

6-axis Machining Center
KTR-1200
PRODUCT CATALOG



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KTR1200 2023'3 EN

6-axis Machining Center Combining Advantages of Horizontal Boring Machine and Machining Center — Higher Efficiency With One Setup —



Corresponding to various industrial workpieces requiring multiple axial details to be machined



Aerospace



Energy Plant



Automobile



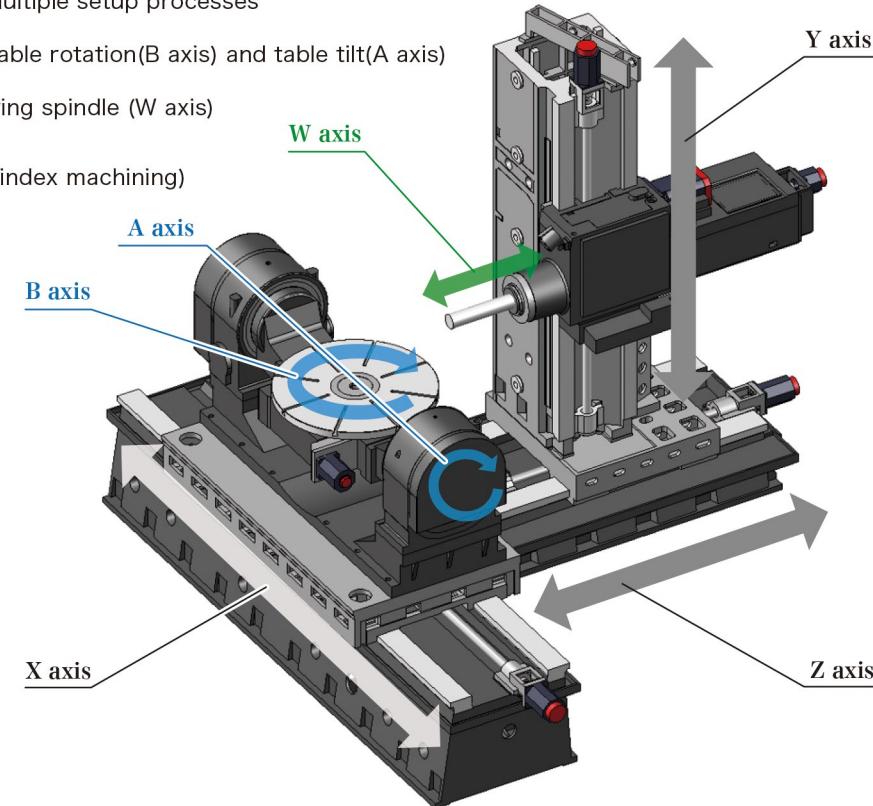
Industrial Machine

Main Body·Table Structure / 2-axis Table+Boring Spindle Structure

KTR-1200

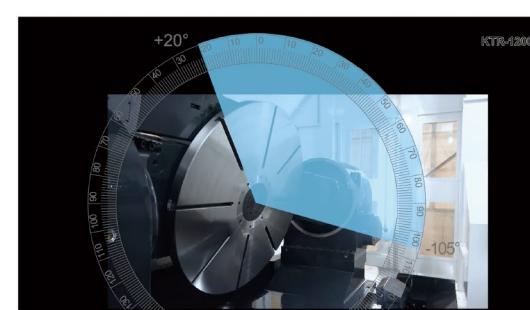
Excellent operability inheriting usability of horizontal boring machines

- Reducing machining time by eliminating multiple setup processes
- Simultaneous 5-axis machining involving table rotation(B axis) and table tilt(A axis)
- More rigid cutting conditions due to a boring spindle (W axis) allowing shorter cutting tools
(Enhancing machining efficiency in 5-axis index machining)



Maximum workpiece size : 1650mm[64.96"] (dia) X 980mm[38.58"] (height)

- Table size : 1,200mm[47.24"] dia. with max. loading capacity of 2,500kg [5,500lbs]
- Long-term high accuracy maintained by carbide worm and worm gear
- Reducing cutting vibration by bearing system with damping mechanism
- Powerful hydraulic clamp and brake system



