VictorTaichung

Management System
ISO 9001:2008
ISO 14001:2004
TÜVRheinland CERTIFIED
www.tuv.com ID 0091003197

Vcenter-205

Pendulum Machining

High Versatility

- ***Long Fixed Table accommodates heavier loads and long parts.***
- ***Traveling Column provides excellent access to work area.***
- ***Easy installation for rotary tables or hydraulic fixtures.***

High Productivity

- ***Rapid feed X/Y/Z-30/30/30 m/min reduces spindle idle time.***
- ***Directly Coupled Spindle avoids belt vibration for better finish.***
- ***Central Partition enables higher production than VMC with 2-pallet APC.***

Victor Taichung – an established ISO 9001 & 14001 company

Highest Productivity And

Designed by following extensive research and feedback from numerous machine tool users, Victor's new Vcenter-205 has been designed with a long fixed table to provide multi-tasking machining precision with 30 m/min rapid traverse in all axes. The traveling column enables pendulum loading and machining in cycle to reduce load/unload times and to maximize spindle utilization.

Directly-coupled Spindle (DCS) with high torque spindle motor

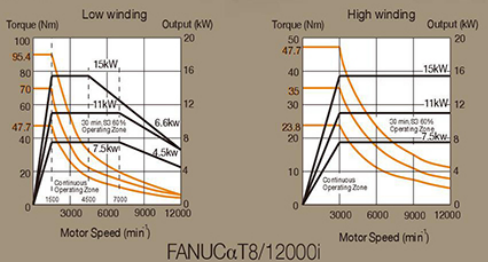
- Spindle motor is directly coupled to the spindle to avoid the vibration resulted from belts and enhance surface finish on components.
- 12000 rpm spindle speed with dual winding for high torque output implements high speed machining at high feed rate.
- Oil-air lubrication with filtration system is used for spindle bearing.
- Air curtain has been added to constantly give the spindle an extra coat of protection.

Spindle oil cooler (Optional)

- While the spindle structure is built for the maximum rigidity, the spindle oil cooler can be installed optional to ensure the long bearing life.
- Cooling oil circulates around the spindle cartridge constantly to maintain the low temperature during the spindle rotation.

High rigidity dynamic structure

- Heavy-duty Meehanite® castings from Victor's licensed Meehanite foundry are used in the bed and column for maximum damping and strength.
- One piece bed castings with a heavily ribbed column minimizes machine distortion.
- CAE (computer aided engineering) design results in a maximum stiffness to ensure the minimum overhang distortion for all Y-axis traveling range 550 mm.



FANUCαT8/12000i

Column-mounted tool magazine and arm type ATC

- Tool magazine moving with column reduces the tool exchange time and ensures tools and kept out of machining area and free of swarf.
- Two arm type ATC offers quick tool changeover time and optimal reliability.
- BT-40 tooling with updated pull stud JIS-40P upgrades the cutting capability than conventional BT-40 tooling.

