

VK II SERIES



VK45II / VK55II

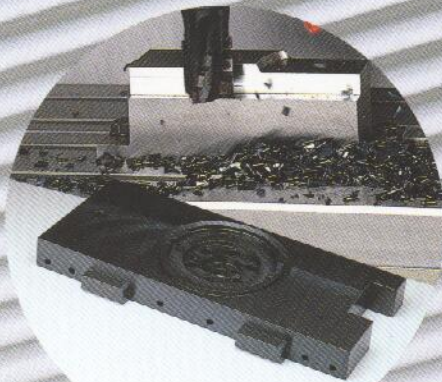
**Super Productive
Vertical Machining Center**

Hitachi Seiki Co.,Ltd.

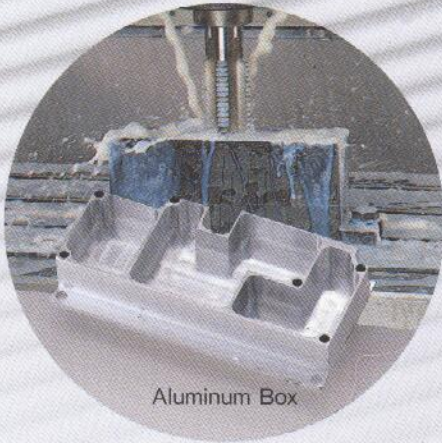
**Super Productive
High Speed
Easy Operation**

VERTICAL MACHINING

New Generation VKII Series Increases Productivity



Clamper



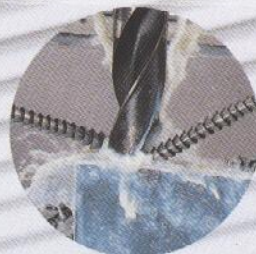
Aluminum Box



Photo includes optional equipment

The VK II Series combines the proven easy set-up and easy operation features of the previous generation VK series with Hitachi Seiki's latest technology to provide the most productive Vertical Machining Centers. The increased spindle speeds and widened machining range increase profitability in an affordable package.

- The rapid traverse rate of 30m/min(1180ipm), which is the fastest in this class of machine, Substantially reduces non-cutting time to provide shorter cycle time and more parts per hour.
- "Multi-function vertical MC" with built-in easy set-up and skill-free mechanical softwares such as tool setter, workpiece setter, easy setter and direct tapping as standard accessories makes even single workpiece machining more profitable.
- "Ultimate vertical MC" provides user-friendly and easy-to-operate functions including accessibility to tool and workpiece and maneuverability as well as maintainability.



Specifications	VK45 II	VK55 II
Table area	1120 × 485mm (44.1 × 19.1")	1400 × 560mm (55.1 × 22")
Travel X·Y·Z	760 × 500 × 500mm (30 × 19.7 × 19.7")	1000 × 600 × 600mm (40 × 23.6 × 23.6")
Spindle speed	60 ~ 8000min ⁻¹ NT40 45 ~ 4500min ⁻¹ NT50	60 ~ 8000min ⁻¹ NT40 45 ~ 4500min ⁻¹ NT50
Spindle motor	5.5/7.5kW (7.5/10HP)	5.5/7.5kW(7.5/10HP)NT40 7.5/11kW (10/15HP) NT50
Feedrate		
Rapid traverse rate X·Y	30m/min(1180-IPM)	30m/min(1180-IPM)
rate Z	20m/min(787-IPM)	20m/min(787-IPM)
cutting feedrate	10m/min(394-IPM)	10m/min(394-IPM)

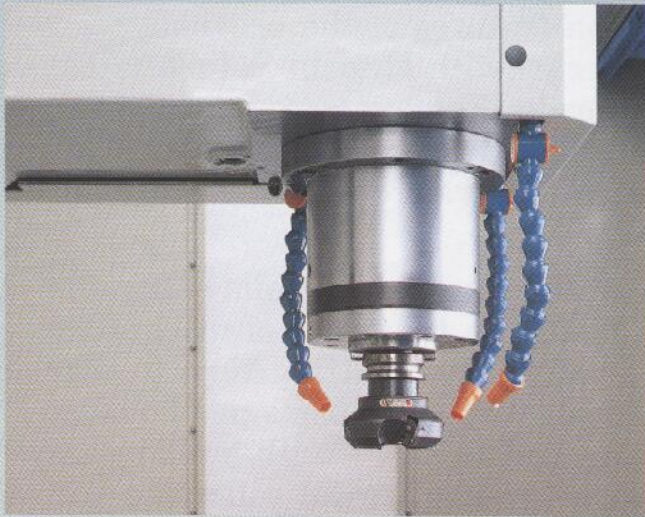
Accuracy

Positioning accuracy	± 0.005mm(0.0002")
Repeatability	± 0.001mm(0.00004")

Data are actual results.

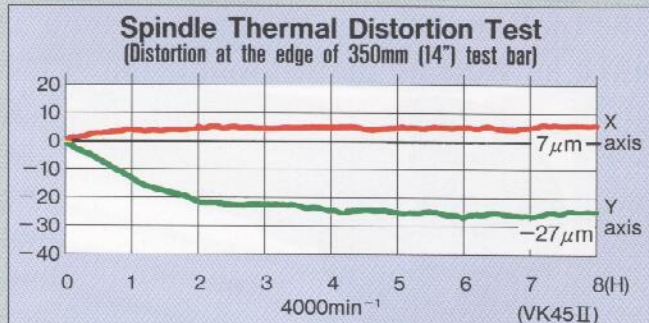
Hitachi Seiki's Massive Hardware Provides Powerful Cutting and High Reliability

MTBF target=2500 hours/ATC 1-million endurance test=10 years or more



Built-in motor provides high rigidity and high accuracy.

Use of a large diameter spindle and built-in motor provides high rigidity, free from vibration and high accuracy. (Ambient temperature tuning type spindle cooling unit is built in as standard equipment.)