Tilting angle +20° to -105°

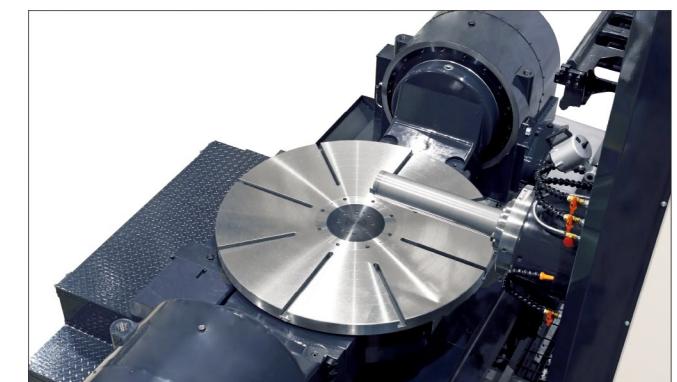
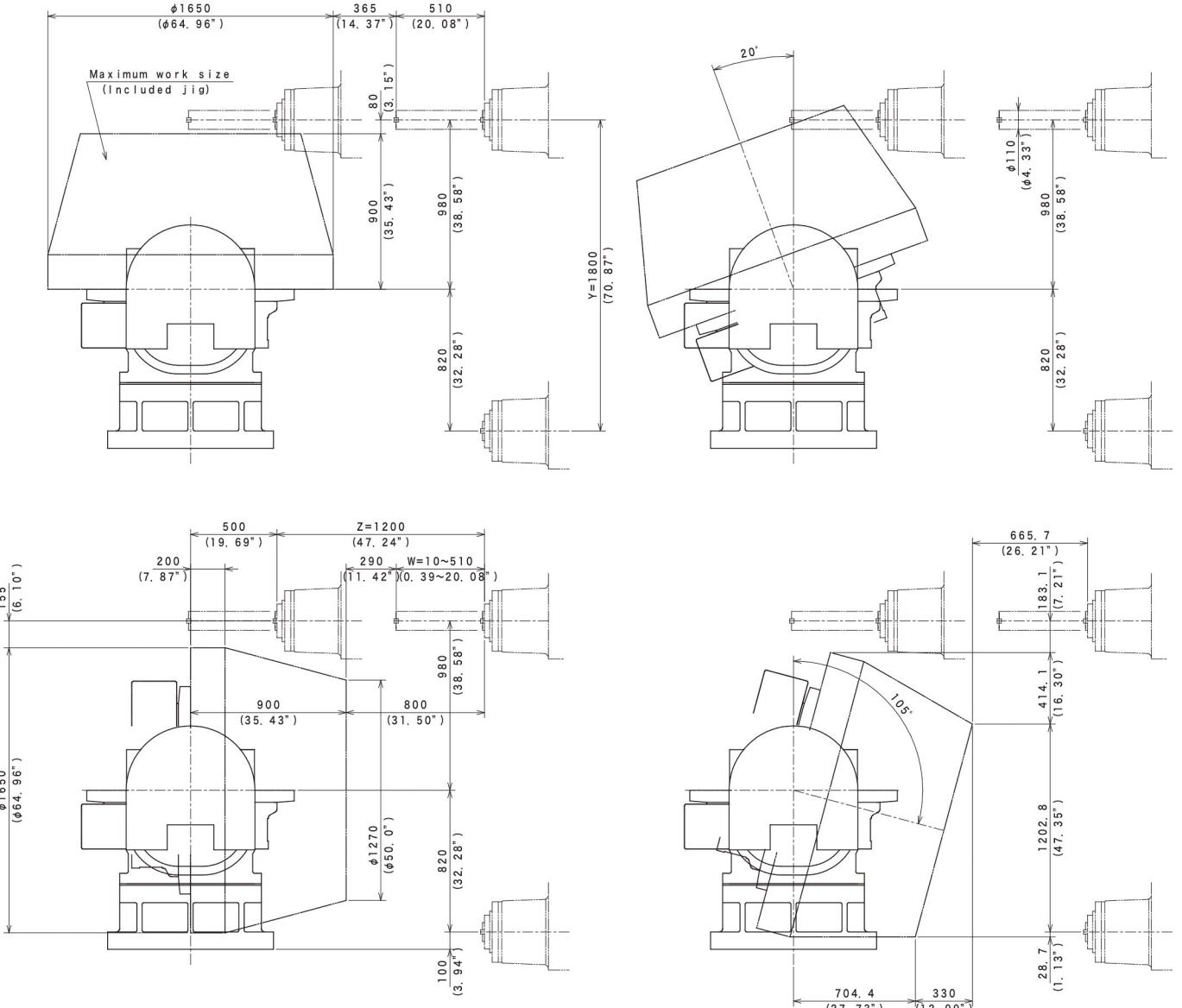


Maximum workpiece size :
1,650mm[64.96"] (dia) X 980mm[38.58"] (height)

	Rotary axis	Tilting axis
Table size	1,200mm[47.24"]	
Loading capacity	2,500kg[5,500lbs]	
Table rotation speed	5.5 rpm	2.7 rpm
Indexing accuracy	± 5"	± 5"
Break torque	14,700 Nm	19,600 Nm
Tilting angle	-	+20°~ -105°

Excellent accessibility to workpiece achieved by 6-axis structure

- Accessibility of workpiece achieved by 6-axis structure



The boring spindle is, even without any tool attached to it, extendable to the table center.