Reliability

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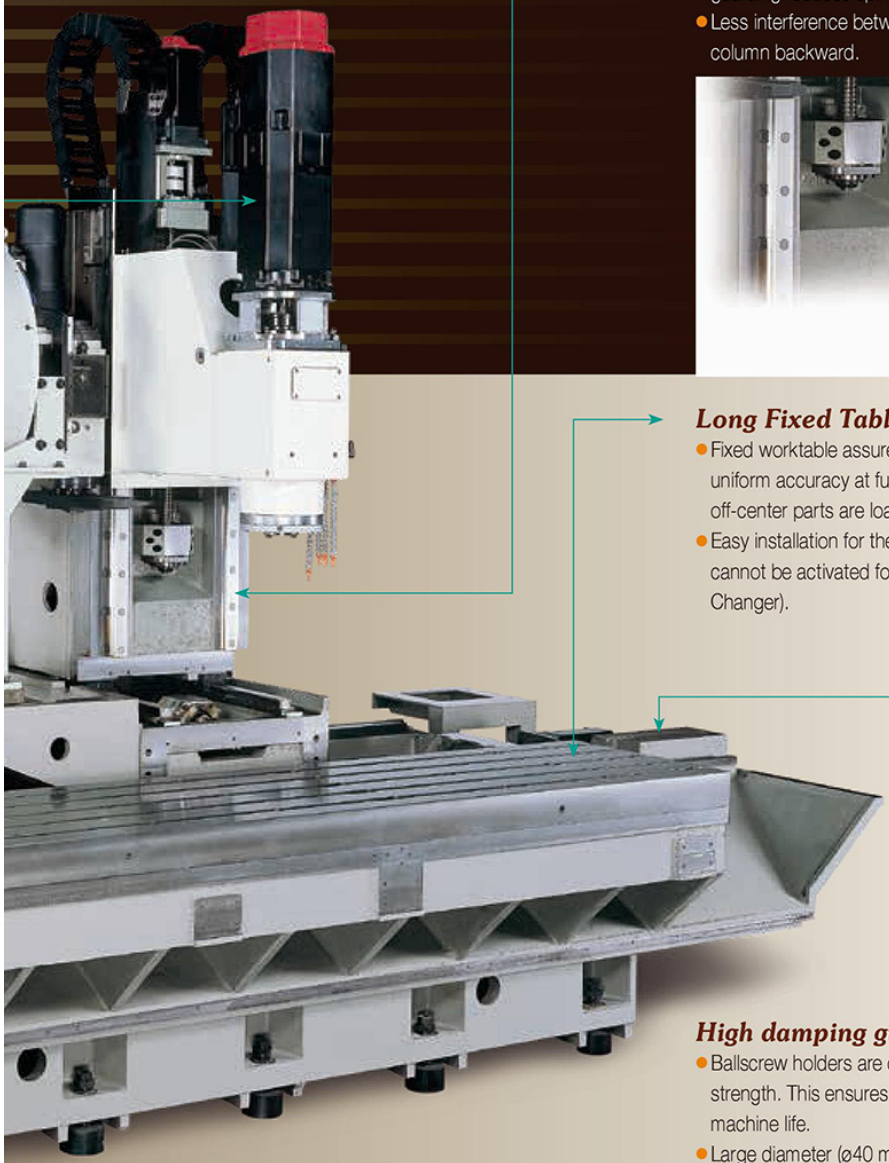
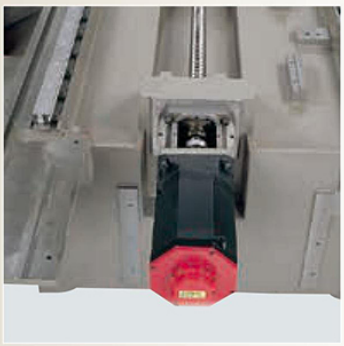
Traveling Column with 30 m/min rapid feed

- C-framed traveling column features easy access to load/unload the components.
- Rapid feed rate 30/30/30 m/min for 3 axes with scissor type telescopic guarding reduces spindle idle time with reliable quality guaranteed.
- Less interference between tool magazine and working area by moving the column backward.



Long Fixed Table

- Fixed worktable assures the evenly distributed loading and features for uniform accuracy at full stroke of X-axis travel even when oversized parts of off-center parts are loaded.
- Easy installation for the 4th axis rotary tables or hydraulic fixtures which cannot be activated for conventional VMC with 2 pallet APC (Auto Pallet Changer).



High damping guide ways with high stiffness

- Ballscrew holders are cast into the machine for even more rigidity and strength. This ensures a constant support for the ballscrews over the entire machine life.
- Large diameter (ø40 mm) ball screws and big size linear guides (width 45 mm) with retainer (model SHS) ensure the high structure stiffness during machining.
- Direct coupled servo motors eliminate motor backlash and noise caused by misalignment.

Victor NC Package

- Fanuc 0i/32i/31i controls to meet various requirement for batch production or high speed machining.
- Heidenhain iTNC-530/TNC-640 controls with user-friendly conversational function to meet mold manufacturing requirement.

High Versatility Through A Wide Range Of Set-ups

With a central partition guarding installed, the Vcenter-205 can effectively be turned into two smaller vertical machining centers, machining on one side while loading or unloading parts on the other side.

Two-door design

Pendulum machining by Central Partition System

- With the central partition guarding installed, the spindle can effectively machine on one side while loading or unloading parts on the other side.
- X-axis travel limit is automatically set up by interlock when partition guarding installed, and the machining area are split into the right and left area.
- The interlock function assures safe setup for one side while machining is made in the other side.
- Central Partition System features higher productivity than that of vertical machining center equipped with a 2-pallet APC.