VK45 II Machining capacity

Material: steel

	Face mill φ100mm (4") 5-blade	End mill φ40mm (1.5") 4-blade	Drill φ32mm (1-1/4")	Tap
Chip volume cu. cm/min. (cu. inch/min.)	179 (10.9)	48 (3.0)	—	—
Cutting width × depth mm (inch)	65 × 5.5 (2.6 × 0.2)	30 × 20 (1.2 × 0.8)	—	M30-P3.5 (1.2")
Cutting speed mm/min. (IPM)	500 (20)	80 (3.1)	0.3(0.12") mm/rev	—

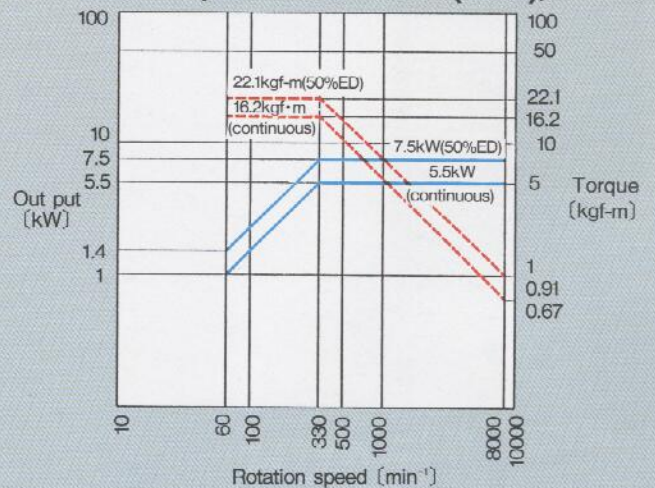
Spindle motor : 5.5/7.5kW (10HP)
Spindle taper hole : 7/24 taper No.40
Spindle speed : 60~8000min⁻¹(rpm)



AC5.5/7.5kW 60-8000min⁻¹(rpm)

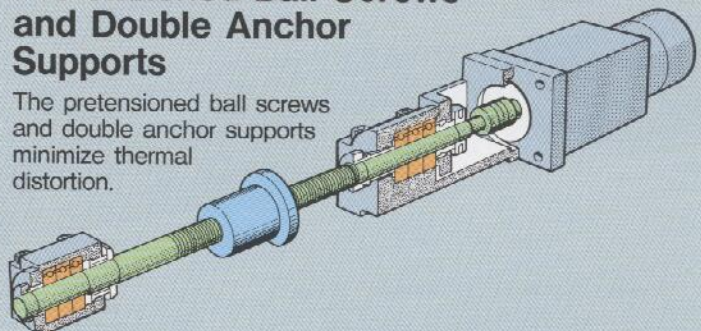
Highly efficient and powerful spindle motor provides constant output from 330min⁻¹(rpm) and heavy cutting even in low speed range. Further, large torque of 217N·m (22.1kgf·m/160 lbs-ft) allows large diameter tapping.

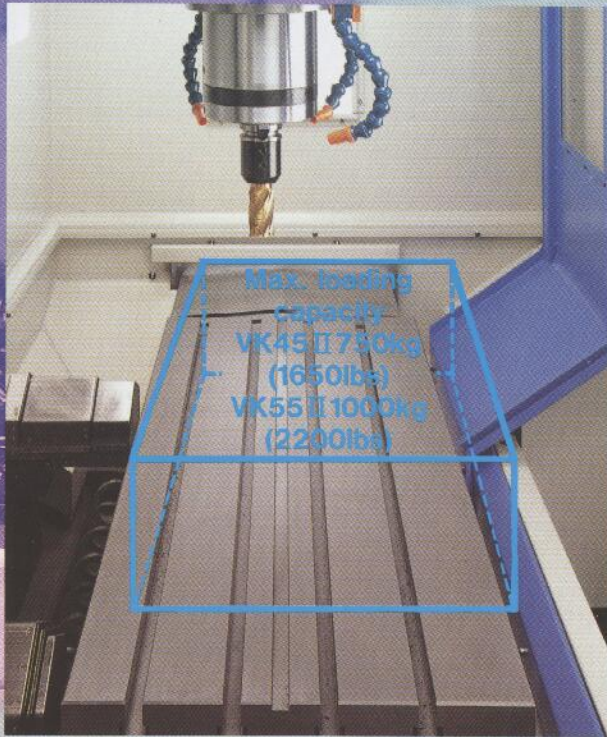
NT40 Spindle (60~8000(min⁻¹))



Pretensioned Ball Screws and Double Anchor Supports

The pretensioned ball screws and double anchor supports minimize thermal distortion.





Large working space & efficient chip collecting chute

Chip collecting chute is a standard feature. Spiral type chip conveyor is provided as standard. Slideways are lubricated automatically, and completely protected by covers.

Long-nosed spindle

Long-nosed spindle enables cutting point to be easily viewed and gives good clearance from workpiece.

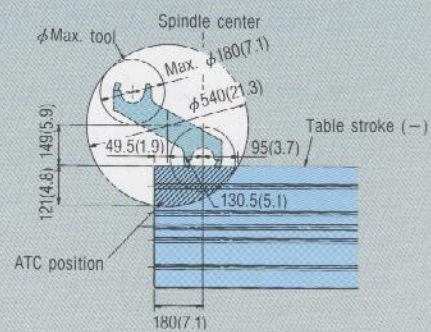
ATC

Independent ATC unit construction
Swing type ATC arm avoids interference with work pieces.

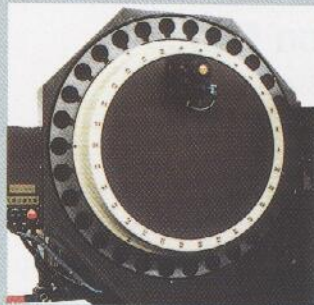
● ATC tool change time (VK45II)

Tool to Tool 5.5 sec.
Chip to Chip 9 sec.

● ATC-Work interference(VK45 II)



Standard : 20 tools/30,60,90,120tools are option



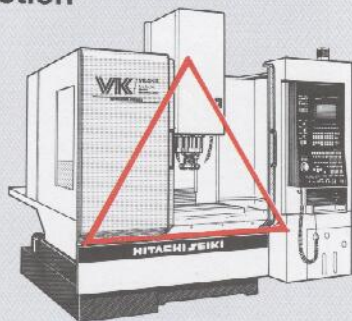
Option : 30 ATC



Option : 60/90/120 ATC

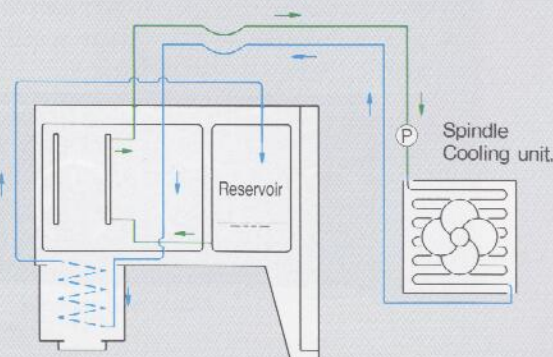
Triangular construction

Wide spread Y axis ways on the bottom of the column provide stable triangular construction even when the spindle head is at the highest Z position. Table only moves in the X axis for more rigid, accurate machining and easy operator access.



Cooling oil reservoir in headstock

Recirculated cooled oil reservoir in the headstock maintains uniform spindle and headstock temperature.