2-axis Table+Boring Spindle Structure / Cutting Capability / Main Body Structure

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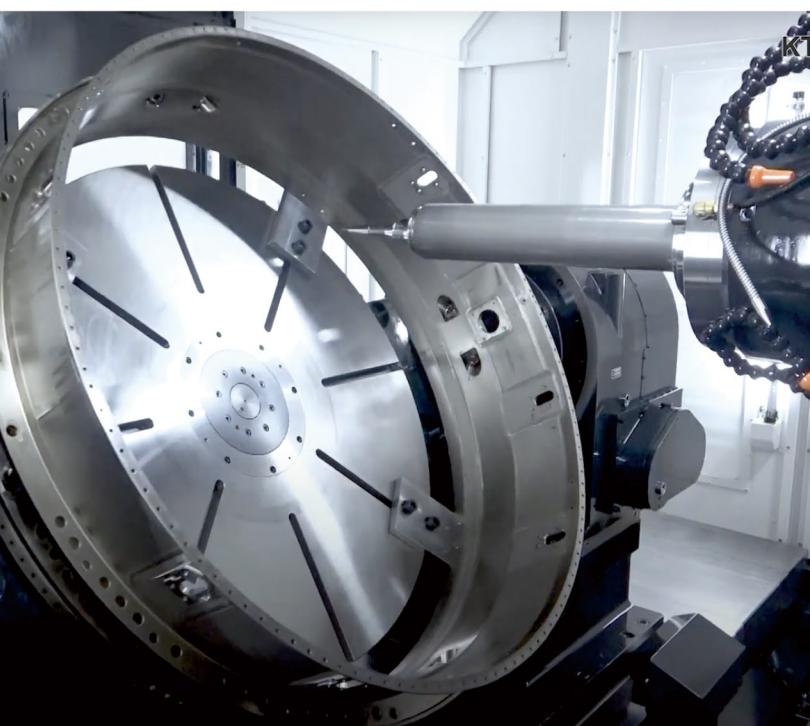
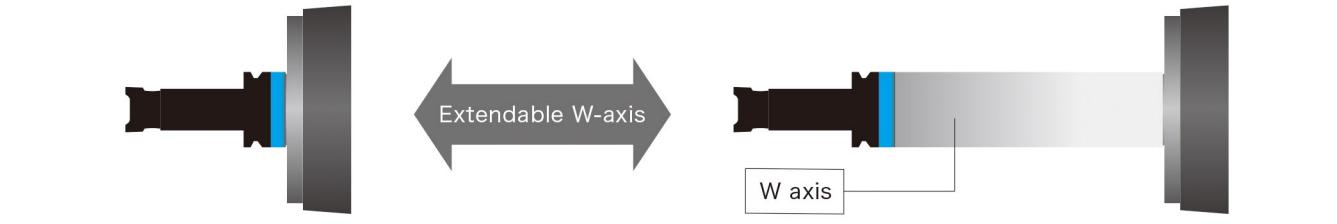
Adopting boring spindle feed not found among typical 5-axis machines

- Boring spindle feed maintains rigidity during machining inside workpiece
- Long tool with rigidity concerns and anti-vibration bar are unnecessary
- Enables machining using an angle attachment
- Enables simultaneous 5-axis machining, which is adaptable to impeller machining
- Workpiece smaller than the table are machinable, which extends the range of target workpieces

Machining on typical machining center



Machining on horizontal boring machine

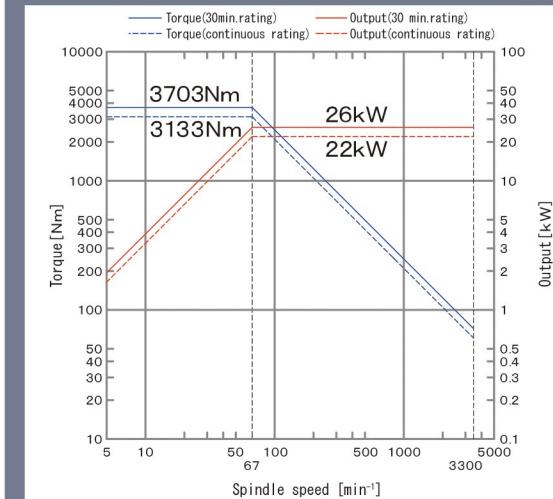


Please watch video
from this QR code.

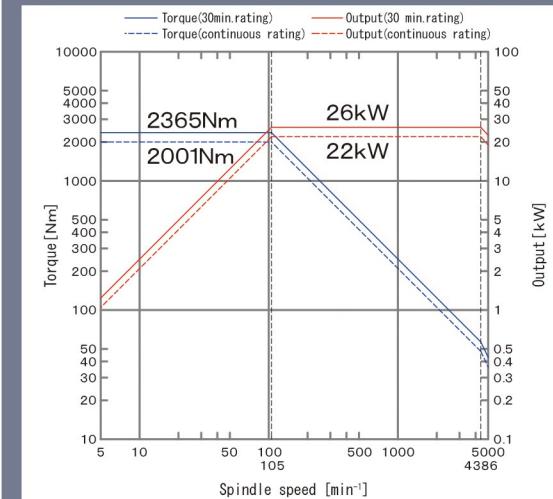
<https://youtu.be/H2BcN0Ray2o>

Three-shift geared spindle drive achieves higher torque for heavy-duty cutting

Spindle speed 5 - 3300 min⁻¹ (standard specifications)



Spindle speed 5 - 5000 min⁻¹ (special specifications)