Easy installation for the 4th/5th axis tables and fixtures

- With a central partition guarding installed, the long table can be mounted with two fixtures or two CNC controlled tables.
- No complicated wiring and cabling involved as the conventional VMC with 2-pallet APC, the fixed table facilitates the ultimate reliability and much heavier loading on the tables.
- Rapid traverse speed 30 m/min by traveling column further offers much higher productivity than conventional VMC with 2-pallet APC.

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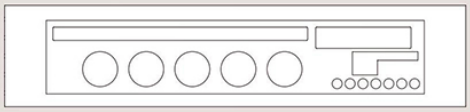
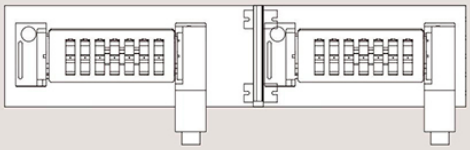
Advantages of Long Fixed Table with Traveling Column

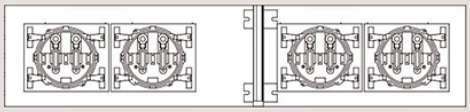
Full Table
with one part loaded



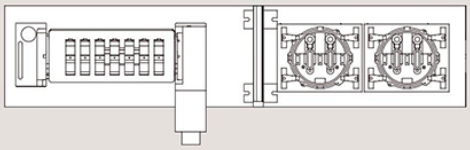
Full Table
with many parts loaded



Split Table
with two identical parts loaded for two different operations

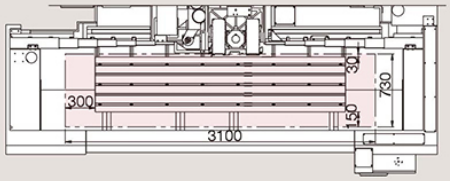


Split Table
with two identical set-ups for the same operations
(with or without rotary tables or fixtures)

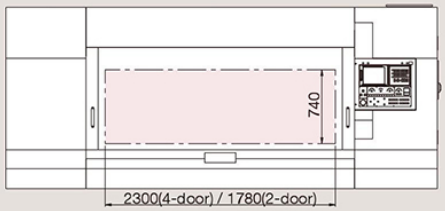


Split Table
with two different setups for two different operations.

Optimized design for part loading

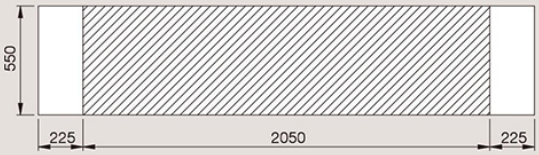


Loading from the top

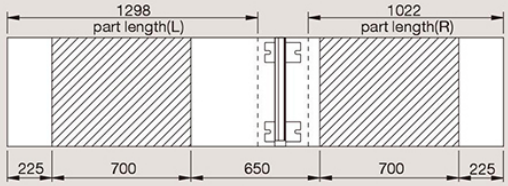


Loading from the front

Maximum machining range



Partition guarding is removed



Partition guarding is installed

Options

32 or 40 tool magazine

Optional 32 (or 40) servo driven tool magazine enables pendulum machining on two spilt tables for different set-ups or two different applications.

Auto tool length measurement

To reduce tool set-up time, Victor offers two automatic tool length measuring systems:

- Simple tool length measurement

Metrol system T-24E is mostly used for tapping and drilling as the probe only measures the tool length.

- Advance tool length measurement

Renishaw system TS-27R offers further advancement with the probe capable of measuring both tool lengths and diameters. This system is ideal for batch production where tools need to be constantly changed or replaced.

Coolant Through Spindle (CTS)

For improved deep hole drilling and boring capability, coolant can be forced through the center of the spindle under the high pressure (20 bars/60Hz by Grundfos pump MTR 3-23) directly to the cutting area. To ensure long and reliable running of this system, fine particles produced during machining must be filtered out to prevent damage to the spindle. Victor's customized cleaning system by centrifugal dispersion or replaceable filter cores is far more reliable with less maintenance than conventional system to avoid the fine particles flowing into the spindle.