Photos includes optional equipment

User Friendly and Easy to Operate ①

Easy Accessibility <VK II SERIES>

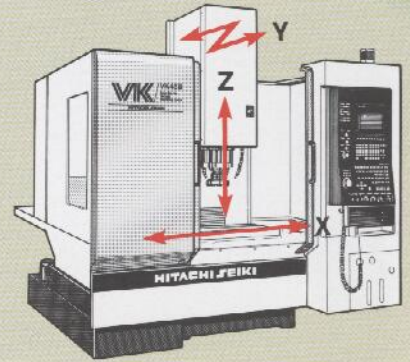
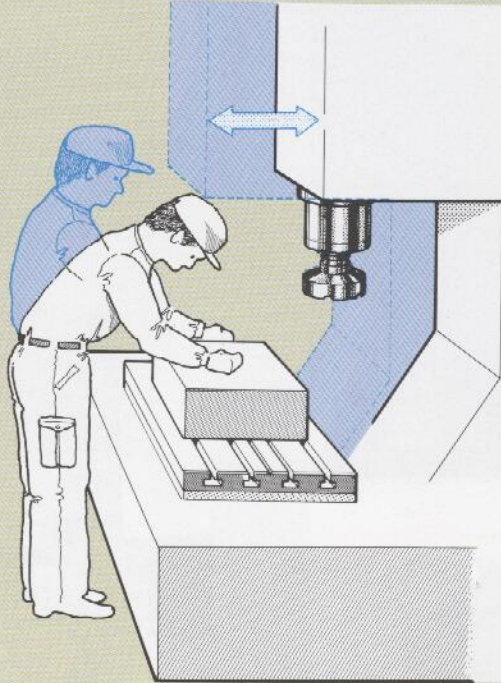
● User-Friendly Technology

Accessibility to Spindle Tool

Accessibility-oriented design to allow operator to have easy access to spindle for installing/removing a heavy tool or adjusting boring bar diameter.

Access and Setup Performance to Workpiece

Use of a travelling column makes setup of fixtures or loading/unloading of workpieces easier, thus relieving operator's fatigue.



Traveling column construction

Heavy bed and highly rigid construction guarantee stable accuracy and excellent accessibility to the work area.

Excellent Maneuverability <VK II SERIES>

● Easy-to-Operate Feature

Swivel Type Operation Panel

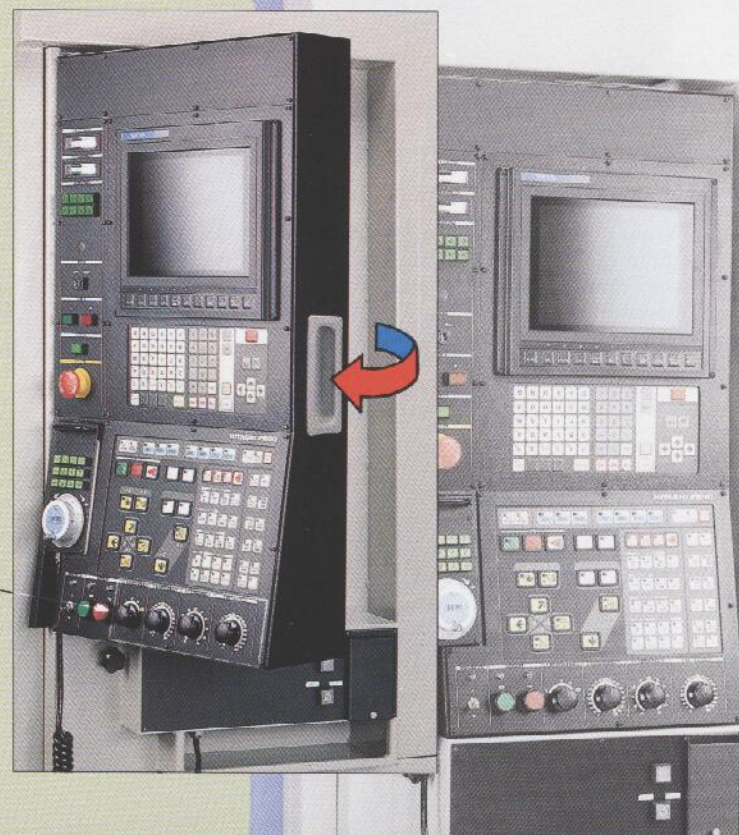
Main operation panel tilts 10°. In addition, it swivels 60° from machine surface (0°) to provide easier access. The operator can control the machine at a convenient position in front of the table.

Portable Manual Pulse Generator

A portable manual pulse generator is equipped as a standard accessory. User-friendly and easy-to-operate analog type controller controls spindle speed, feedrate and rapid traverse rate adjustments.



Analog type controller



Photos includes optional equipment



ATC fixed address system

Even a large tool or a special tool is always stored in the same position without possible interference with adjacent tools which could occur in the address change system.

ATC canned cycle (M06)

When M06 is specified at the end of machining with a spindle tool, spindle automatically stops+coolant stops →Z-axis returns to ATC ref. point →XY-axis returns to ATC ref. point+spindle positioning →ATC starts to operate, not requiring ATC preparation commands, thus making a program more simple.

ATC Single/Confirm Cycle

One ATC operation is performed sequentially each time the SINGLE BLOCK switch is on. The operator can easily confirm the possibility of interference between long tools and fixtures or workpieces to avoid collisions.

ATC Retry Function

ATC operation is repeated and goes to the next step, if the complete signal is not returned due to intervention by chips, loose proximity switch, etc.,. Also, this retry operation is recorded in the controller, and you can utilize it for maintenance review.

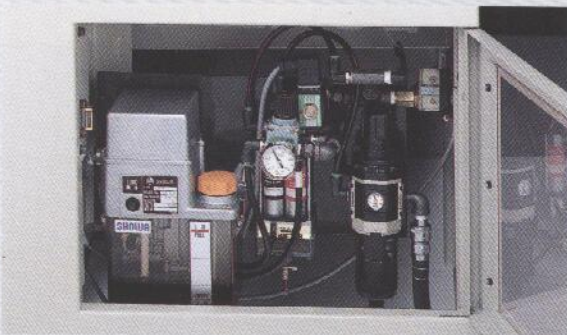
ATC Automatic Recovery Function

Previously, much time was consumed returning the ATC unit to zero point in case of an emergency stop or power failure during ATC operation. On the VKII, machining can be continued just by pressing the ZERO RETURN button.



Centralized Checking at Machine Front

Lubricant and air supply ports are located on the machine front side, thus facilitating daily checking or oil refilling. In addition, the main switch is located on the machine front side.



Direct Tapping Function

Fast, easy and accurate tapping without floating Tap holders is ideal for small taps, bottomed-threads, pipe taps, and for increased tapping efficiency.