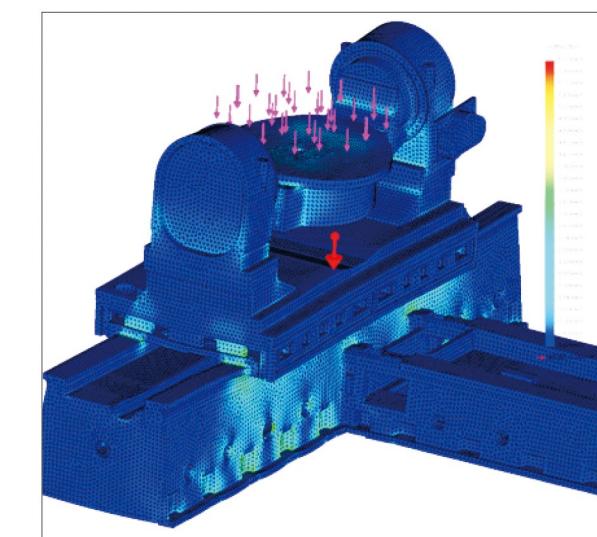
Pursuit of higher accuracy

- To joining the table bed and the column bed improves the rigidity of the entire machine and suppresses vibration.
- Hardened square slide ways on X, Y, and Z axes
- Scale feedback system as standard for A and B axes as well as X, Y, and Z axes
- Spindle thermal displacement compensation system as standard

	Positioning accuracy	Repeatability
X, Y, Z axis	±0.005mm[±0.0002"]	±0.003mm[±0.0001"]
W axis	±0.010mm[±0.0004"]	±0.005mm[±0.0002"]
B axis	± 5"	± 3"
A axis	± 5"	± 3"



Combination of table bed and column bed



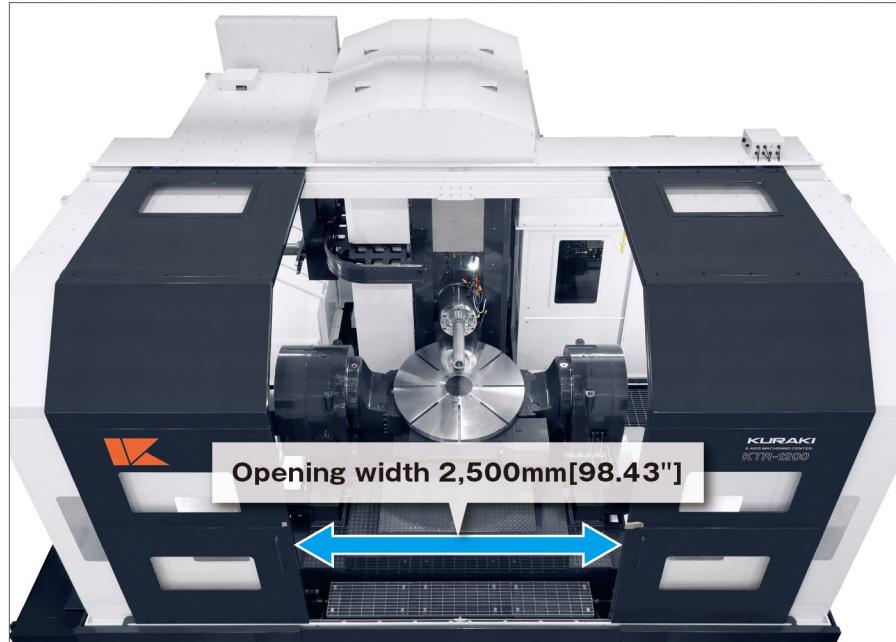
Higher machine rigidity and improved machined surface quality

Peripheral Equipment / Operability / Overall Dimensions / Machine Specifications

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Full cover type splash guard for high-pressure through-spindle coolant and safety operation

High-Pressure through-spindle coolant unit and mist collector (optional accessories) are attachable.

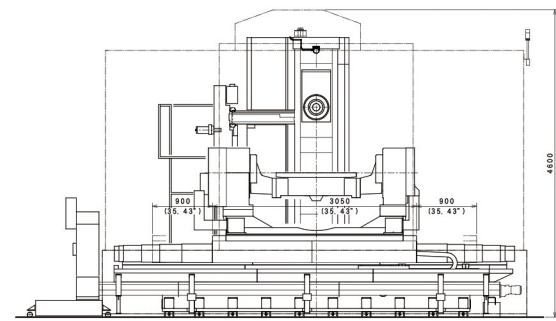
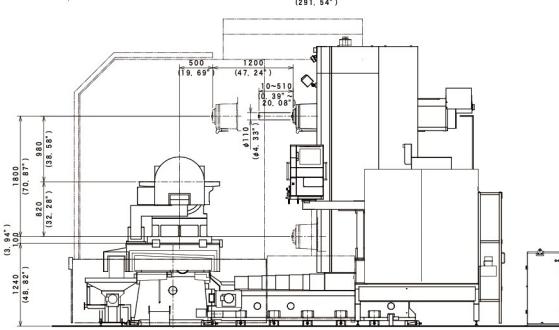
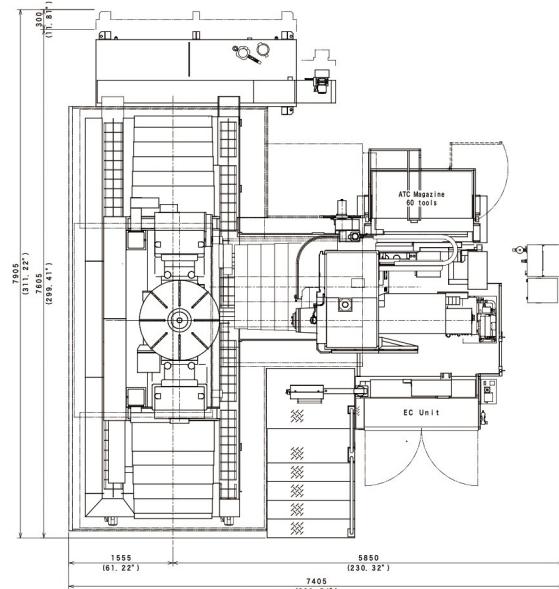