Stop block for oil hole coolant

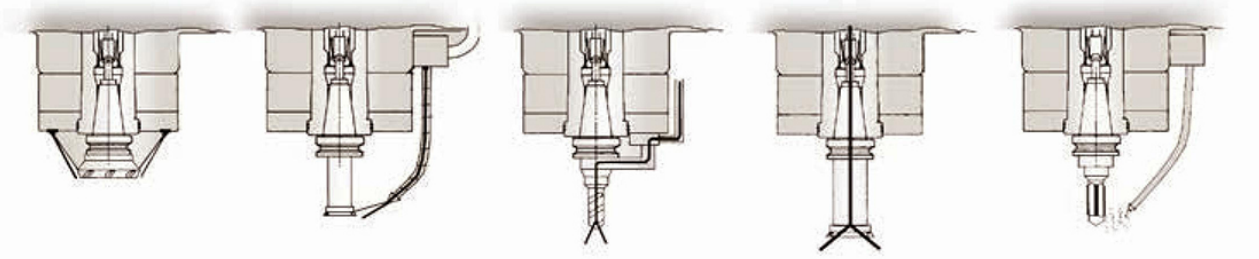
As an alternative to CTS, it is possible to supply coolant through the tool holder by using an adaptor (stop block) located on the spindle nose. High pressure(coolants) can be supplied with no need for higher cost filter system as coolant bypassed the spindle.

Linear scales for improved repeatability

Linear scales offer exceptional positioning accuracy up to 0.005mm over full stroke. Heidenhain or Fagor linear scales with a thermal behavior similar to that of the machine are selected to compensate for the thermal expansion and to enhance repeatability. Sealed encoders with durable Aluminum housing offer improved reliability and service life.

Coolant Options

Std. - coolant ring	Opt. - directional pipe	Opt. - oil hole coolant	Opt. - thru. spindle coolant	Opt. - oil mist
Purpose - general	Purpose - general	Purpose - drilling, boring	Purpose - drilling, boring	Purpose - tapping, reaming



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4th/5th axis CNC rotary or tilting tables

Making the full use of the long fixed table feature, CNC rotary tables can be easily installed to improve the application range. Four axes simultaneous machining for multiple faces can be realized with a single set-up. The 5th axis table is also available with tilting as well as rotary function, Fanuc 31i-B5 or Heidenhain TNC-640 controls will be required for 5 axis simultaneous machining.

Workpiece measurement

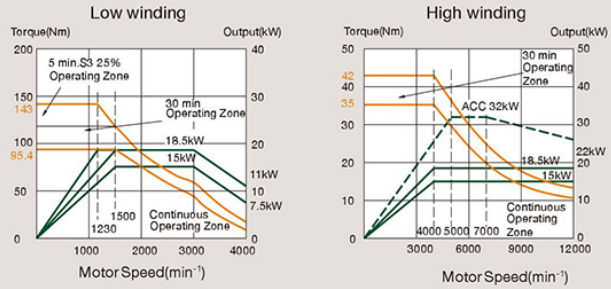
To reduce time spent setting workpiece positions and then manually inspecting finished parts, automatic workpiece measurement is available with the use of Renishaw MP-10 or OMP-60 measuring probes. The workpiece position can be identified with the probe and work offsets automatically updated, enabling parts to be made right firs time. During batch production, in-process checking can be performed on the machine to maintain tight tolerance after rough machining.

Non-central Partition System

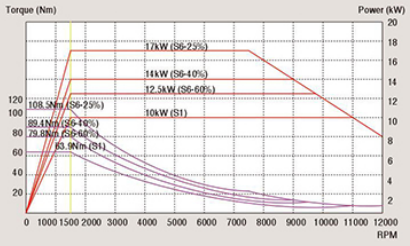
In case the central partition guarding is required to be located in different location for different setups, the partition guarding can also be re-located with the guarding options. However, two doors and the according moving stroke are unchanged to avoid any possibility for coolant leakage.

Higher power spindle

To meet heavier cutting requirement, the DCS spindle can be upgraded to higher power spindle motor or higher speed spindle.