Max. spindle speed 3000min⁻¹
 <Actually measured data.>



Photos includes optional equipment


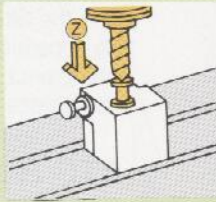
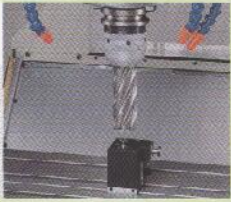
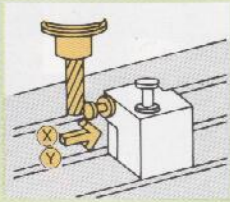
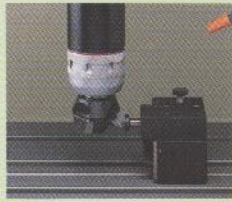


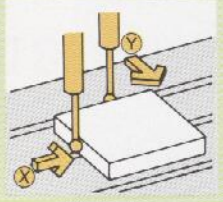
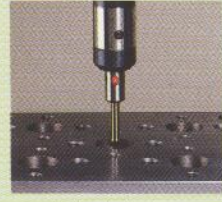
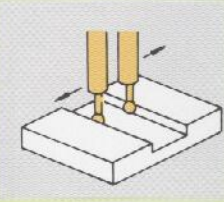
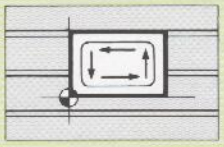

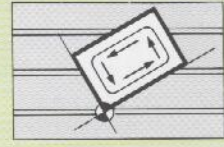




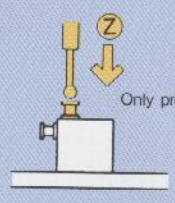
User Friendly and Easy to Operate ②

Standard equipment of quick setup function <SEICOS M III >



Quick and exact setup for everyone

- VKT's labor-saving setup function increases run hours.
- Setup only requires manual tool movement and button operation.
- No measurement or calculation is required. Also, trouble-some coordinate setting or offsetting is unnecessary.
- Even unskilled operators can make setup quickly and exactly like a skilled operator.
- Even skilled operators are protected from accidental mistakes in measurement, calculation or input.
- Remarkably reduced setup time increases the number of workpieces to be cut, irrespective of a single workpiece or small lot workpieces.

W-Setter	Tool Setter Tool length compensation 30 sec. Tool dia. compensation 60 sec.  ※ Accuracy ± 0.02mm(0.0008")	Tool compensation is completed through a touch of tool to datum block.
		    <p style="text-align: center;">Tool length compensation</p> <p style="text-align: center;">Tool diameter compensation For odd number of flutes, the control picks up max. value.</p>
	Workpiece Setter Centering 60 sec. Zero positioning 60 sec.  ※ Accuracy ± 0.02mm(0.0008")	Program zero point is determined through a touch of probe to workpiece.
		    <p style="text-align: center;">Z direction</p> <p style="text-align: center;">X,Y directions</p> <p style="text-align: center;">Datum hole-boss</p> <p style="text-align: center;">Datum groove</p>
	Easy Setter Coordinate rotation Zero positioning 60 sec. ※ Accuracy ± 0.02mm(0.0008")	Workpiece even at tilt on X-Y plane can be machined as it is.
		   <p style="text-align: center;">Programming under this condition</p> <p style="text-align: center;">Even if workpiece tilts, only probe touch is required.</p> <p style="text-align: center;">Machining can be done without modifying the program.</p>
	Safety Guard 	It prevents interference between tool and workpiece/fixture due to program error or tool length compensation error.
		    <p style="text-align: center;">NC program</p> <p style="text-align: center;">Manual operation</p> <p style="text-align: center;">Tool length can be measured continuously.</p> <p style="text-align: center;">Program can be checked.</p>

※Accuracy measured actually under constant speed.



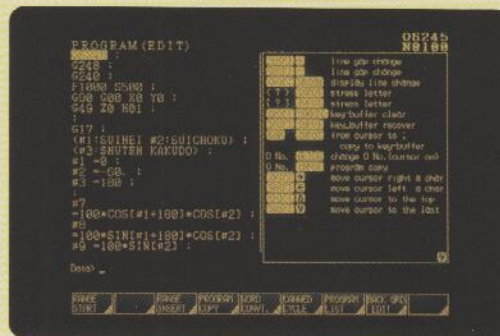
No mistake, Correct setting, Easy operation, Setup-saving, Full utilization

PM (Preventive Maintenance) Oriented STAF (Seiki Technical Assistance Function)

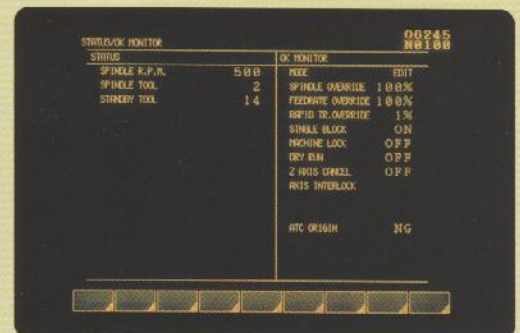
SEICOS M III control provides maintenance screen to display available run hours with current lubricant volume, hydraulic fluid change time, limit switches/solenoids operation status, etc. as well as M codes/G codes list screen to help program editing.