Equipped with FANUC CNC having excellent 5-axis machining function

The operation panel is ergonomic in design for ease of use in all work areas of the machine.



Overall Dimensions • Machine Specifications



Stroke		Automatic Tool Changer	
X axis travel (table longitudinal)	1,800 mm [70.87"]	Tool shank type	CT(BT) No.50
Y axis travel (spindle vertical)	1,800 mm [70.87"]	Pull stud type	MAS P50T-1 (45 deg)
Z axis travel (column cross)	1,200 mm [47.27"]	Tool storage capacity	60 tools
W axis travel (spindle axial)	500 mm [19.69"]	Max. tool diameter	125 mm [4.92"] - Continuous Storage 240 mm [9.45"] - Vacant adjacent pots
Distance from table top to spindle center	-820 thru 980 mm [-32.28" thru 38.58"]	Distance from table center to milling spindle nose	500 thru 1,700 mm [19.69" thru 66.93"]
Distance from table center to milling spindle nose	500 thru 1,700 mm [19.69" thru 66.93"]	Max. tool length	600 mm [23.62"]
		Max. tool weight	30 kg [66 lbs]
Table		Tool selection system	
Table work space	Dia. 1,200 mm [47.24"]	Tool selection system	Fixed address, shortcut rotation at random
Tilt angle range	+20 thru 105 deg	Motors	
Table maximum loading capacity	2,500 kg [5,500 lbs]	Spindle motor	AC 26 / 22 kW
Table top profile	22 mm [0.87"]x8 T-slots	Feed axis motor X axis	AC 9.0 kW
Table auto. indexing	0.001 deg	Y axis	AC 3.0 kW
Spindle Head		Z axis	AC 9.0 kW
Boring spindle diameter	110 mm [4.33"]	W axis	AC 3.1 kW
Spindle speed (for every 1 min ⁻¹)	5 thru 3,300 min ⁻¹	A axis	AC 7.0 kW
Spindle speed change range	3 steps	B axis	AC 4.0 kW
Spindle torque	3,183 / 2,694 Nm	Voltage	
Spindle taper	7/24 taper No.50	Capacity	67 kVA
Feedrate		Air pressure source	0.5 MPa 400 NL/min(atm.)
Rapid traverse (X, Y, Z axis)	12 m/min [472.44"]	Dimensions	
(W axis)	10 m/min [393.70"]	Machine height	4,600 mm [181.10"]
Feedrate	1 thru 6,000 mm/min [0.04" thru 236.22"]	Floor space (Not incl. opt)	7,600 x 6,775 mm [299.21"x266.73"]
Table revolution (A axis/tilting axis)	2.7 min ⁻¹	Machine weight	40,000 kg [88,000 lbs]
(B axis/rotary axis)	5.5 min ⁻¹		