Fanuc αL8/15000i

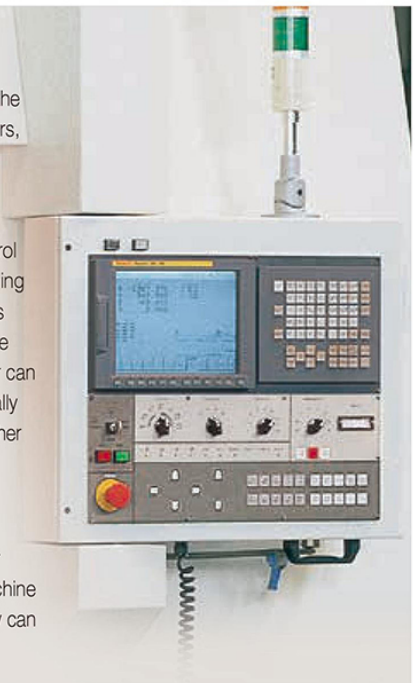


Heidenhain motor QAN200UH

VICTOR Taichung's NC PACKAGE

Fanuc 0i/32i/31i controls

With 8.4" color display included as standard on Victor Taichung's Fanuc control package, Fanuc 0i-MF control is capable of addressing look-ahead up to 40 blocks to offer optimal reliability with the highest level of machine integration. With PLC developed in-house by highly experienced engineers, Vcenter-205 offers numerous safety features and maximizes the machine efficiency to meet the demands for most productions.

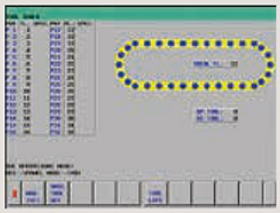


Through the option of 10.4" color display upgrade on the controller, Victor Taichung's Fanuc control package includes not only the conversational function MANUAL GUIDE I to reduce the programming time for easier operation, but control option AICC-2 capable of addressing look-ahead 200 blocks to shorten the cutting time for high speed machining. The control option Data Server board can be installed to extend the memory length for upgrading the data transfer rate. The machine controller can be upgraded to 31i-B control which is capable of addressing 600 blocks as standard and optionally 1000 blocks available by the so-called AICC-2 with HSP function (High Speed Processing) to further reduce the block addressing time for better surface finish.

VSS (Victor Software System) Macros

With exclusive software developed in-house by highly experienced engineers, VSS macros (Victor GUI), which is included when the controller is upgraded with 10.4" monitor, enhance not only machine operation to reduce tool set-up time but also safety features to protect costly spindle. Productivity can be further increased when the adaptive controlled cutting is implemented.

Smart workpiece measurement



Graphic tool management

Renishaw® GUI

Heidenhain TNC-620/640 control

Powerful dialog programming with fully alphanumeric keyboard, Heidenhain control is also available. Without remembering complicated G-codes, sophisticated graphics functions with 15" screen make programming check easy. TNC-620/640 controller is capable of addressing 5000 blocks and further makes use of hard drive memory for advanced 4 or 5 axis simultaneous control.

Control features for fast contour milling

Feature \ Controller	Fanuc			Heidenhain	
	0*i*-MF	32*i*-B	31*i*-B	TNC-620	TNC-640
Block addressing time	2 ms* (with AICC-2)	2 ms	1 ms (Opt. 0.4 ms by HSP)	1.5 ms	0.5 ms
Preview contouring (look ahead blocks)	200* (with AICC-2) (Opt. 400)	200 (Opt. 400)	600 (Opt. 1000 by HSP)	5000	5000
Graphic display	10.4" (Opt. 15")	10.4" (Opt. 15")	10.4" (Opt. 15")	15"	15" (opt. 19")
Data storage	1280m (512kB) Opt. 5120m (2MB)	1280m (512kB) Opt. 5120m (2MB)	2560m (1MB) Opt. 10240m (8MB)	Min. 2 GB	Min. 2 GB
Data server (Memory extension)	Opt. (by CF Card)	Opt. (by CF card)	Std. (with CF card)	N.A. (8 GB with CFR)	Std. 21 GB (by SSRD) Opt. 144 GB (by HRD)
Ethernet link	Std.	Std.	Std.	Std.	Std.
Conversational function	Manual guide i + VSS macros	Manual guide i	Manual guide i	Std.	Std.
Data transfer interface	PCMCIA + USB	PCMCIA + USB	PCMCIA + USB	USB	USB

*Victor Taichung's standard

Victor Taichung's Fanuc 0*i*-MF (Type 1)/32i-B/31i-B Control Specifications

Standard:

ITEM	SPECIFICATION	DESCRIPTION
Controlled Axes:		
1.	Controlled Axes	3 Axes (X, Y, Z)
2.	Simultaneous Controlled Axes	Position / Linear Interpolation / Circular Interpolation (3 / 3 / 2)
3.	Least Input Increment	0.001 mm / 0.0001 inch / 0.001 deg.
4.	Least Input Increment 1/10	0.0001 mm / 0.00001 inch / 0.0001 deg.
5.	Max. Command Value	±99999.999 mm (±9999.9999 in)
6.	Fine Acceleration & Deceleration Control	Std.
7.	High Speed HRV Control	Std.
8.	Inch / Metric Conversion	Std. (G20 / G21)
9.	Interlock	All Axes / Each Axis / Cutting Block Start
10.	Machine Lock	All Axes / Each Axis
11.	Emergency Stop	Std.
12.	Over-Travel	Std.
13.	Stored Stroke Check 1 And Check 2	Std.
14.	Mirror Image	Each Axis
15.	Mirror Image M73, M74, M75, M76	X, Y Axes
16.	Follow-Up	Std.
17.	Position switch (with Victor's own PLC)	Std.
Operation:		
1.	Automatic Operation	Std.
2.	MDI Operation	MDI B
3.	DNC Operation	Reader / Puncher Interface Is Required
4.	DNC Operation With Memory Card	PCMCIA Card Attachment Is Required
5.	Program Number Search	Std.
6.	Sequence Number Search	Std.
7.	Sequence Number comparison and stop	Std.
8.	Buffer Register	Std.
9.	Dry Run	Std.
10.	Single Block	Std.
11.	Jog Feed	Std.
12.	Manual Reference Position Return	Std.
13.	Manual Handle Feed	1 Unit / Each Path
14.	Manual Handle Feed Rate	X1, X10, X100
15.	Z Axis Neglect	Std.
Interpolation:		
1.	Positioning	G00
2.	Single Direction Positioning	G60
3.	Exact Stop Mode	G61
4.	Exact Stop	G09
5.	Linear Interpolation	G01
6.	Circular Interpolation	G02, G03 (Multi-Quadrant Is Possible)
7.	Dwell	G04
8.	Helical interpolation	Std.
9.	Skip Function	G31
10.	Reference Position Return	G28
11.	Reference Position Return Check	G27
12.	2nd / 3rd / 4th Reference Position Return	Std.
Feed:		
1.	Rapid Traverse Rate	Std.
2.	Rapid Traverse Override	F0, 25%, 50%, 100%
3.	Feed Per Minute	G94 (mm/min)
4.	Tangential Speed Constant Control	Std.
5.	Cutting Feed Rate Clamp	Std.
6.	Automatic Acceleration / Deceleration	Rapid Traverse: Linear; Cutting Feed: Exponential
7.	Rapid traverse Bell-shaped Acc. / Deceleration	Std. (G00)
8.	Bell-shaped Acc. / Deceleration Before & After Cutting Feed Interpolation	Std. (G01)
9.	Automatic Corner Deceleration	Std. (G64)
10.	Linear Acc / Deceleration Before & After Cutting Feed Interpolation	Std. (G01)
11.	Feed Rate Override	0~150%
12.	Jog Override	0~100%
13.	Automatic Corner Override	G62.
14.	Feed Stop	Std.
15.	AI contour control (AICC, G05.1) (in total)	200 blocks (0i/32i with AICC-2)
16.	AICC-2 + High speed processing (G05.1) (in total)	600 blocks (31i)
17.	Jerk Control	Std. (31i)
18.	Rigid Tapping Bell-Shaped Acc. / Deceleration	Std.
19.	Feed rate clamp by arc radius (G02/G03)	Std.
Program Input:		
1.	EIA / ISO Automatic Recognition	Std.
2.	Label Skip	Std.
3.	Parity Check	Std.
4.	Control In / Out	Std.
5.	Optional Block Skip	1
6.	Max. Programmable Dimension	±8-Digit
7.	Program Number	O4-Digit
8.	Sequence Number	N5-Digit
9.	Absolute / Incremental Programming	G90 / G91