Operation Guide and Assistance

Operation guide and HELP key

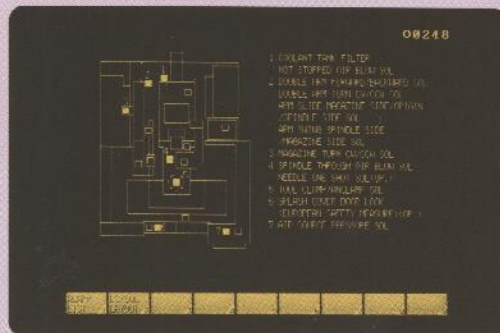


Status/OK display

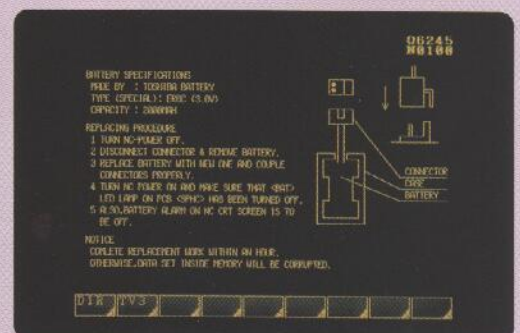


Easy Maintenance

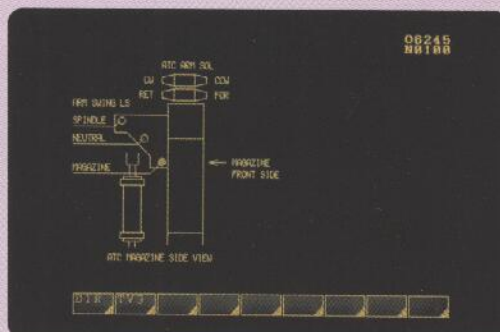
Alarm diagnosis and LS/SOL layout



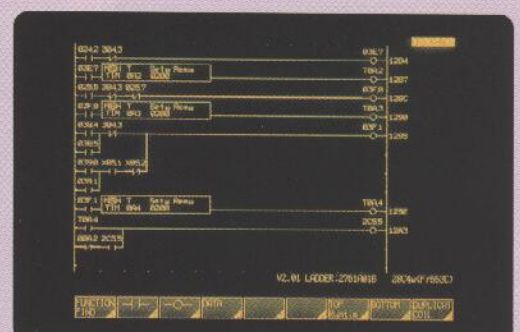
Battery change instruction



Maintenance guide



Ladder live-line display



Intelligent 32 Bit CNC <SEICOS M III>

Hitachi Seiki's Own CNC Brings out the Maximum Performance

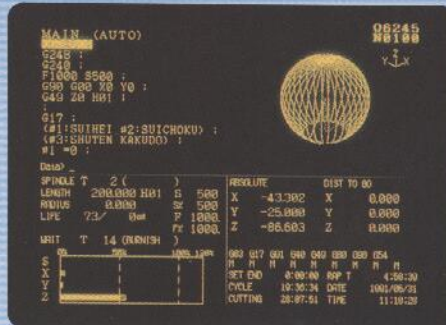
CNC developed from the viewpoint of the user. Fast, easy and convenient SEICOS M III.



Integrated Group Display, Set and Edit Screens

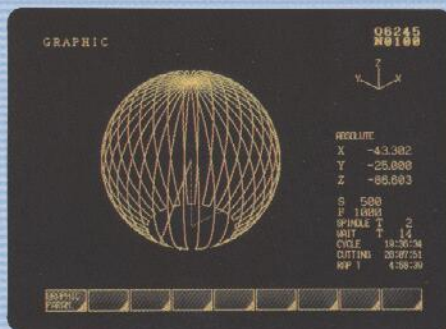
General Screen

Data necessary for operation is centralized on one screen.



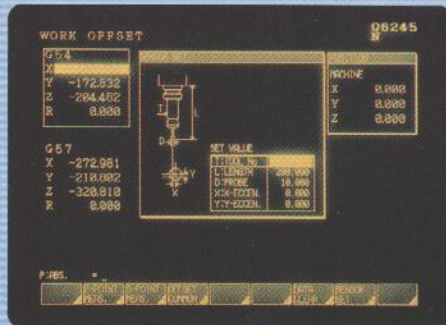
Graphic Screen

Background/synchronous drawing is also possible.



Work Coordinate System (Offset) Screen

<Touch probe setting is also available>



Program Screen

Subprogram groups are also displayed.



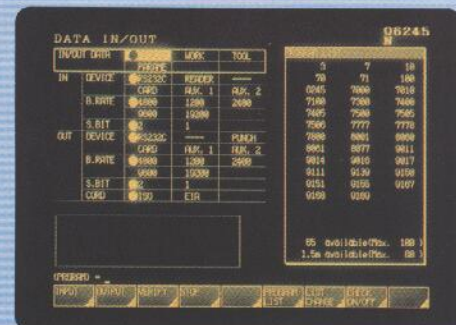
Position Screen

Work coord. system, relative coord. system and remaining distance are displayed.



Data Input/Output Screen

Data necessary for I/O is centralized.



A Variety of Options and Labor-Saving Support Function ①

A variety of options for labor-saving and automatic functions are available. Make a better choice ranging from stand-alone machine to system machine according to your requirements.

* Mark shows standard specifications.

ATC

- 20 tools *
- 30 tools
- 60 tools
- 90 tools
- 120 tools
- ATC cover *

Chip disposal

- Chip pan and spiral conveyor (1 pc) *
- Chip wagon
- Chip conveyor
 - Flat
 - Rear discharge
 - Scraper
 - X direction
 - For aluminum
- Oil skimmer
- Tool edge air blow

Coolant system

- Flood *
- Oil hole
- Jet
- Gun
- Spindle-through
 - DIN type
- Oil mist
 - Needle type

APC

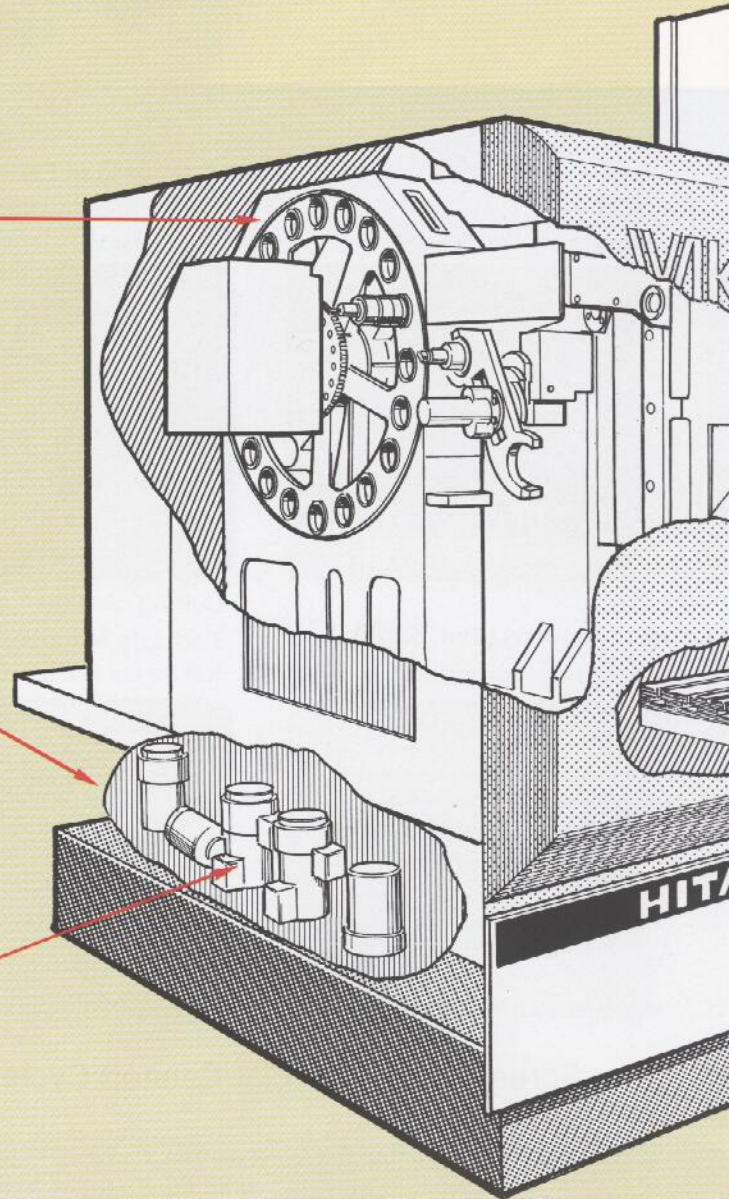
- T-slot pallet
- Tapped pallet
- Pallet ID
- For additional axis