Specifications

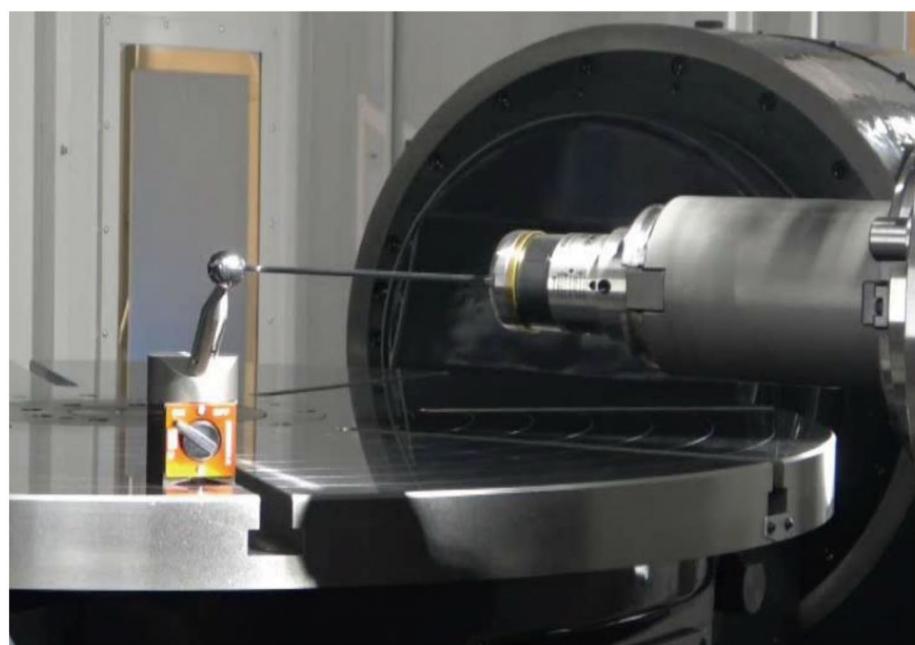
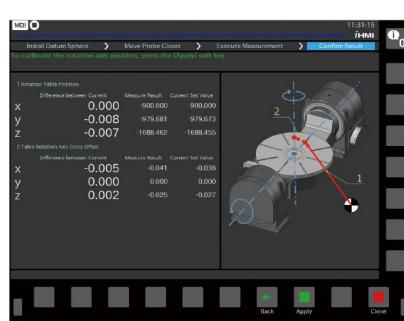
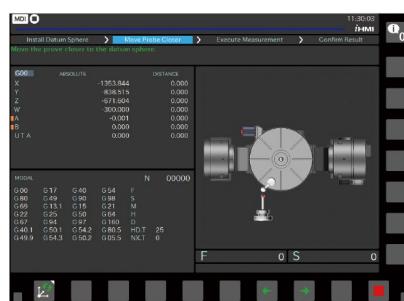
1. Standard Accessories

1	Coil type chip conveyor
2	Spindle cooling device
3	Chip cover for slide ways
4	Manual pulse generator (1 pc)
5	Work light and signal light
6	Power shutt off device
7	Monolever type job feed
8	Scale feedback system (X, Y, Z, A, B axis)
9	Absolute position detection system (X, Y, Z, W, A, B axis)
10	Maintenance screen
11	Tool & tool box for reassembly
12	Leveling block and foundation bolt
13	Z, W axis auto coordinate system setting and tool length compensating function [G143]
14	External air blow
15	Interruption for magazine rotation
16	Manual handle interruption
17	Electric spare parts
18	Relocation detection unit
19	Macro pattern cycle
20	Splash guard whole cover type
21	A, B axis centering kit (with Renishaw RMP 600 probe system)
22	Spindle thermal distortion compensating system

2. Special / Optional Specifications

1	ATC 90 tools
2	ATC 120 tools
3	Oil skimmer system
4	Centering system automatic type
5	Auto tool length measurement (Renishaw laser type)
6	Spindle speed 5 ~ 5000 min-1
7	Coolant through spindle unit (Max. pressure 7MPa)
8	Coolant device
9	Extension head L=220 mm (include ATC rail extension)

Rotary axis position measurement function for facilitating 5-axis calibration



3. FANUC 31i-B5 PLUS Specifications

	Standard	Option
HRV3 control	<input type="radio"/>	<input type="radio"/>
NURBS interpolation [G06.2]	<input type="radio"/>	<input type="radio"/>
Smooth tolerance control [G05.1]	<input type="radio"/>	<input type="radio"/>
AI contour control II	<input type="radio"/>	<input type="radio"/>
High-speed processing	<input type="radio"/>	<input type="radio"/>
Tilted working plane indexing command [G68.2]	<input type="radio"/>	<input type="radio"/>
3-dimensional coordinate system conversion [G68/G69]	<input type="radio"/>	<input type="radio"/>
Retraction for -dimensional rigid tapping	<input type="radio"/>	<input type="radio"/>
Manual interruption of 3-dimensional coordinate system conversion	<input type="radio"/>	<input type="radio"/>
3-dimensional coordinate system conversion	<input type="radio"/>	<input type="radio"/>
High-speed smooth TCP	<input type="radio"/>	<input type="radio"/>
Smooth TCP	<input type="radio"/>	<input type="radio"/>
Expansion of axis move command in tool center point control [G43.4/G43.5]	<input type="radio"/>	<input type="radio"/>
3-dimensional cutter compensation	<input type="radio"/>	<input type="radio"/>
Work setting error compensation	<input type="radio"/>	<input type="radio"/>
Rotary axis position measuring function	<input type="radio"/>	<input type="radio"/>
3-dimensional manual feed	<input type="radio"/>	<input type="radio"/>
Look-ahead blocks expansion	<input type="radio"/>	<input type="radio"/>
Control axes 6 axes (X, Y, Z, W, A, B axis)	<input type="radio"/>	<input type="radio"/>
Simultaneously controlled axes 5 axes: Positioning, Linear interpolation 2 axes: Circular interpolation	<input type="radio"/>	<input type="radio"/>
Increment system 0.001mm (X,Y,Z,W axis) 0.001deg.(A,B axis)	<input type="radio"/>	<input type="radio"/>
Max. programmable dimension \pm 9 digit	<input type="radio"/>	<input type="radio"/>
Absolute/incremental programming [G90/G91]	<input type="radio"/>	<input type="radio"/>
Decimal point programming / pocket calculator type decimal point programming	<input type="radio"/>	<input type="radio"/>
Inch/metric conversion [G20/G21]	<input type="radio"/>	<input type="radio"/>
Polar coordinate command [G15/G16]	<input type="radio"/>	<input type="radio"/>