10.	(Pocket Calculator Type) Decimal Point Programming	Std.
11.	Input Unit 10 Time Multiply	Std.
12.	Plane Selection	G17, G18, G19
13.	Rotary Axis Designation	Std.
14.	Rotary Axis Roll-Over Function	Std.
15.	Polar coordinate command	G16.
16.	Coordinate System Setting	Std.
17.	Automatic Coordinate System Setting	Std.
18.	Work Piece Coordinate System	G52, G53, G54~G59
19.	Addition of Work Piece Coordinate System Pair	48 Pairs
20.	Manual Absolute On And Off	Std.
21.	Optional Chamfering / Corner R	Std.
22.	Programmable Data Input	G10
23.	Sub Program Call	4 (0i/32i) or 10 (31i) folds nested
24.	Custom Macro B	Std.
25.	Addition of Custom Macro Common Variables	#100~#199, #500~#999
26.	Canned Cycles For Milling	G73 / G74 / G76, G80~G89, G98 / G99
27.	Small hole peck drilling cycle	G83
28.	Circular Interpolation By R Programming	Std.
29.	Program Format	FANUC Std. Format
30.	Program Stop / Program End	M00 / M01 / M02 / M30
31.	Reset	Std.
32.	Scaling	G51
33.	Coordinate System Rotation	G68
Auxiliary Spindle Speed Function:		
1.	Auxiliary Function Lock	Std.
2.	High Speed M / S / T Interface	Std.
3.	Spindle Speed Function	Std.
4.	Spindle Override	50~120%
5.	1st Spindle Orientation	Std.
6.	M Code Function	M3 Digit
7.	S Code Function	S5 Digit
8.	T Code Function	T2 Digit
9.	Rigid Tapping	Std.
Tool Function & Tool Compensation:		
1.	Tool Function	T8 Digit
2.	Tool Offset Pairs	±6-digit, 400 (0i/32i), 999 (31i)
3.	Tool Offset Memory C	Std. (D / H codes are separated)
4.	Tool Length Compensation	G43-G44, G45-G48, G49
5.	Cutting Compensation C	Std.
Accuracy Compensation:		
1.	Backlash Compensation	Rapid Traverse / Cutting Feed
2.	Stored Pitch Error Compensation	Std.
Edit Operation:		
1.	Part Program Storage Length (In Total)	1280m (512KB) (0i/32i), 2560m (31i)
2.	Number Of Registered Programs (In Total)	400 (0i/32i), 1000 (31i)
3.	Part Program Editing / Protect	Std.
4.	Background Editing	Std.
5.	Memory card editing	Std.(0i-F)
Setting And Display:		
1.	Status Display	Std.
2.	Clock Function	Std.
3.	Current Position Display	Std.
4.	Program Display	Program Name 31 Characters
5.	Parameter Setting And Display	Std.
6.	Self Diagnosis Function	Std.
7.	Alarm Display	Std.
8.	Alarm History Display	25
9.	Operation History Display	Std.
10.	Help Function	Std.
11.	Run Hour And Parts Count Display	Std.
12.	Actual Cutting Feedrate Display	Std.
13.	Display Of Spindle Speed And T Code At All Screens	Std.
14.	Graphic Function	Std.
15.	Dynamic Graphic Display	Std.
16.	Servo Setting Screen	Std.
17.	Spindle Setting Screen	Std.
18.	Display Of Hardware And Software Configuration	Std.
19.	Multi-Language Display	Std.
20.	Data Protection Key	Std.
21.	Erase CRT Screen Display	Std.
22.	Machining Condition Selecting Screen	Std.
23.	Color LCD / MDI	8.4" (0i), 10.4" (0i/32i/31i)
Data Input / Output:		
1.	Reader / Puncher Interface	RS-232 Interface
2.	External Work Piece Number Search	9999
3.	Memory Card Interface	Std.
4.	Embedded Ethernet (10Mbps)	Std.
5.	USB Device	Std.