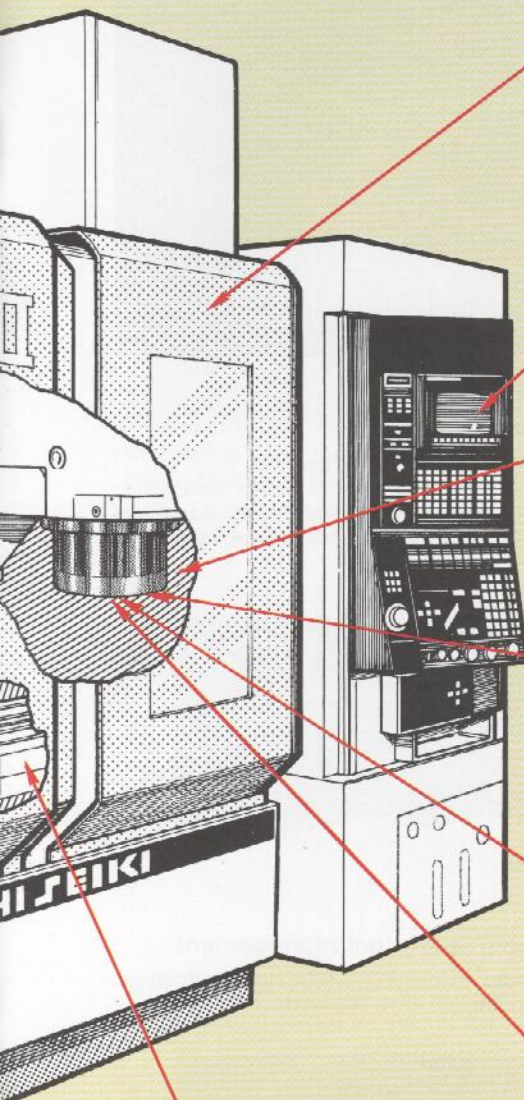
Pallet pool line

- 6 pallets
- 8 pallets

Additional axis

- 4 axes
- 4, 5 axes





Splashguard

- Standard (B) *
- Totally closed (with top cover)
- APC specification

Controller

- SEICOS M III *
- SEICOS M MULTI.

Tool shank

- JIS BT#40 (VK45 II) *
- JIS BT#50 (VK55 II) *
- CAT #40
- DIN #40

Spindle speed

- NT#40
- 60-8000min⁻¹(rpm) *
 - 120-12000min⁻¹(rpm)
 - 200-20000min⁻¹(rpm)
- NT#50
- 45-4500min⁻¹(rpm) *
 - 80-8000min⁻¹(rpm)

Z-axis stroke

- Standard 450mm(18") *
- High column(VK45 II) 600mm(23.6") (Z stroke+100mm(4"))

Direct tapping Function

*

Table, Stroke <X>

- Standard VK45 II 1120×485mm(44"×19.1"), X= 750mm(30") *
- VK55 II 1400×560mm(55"×22"), X=1000mm(40")
- In APC spec., VK45 II 900×450mm(35"×17.7"), X= 750mm(30")
- VK55 II 1200×560mm(47"×22"), X=1000mm(40")
- X Long stroke VK45 II X=1000mm(40")
- VK55 II X=1250mm(50")

Operation management function

- Automatic power cut-off device *
- Leakage circuit breaker *
- Call light · 1 color *
- 3 colors
- Machining completion precall *
- Melody horn *
- Spindle override *
- Auto. override memory *
- Spindle speed meter
- Spindle load meter
- Run hour meter
- Workpiece counter
- Weekly timer

Accuracy management function

- Closed loop · Pulscale
- Magnescale
- Thermal distortion compensation (Z-axis)
- Automatic · UTS measurement
- Renishaw

Diagnostic and monitoring function

- Cutting monitoring device
- Tool length measuring device
- (also used as breakage detector)

Others

- Tape reader
- Tool ID
- FA card
- Add-on
- Built-in
- Handy 7
- Computer (HC45)
- FA DON (Floppy Disk)
- Handy
- Built-in

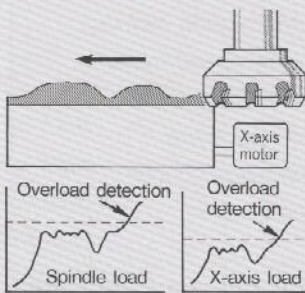
(Standards and options may vary by country destination)

A Variety of Options and Labor-Saving Support Functions ②

Cutting Monitoring System

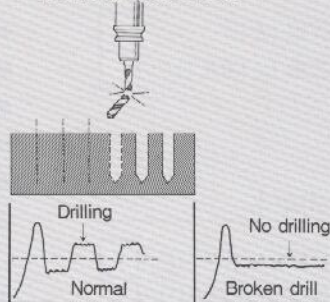
Monitors the cutting load on spindle and feed axes following predetermined targets to prevent erroneous cutting and machining failure. Monitoring data and monitoring function can be set for every tool so that more precise monitoring can be made. This adaptive control type system also executes error processing, thus ensuring untended operation and improving cutting efficiency. (Optional tool life management is required.)

● Overload detection



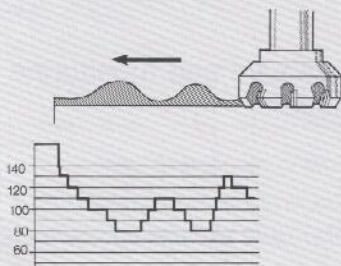
Based on the data of normal cutting, real-time monitoring is carried out to detect interference between tool and workpiece and tool breakage.

● No-load detection



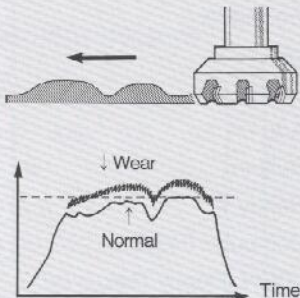
"NO-LOAD ALARM" (tool breakage) is displayed if a load over the specified value is not applied in each cutting.

Overload detection+No-load detection+Feed override control



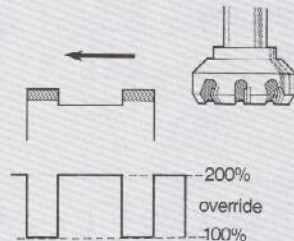
The cutting load is detected against variation in stock removal and the feed override is automatically controlled so that the load falls between adaptive upper limit and lower limit.

● Wear detection



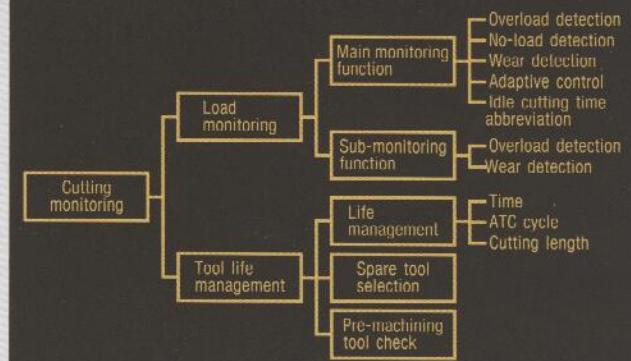
If the cutting load exceeds the wear criterion for duration of a specified time, that tool is judged as a worn out tool.