	Standard	Option
Positioning [G00]	<input type="radio"/>	<input type="radio"/>
Linear interpolation [G01]	<input type="radio"/>	<input type="radio"/>
Circular interpolation [G02/G03]	<input type="radio"/>	<input type="radio"/>
Helical interpolation [G02/G03] Circular plus linear	<input type="radio"/>	<input type="radio"/>
Involutes interpolation [G02.2/G03.2]	<input type="radio"/>	<input type="radio"/>
Cylindrical interpolation [G07.1]	<input type="radio"/>	<input type="radio"/>
Smooth interpolation [G05.1]	<input type="radio"/>	<input type="radio"/>
Conical/spiral interpolation	<input type="radio"/>	<input type="radio"/>
3 dimensional circular interpolation [G02.4/G03.4]	<input type="radio"/>	<input type="radio"/>
Feed per minute / Feed per revolution [G94/G95]	<input type="radio"/>	<input type="radio"/>
Dwell [G04] (0~99999.999 seconds)	<input type="radio"/>	<input type="radio"/>
Rapid traverse override (0,Low,25,50,100%)	<input type="radio"/>	<input type="radio"/>
Feedrate override 0~240% (every 10%)	<input type="radio"/>	<input type="radio"/>
Exact stop / Exact stop mode [G09/G61]	<input type="radio"/>	<input type="radio"/>
Bell-shaped acceleration/deceleration after cutting feed interpolation	<input type="radio"/>	<input type="radio"/>
Manual pulse generator 1 pc	<input type="radio"/>	<input type="radio"/>
X, Y, Z, W axis: 0.001 / 0.01 / 0.1 mm (per 1 graduation)	<input type="radio"/>	<input type="radio"/>
A, B axis: 0.001 / 0.01 deg. (per 1 graduation)	<input type="radio"/>	<input type="radio"/>
One-digit F code feed	<input type="radio"/>	<input type="radio"/>
Thread cutting, synchronous cutting [G33]	<input type="radio"/>	<input type="radio"/>
Program storage capacity / Number of registrable programs 4MB (= 10240 m)、1000 pc's	<input type="radio"/>	<input type="radio"/>
Program storage capacity 8MB (= 20480 m)	<input type="radio"/>	<input type="radio"/>
Registrable program expansion 2 (Total 4000 pc's)	<input type="radio"/>	<input type="radio"/>
Program editing, creation, deletion, edit, search etc.	<input type="radio"/>	<input type="radio"/>
Expanded program editing, replacement, copy, transfer etc.	<input type="radio"/>	<input type="radio"/>
Background editing	<input type="radio"/>	<input type="radio"/>
Program file name 32 characters	<input type="radio"/>	<input type="radio"/>
Program number 04 digits	<input type="radio"/>	<input type="radio"/>
Program number search	<input type="radio"/>	<input type="radio"/>
Sequence number N8 digits	<input type="radio"/>	<input type="radio"/>
Sequence number search	<input type="radio"/>	<input type="radio"/>
Main program / Sub program (Sub program calls can be nested up to 10 levels)	<input type="radio"/>	<input type="radio"/>
LCD/MDI panel 15 inch LCD touch panel	<input type="radio"/>	<input type="radio"/>
Clock function	<input type="radio"/>	<input type="radio"/>
Run hour & Parts count display	<input type="radio"/>	<input type="radio"/>
Load meter display	<input type="radio"/>	<input type="radio"/>
Alarm message display	<input type="radio"/>	<input type="radio"/>
Alarm history display	<input type="radio"/>	<input type="radio"/>
Operation history display	<input type="radio"/>	<input type="radio"/>
Periodic maintenance screen	<input type="radio"/>	<input type="radio"/>
Maintenance information screen	<input type="radio"/>	<input type="radio"/>
Erase LCD screen display	<input type="radio"/>	<input type="radio"/>
Graphic display (Tool path drawing during machining)	<input type="radio"/>	<input type="radio"/>
Multi-language display (Choice of 5 optional languages)	<input type="radio"/>	<input type="radio"/>
iHMI machining preview	<input type="radio"/>	<input type="radio"/>
Tool path drawing and animation drawings, Drawings of another program not during machining	<input type="radio"/>	<input type="radio"/>
Machining time stamp function	<input type="radio"/>	<input type="radio"/>
RS232C interface 1	<input type="radio"/>	<input type="radio"/>
Memory card input/output (PC card slot)	<input type="radio"/>	<input type="radio"/>
USB memory input/output	<input type="radio"/>	<input type="radio"/>
Embedded Ethernet (supporting 100Mbps)	<input type="radio"/>	<input type="radio"/>
Fast data server (CF card is required)	<input type="radio"/>	<input type="radio"/>
CF card capacity 128MB/256MB/1GB/2GB/4GB/16GB/32GB Note that 4GB/16GB/32GB can be used only for fast data server. PC card adapter included for use in the card slot on the side of the operation panel.	<input type="radio"/>	<input type="radio"/>

