / G48	●
3D tool offset	G41 / G42	○
Coordinate system		
Reference position return manual		●
Reference position return automatic	G28	●
Machine coordinate system selection	G53	●
Workpiece coordinate system selection	G54 — G59	●
Workpiece coordinate system setting	G92	●
Workpiece coordinate system preset	G92.1 (Workpiece coordinate system shift is cleared.)	●
Local coordinate system setting	G52	●
Addition of work coordinate system pairs	48 / 300 pairs	○

*1 AI contour control II is required.
*2 CF card (1 GB, 2 GB, 4 GB, 16 GB)
*3 Please select it when operating a minute light segment program of 10 MB or higher.
● Catalog information last updated in July 2024.

Numerical Control Unit Specifications

FANUC F31iB5 Plus

●: Standard
○: Option

		F31iB5 Plus
Operation help functions		
Program stop	M00	●
Optional stop	M01	●
Single block		●
Optional block skip	1 block	●
	1, 2, 3, 4 (Total 4 blocks)	○
Dry run		●
All axis machine lock		●
W-, Z-axis command cancel		●
Auxiliary function lock	S, M, T command ignored	●
Program restart		○
Manual intervention and recovery		●
Programmable data / parameter input	G10	●
Help function		●
Sequence number comparison and stop		●
Program help functions		
Canned cycle for drilling	G73, G74, G76, G80—G89, G98, G99	●
Custom macro common variables	600 variables	●
Addition custom macro common variables	Total 1,100 variables	○
FS15 program format		●
Mirror image	Setting and M command M40, M41, M42	●
Programmable mirror image	G51.1 / G50.1	○
Coordinate rotation	G68 / G69	●
Scaling	G51 / G50	○
Play back	TEACH JOG, TEACH HANDLE	○
Machining help functions		
Rigid tap (including return function)		●
Auto corner override	G62	●
Optional angle chamfering and corner R		●
Tool life management set	Total 256 sets	○
Additional tool life management set	Total 1,024 sets	○
Precision compensation		
Stored pitch error compensation		●
Backlash compensation of rapid traverse /cutting feed		●
Single direction positioning	G60	●
Straightness compensation		○
Maintenance & Safety		
Over travel		●
Stored stroke check 1		●
Stored stroke check 2, 3	G22 / G23	●
Stroke limit check before move		●
Self-diagnosis function		●
Dual check safety		●

● Catalog information last updated in July 2024.

Standard & Optional Features

●: Standard features
○: Options

		KBT
Spindle		
Milling spindle extension	200 mm (7.9 in.)	○
ATC magazine		
Interruption for magazine rotation		●
Tool storage capacity	60, 90, 120 tools	○
Maximum tool length extension		○
APC (Automatic Pallet Changer)		
2 pallets shuttle type		○
Table		
NC indexing table	0.0001° indexing (by positioning pin every 90°)	●
Plane table*1		○
Combination table type*1		○
Additional table reference groove		○
Through-spindle		
Through-spindle coolant	1.5 MPa (217.5 psi)	○
	7 MPa (1,015 psi)	○
Through-spindle air		○
Through-spindle mist		○
Stroke		
X-axis stroke	KBT 11Z: 3,000 mm (118.1 in.) KBT 13 A / 13E A / 15 A / 13B A / 15B A: 4,000 mm (157.5 in.)	○
Y-axis stroke	KBT 11 A / 11W A: 1,800 mm (70.9 in.) KBT 11Z / 11EZ: 2,000 mm (78.7 in.) KBT 13 A / 13E A / 15 A: 2,300 mm (90.6 in.), 2,500 mm (98.4 in.) KBT 13B A / 15B A: 2,500 mm (98.4 in.)	○
Z-axis stroke	KBT 13 A / 13E A / 15 A: 1,600 mm (63.0 in.) KBT 13B A / 15B A: 2,000 mm (78.7 in.)	○
Coolant / Chip disposal		
Spiral chip conveyor		●
External air blow system		●
2 additional coolant nozzles (total 4 pcs.)		○
Oil mist system (Variety of Semi-dry cutting system)		○
Oil-hole drill system (Holder not included)		○
Chip bucket (for lift type chip conveyor)		○
Magnet roller type chip removal device		○
Oil skimmer		○
Scale feed back system		
Absolute position detection type		○
Attachment*2		
Facing head (Manual operation)		○
NC contouring head		○
Vertical milling attachment		○
Universal milling attachment (Manual indexing)		○
Extension head		○
Extension sleeve		○
Positioning block	For angle attachment and etc.	○

*1 Except for KBT 11 A / 11W A.
*2 The attachments cannot be used together with the Oil mist system and Oil-hole drill system.
● Catalog information last updated in July 2024.
● For details, please consult our sales representative.

Standard & Optional Features

●: Standard features
○: Options

		KBT
Operation help		
Power shut off device		●
Cs control		○
IPT		○
Machine management		
Warming up function		○
External run hour display	Auto run	○
	Spindle rotation	○
	Cutting feed	○
	Machine power on	○
Measuring system		
Scale feed back system for X-, Y-, Z-, B-axis		●
Z-, W-axis auto coordinate system setting and tool length compensating function		●
Workpiece reference point auto calculating function by B-axis rotation		●
Guided Centering function		●
Setup Assistant *3		○
Measuring Pro *3		○
Auto tool length measurement (tool breakage detector included) *4		○
Monitoring system		
Load monitor function		●
Energy Monitoring		●
Energy Saving		●
Programming support function		
MAPPS Guidance function		●
High precision machining		
Absolute position detector		●
AI contour control II machining function + High speed processing		○
AI contour control II machining function		○
Safety / Others		
Spindle cooling device		●
Full cover		●
Chip cover for slide ways		●
Manual pulse generator	1	●
Manual handle interruption		●
Work light (waterproof LED lamp)		●
Signal lamp	4	●
Self-diagnosis function		●
Leveling block and foundation plate		●

●: Standard features
○: Options

	KBT
Safety / Others	
Rigid tap	●
Macro pattern cycle	●
Manual (DVD)	●
Earth leakage circuit breaker	○
EC cabinet door interlock	○
Light inside EC cabinet	○
Angle Plate	○

＊3 Included touch sensor uses radio signal transmission.
＊4 2 types of sensors available: touch type and laser type.
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MAPPS: Mori Advanced Programming Production System

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