● Idle cutting time abbreviation



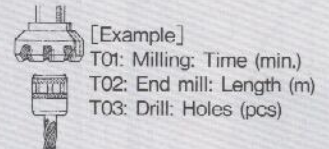
The feedrate becomes two times the programmed feed in an air cutting portion of machining process to shorten the machining time.

General Description of Cutting Monitoring Unit



● Tool life management

The tool life can be set for every tool to provide careful tool life management.



TOOL (LIFE+SPARE)									
TOOL	NAME	USE	SET	UNTT	STATUS	USE GRAPH			
						90%	100%		
001	FACE MILL	100	120	min	WEAR OVER				
002	ENDMILL	20	50	len	MONITOR				
003	REAMER	0	80	cnt					
004	DRILL	2000	2000	hole	LIFE OVER				
005		0	0	min					
006		0	0	min					
007		0	0	min					
008		0	0	min					
009		0	0	min					
010		0	0	min					

● Spare tool selection/Spare tool management

If spare tools are registered, machining can be done with spare tools automatically when original tools are worn.

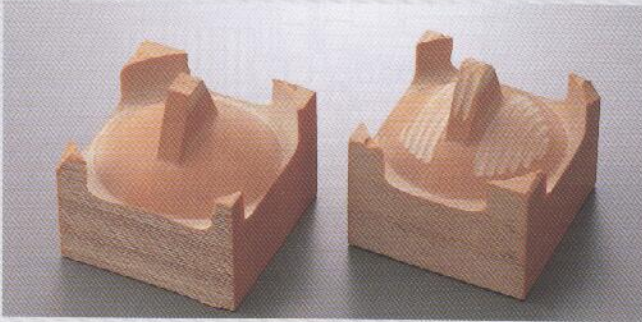
TOOL (LIFE+SPARE)									
No	TOOL	USE	STATUS						
1	10	2000	LIFE OVER						
2	11	50							
3	13	0							
4									
3.GROUP T1200 (DRILL) LIFE SET 500cnt									
No	TOOL	USE	STATUS						
1	20	0							
2									
SPINDLE I 1									
WAIT T 0									
GROUP No(ALT) -									
TOOL NAME	UNIT	TOOL INSERT	REAL SET	LOAD GRAPH	SPARE TOOL	DATA CLEAR	TOOL STATUS	(OFFSET)	

● Pre-machining tool check

Presence of a faulty tool (lifetime expired) during machining, generates incomplete products. In such a case, the tool check before machining function checks the tools to be used in advance to prevent generation of incomplete products.

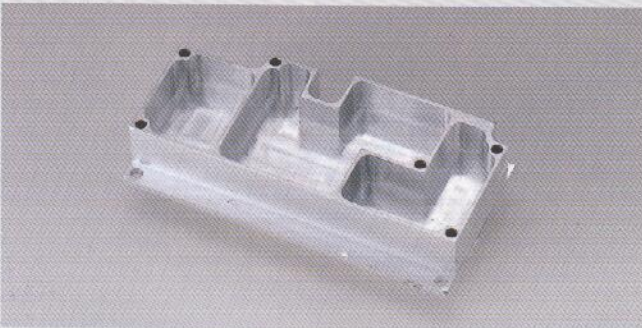
High Speed High Precision Control

High speed machining+Multi buffer+Linear acc./decel. before/after feedrate interpolation+Exponential acc./decel. after feedrate interpolation+Acc./decel. before pre-read interpolation
In a high speed machining of a curved surface divided into continuous small linear blocks such as molds or airplane parts or in a high speed end milling of aluminum parts, high precision can be attained with minimized error in profile and corner (due to servo delay).



Machining examples of continuous small blocks at feedrate 10m/min (394ipm)

Right photo shows a machining without high speed high precision control; servo delay occurred.



Aluminum case

● Multi-buffer

15 blocks of data can be read in the buffer for calculation compared to 2 blocks maximum in the standard function.

● Linear acc./decel. before feedrate interpolation

Linear acc./decel. control is made to the cutting feedrate. This is required for high speed feed over 5000mm/min (200ipm).

● Linear acc./decel. after feedrate interpolation

This function minimizes error in a circular machining at high speed feed.

● Exponential acc./decel. after feedrate interpolation

Exponential (bell-like) acc./decel. control is made to the cutting feedrate. This function provides quicker and smoother acceleration/deceleration than linear acc./decel.

● Acc./decel. before pre-read interpolation

The data is pre-read for automatic control to avoid corner profile error caused by acc./decel.

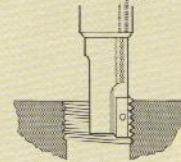
Additional NC Options

● Machining time display function

PROGRAM (AUTO)		CUTTING TIME	
01 ;		PROGRAM No.	Hour min sec.
G90 G54 G0 X0 Y0 ;		33	0:00:07
G48 G0 H1 Z0 ;		720	0:05:50
G0 Z10. ;		1100	0:00:01
G01 X100. Y200. F500 ;		1	0:00:02
Z20. F100. ;		1001	0:00:07
Z0 ;		1002	0:00:02
Y300. ;		1003	0:00:15
M99 ;		322	0:00:03
;		81	0:00:00
%		2	0:00:18

Execution of program run displays the machining time of that program on the screen (max. 10 programs).

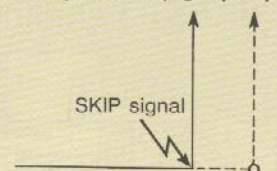
● Helical cutting



Thread milling

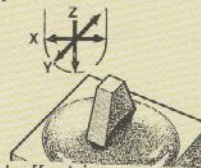
Additional one axis linear command is specified in synchronization with circular interpolation. This function will be necessary for a large diameter thread cutting that cannot be made by tapping.

● Skip function (high speed)



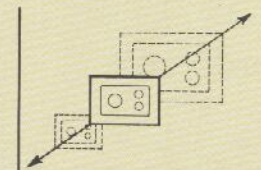
Input of SKIP signal from external unit during execution of X, Y and Z commands following the G31 causes the remaining commands to be skipped and the next block to be executed. This function will be used for measurement.

● Three-dimensional tool compensation



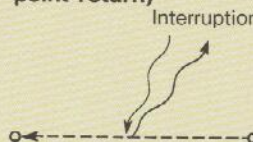
The tool offset is compensated in 3-dimensional direction in a machining of 3-dimensional surface.

● Scaling



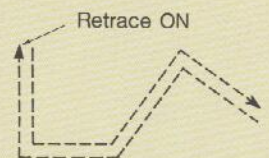
The profile specified by a part program can be enlarged or reduced at any scale (0.00001 to 9.9999).