	Standard	Option
Tool length compensation [G43/G44]	<input type="radio"/>	<input type="radio"/>
Tool radius compensation [G41/G42]	<input type="radio"/>	<input type="radio"/>
Tool offset pairs 64 pairs	<input type="radio"/>	<input type="radio"/>
Addition tool offsets Total 99/200/400/499/999/2000 pairs	<input type="radio"/>	<input type="radio"/>
Tool offset memory C (Memory for each figure, abrasion, Tool length: H code, Tool radius: D code)	<input type="radio"/>	<input type="radio"/>
Tool length measurement	<input type="radio"/>	<input type="radio"/>
Tool position compensation [G45/G46/G47/G48]	<input type="radio"/>	<input type="radio"/>
Rotary table dynamic fixture offset	<input type="radio"/>	<input type="radio"/>
Reference point return manual, automatic [G28]	<input type="radio"/>	<input type="radio"/>
Machine coordinate system selection [G53]	<input type="radio"/>	<input type="radio"/>
Workpiece coordinate system selection [G54~G59]	<input type="radio"/>	<input type="radio"/>
Workpiece coordinate system setting [G92]	<input type="radio"/>	<input type="radio"/>
Workpiece coordinate system preset [G92.1]	<input type="radio"/>	<input type="radio"/>
(Workpiece coordinate system shift is cleared)	<input type="radio"/>	<input type="radio"/>
Local coordinate system setting [G52]	<input type="radio"/>	<input type="radio"/>
Absolute position detection	<input type="radio"/>	<input type="radio"/>
Addition of work coordinate system pairs total 48/300 pairs	<input type="radio"/>	<input type="radio"/>
Program stop [M00]	<input type="radio"/>	<input type="radio"/>
Optional stop [M01]	<input type="radio"/>	<input type="radio"/>
Single block	<input type="radio"/>	<input type="radio"/>
Optional block skip 1 pc	<input type="radio"/>	<input type="radio"/>
Optional block skip /1, /2, /3, /4 (total 4 pc's)	<input type="radio"/>	<input type="radio"/>
Dry run	<input type="radio"/>	<input type="radio"/>
All axis machine lock	<input type="radio"/>	<input type="radio"/>
W, Z axis command cancel	<input type="radio"/>	<input type="radio"/>
Auxiliary function lock S,M,T command ignored	<input type="radio"/>	<input type="radio"/>
Program restart	<input type="radio"/>	<input type="radio"/>
Manual intervention and recovery	<input type="radio"/>	<input type="radio"/>
Programmable data, parameter input [G10]	<input type="radio"/>	<input type="radio"/>
Help function	<input type="radio"/>	<input type="radio"/>
Data protection key / Memory protect	<input type="radio"/>	<input type="radio"/>
Sequence number comparison and stop	<input type="radio"/>	<input type="radio"/>
Canned cycle for drilling [G73,G74,G76,G80~G89,G98,G99]	<input type="radio"/>	<input type="radio"/>
Custom macro common variables total 600 pc's	<input type="radio"/>	<input type="radio"/>
Addition custom macro common variable total 1100 pc's	<input type="radio"/>	<input type="radio"/>
FS15 program format	<input type="radio"/>	<input type="radio"/>
Mirror image (Setting and M command [M40, M41, M42])	<input type="radio"/>	<input type="radio"/>
Programmable mirror image [G51.1/G50.1]	<input type="radio"/>	<input type="radio"/>
Coordinate system rotation [G68/G69]	<input type="radio"/>	<input type="radio"/>
Scaling [G51/G50]	<input type="radio"/>	<input type="radio"/>
Play back (TEACH JOG/TEACH HANDLE)	<input type="radio"/>	<input type="radio"/>
Rigid tap (including return function)	<input type="radio"/>	<input type="radio"/>
Auto corner override [G62]	<input type="radio"/>	<input type="radio"/>
Optional angle chamfering and corner R	<input type="radio"/>	<input type="radio"/>
Tool life management total 256 sets	<input type="radio"/>	<input type="radio"/>
Addition tool life management total 1024 sets	<input type="radio"/>	<input type="radio"/>
Over travel	<input type="radio"/>	<input type="radio"/>
Stored stroke check 1	<input type="radio"/>	<input type="radio"/>
Stored stroke check 2, 3 [G22/G23]	<input type="radio"/>	<input type="radio"/>
Stored limit check before move	<input type="radio"/>	<input type="radio"/>
Self-diagnosis function	<input type="radio"/>	<input type="radio"/>
Dual check safety	<input type="radio"/>	<input type="radio"/>