Options:

	With Hardware Included:	0i-MF	32i-B	31i-B
1.	Conversational Programming (Manual Guide i)*1	□	Std.	Std.
2.	Conversational Programming (Super Cap i)	N.A.	N.A.	N.A.
3.	Data server (with PCB and CF card 1 GB)	□	□	Std.
4.	Fast Ethernet (100 Mbps, Available In Data Server)	□	Std.	Std.
5.	Tool life management (2 buttons on control panel)	□	□	□
6.	Part Program Storage Length 5120 m (2MB in total)	□	□	□
7.	Part Program Storage Length 8MB in total	N.A.	N.A.	□
8.	Program restart	□	□	□
9.	Optional block skip 9 blocks	□	□	□
10.	High Precision Contour Control (with RISC board)	N.A.	N.A.	Std.
11.	Profibus	□	□	□
12.	5-Axis Simultaneous Control	N.A.	N.A.	□ (31i-B5)
13.	AI contour control II (AICC-2, G05.1, 200 blocks)	□	Std.	Std.
14.	Look ahead block expansion (400 blocks in total)	□	□	N.A.
	Without Hardware Included:			
15.	Tool Load Monitoring (With Victor Own PLC)	□	□	□
16.	Programmable Mirror Image (G50.1)	□	□	□
17.	Bi-directional Pitch Error Compensation	□	□	□
18.	Addition Of Tool Pairs For Tool Life Management 512 Sets	N.A.	□	□
19.	Cylindrical Interpolation (G7.1) (Used On 4th-Axis)	Std.	□	□
20.	Interruption Type Custom Macro	N.A.	□	□
21.	Addition Of Work-Piece Coordinate Systems 300 Sets	N.A.	N.A.	□
22.	Exponential Interpolation (G2.3)	N.A.	N.A.	□
23.	Smooth Interpolation	N.A.	N.A.	□
24.	Spiral / Conical Interpolation	N.A.	N.A.	□
25.	Polar coordinate interpolation	N.A.	□	□
26.	Floating Reference Position Return	N.A.	N.A.	□
27.	Hypothetical Axis Interpolation (G07)	N.A.	N.A.	□
28.	Tool Retract And Return (G10.6 With Victor Own PLC)	N.A.	N.A.	□
29.	NURBS Interpolation (Only Avail. In HPCC / RISC)	N.A.	N.A.	□

*1. Fanuc "Manual Guide I" is only available on 10.4" screen.

Machine Specification

Item \ model		Units	Vcenter-205
Travel	X axis travel	mm	2050
	Y axis travel	mm	550
	Z axis travel	mm	560
Distance	Spindle center to column	mm	638
	Spindle nose to table surface	mm	180 ~ 740
Table	Table work area	mm	2500 x 550
	Dimension of T-slot	mm	5 x 18 x 100
	Max. table load	kg	1200
Spindle	Spindle taper		BT-40
	Spindle motor - cont / 30 / 10 min	kW	7.5 / 11 / 15 (opt. 15 / 18.5 / -)
	Spindle speed	rpm	12000
Feed rate	Rapid feed rate - X/Y/Z	m/min	30 / 30 / 30
	Axis feed motor - X/Y/Z	kW	4 / 3 / 4
	Cutting feedrate by table	m/min	20
	X ballscrew diameter	mm	50
	Y ballscrew diameter	mm	40
	Z ballscrew diameter	mm	40
	Linear guide width (X/Y/Z)	mm	45 / 45 / 45
Tools	Max. tool length	mm	350
	Max. tool weight	kg	8
	Magazine capacity		24 disc (opt. 32, 40)
	Max. tool diameter (without adjacent tools)	mm	ø80 (ø127)
	Tool exchange time	sec.	2.9 (T-T), 7.2 (C-C)
	Pull stud angle	deg.	15
	Tool selection method		Random
Machine	Power requirement	kVA	40
	Air pressure requirement	kg/cm²	5.5 ~ 6.5
	Coolant tank capacity	L.	600
	Std. NC controller		Fanuc 0i-MD
	Floor space requirement	mm	5300 x 3430
	Max. machine height	mm	3045
	Machine weight	kg	9840

Standard accessories

- Chip conveyor with cart
- Air dryer for DCS spindle
- Central partition system
- Fully enclosed splash guard
- Rigid tapping
- Remote MPG
- Hand tools and toolbox
- T nuts for table slot
- Built-in work light
- Auto power off system
- Leveling blocks
- Air conditioner for electric cabinet
- Moving CRT

Optional accessories

- Spindle oil cooler
- High-powered spindle motor
- Coolant through spindle
- Linear scale (X-axis)
- Auto tool length measurement
- Stop block for special tool
- 4th/5th axis interface
- Hydraulic interface
- Rotary tables
- 32, 40 tool magazine
- Workpiece measurement
- Table shower system
- Auto door
- Fanuc 31i or Heidenhain TNC-640 control
- SK-40 / CAT-40 tooling system
- Non-central partition system
- 2-door design