● Tool retraction & return (Machining stop point return)



The tool can be retracted and returned at high speed for checking of machining condition or tool change.

● Retrace

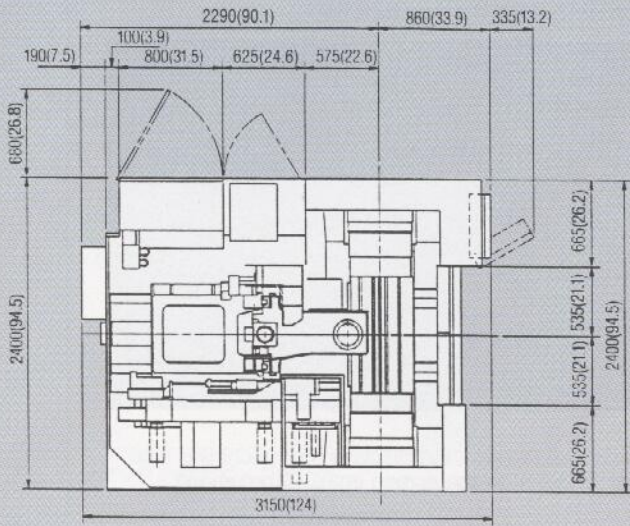


Turning on the RETRACE switch causes 40 to 80 blocks already executed to be retraced.

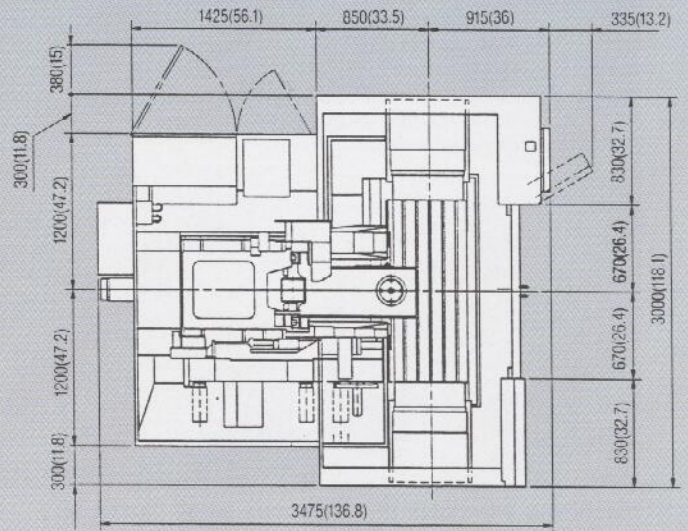
Outline Dimension and Floor Plan

Unit: mm/Data in () is given in inch.

VK45 II floor plan

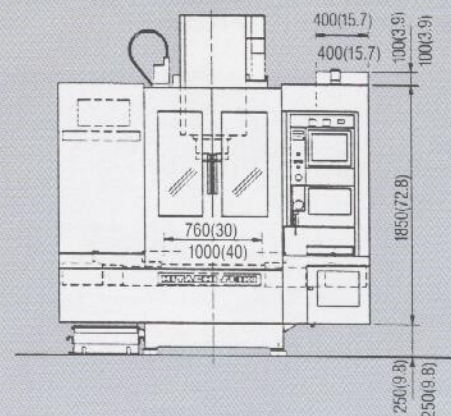
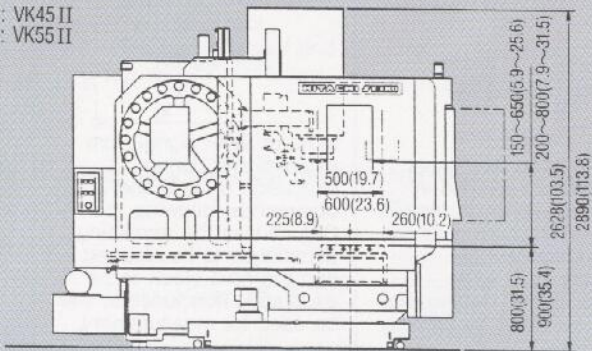


VK55 II floor plan

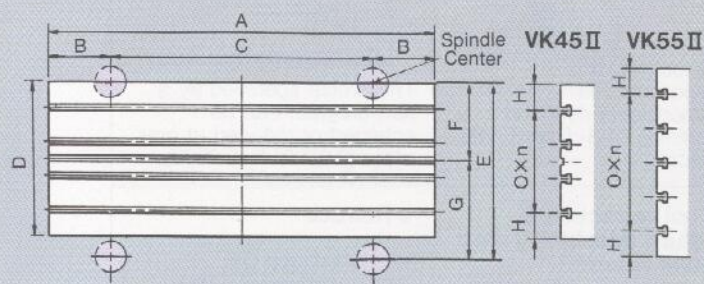


VK45 II (VK55 II) Outline dimensions

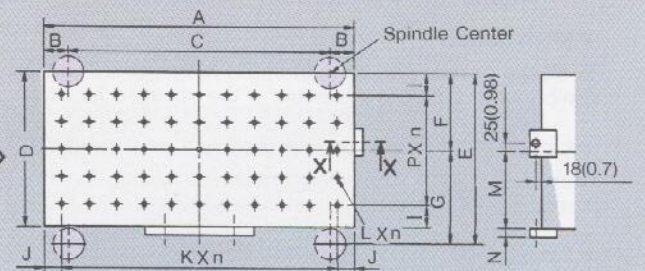
UPPER : VK45 II
LOWER : VK55 II



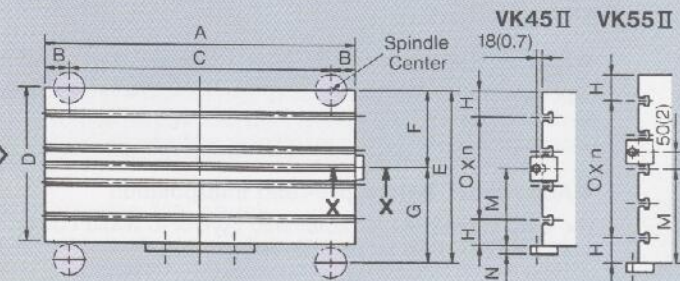
Standard Table



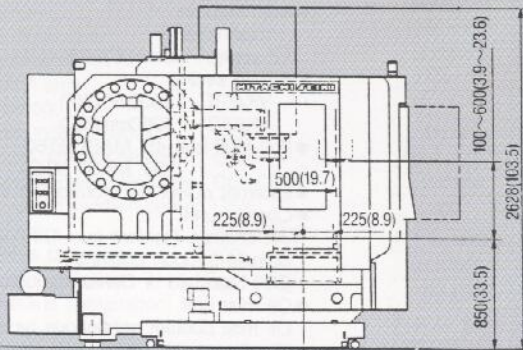
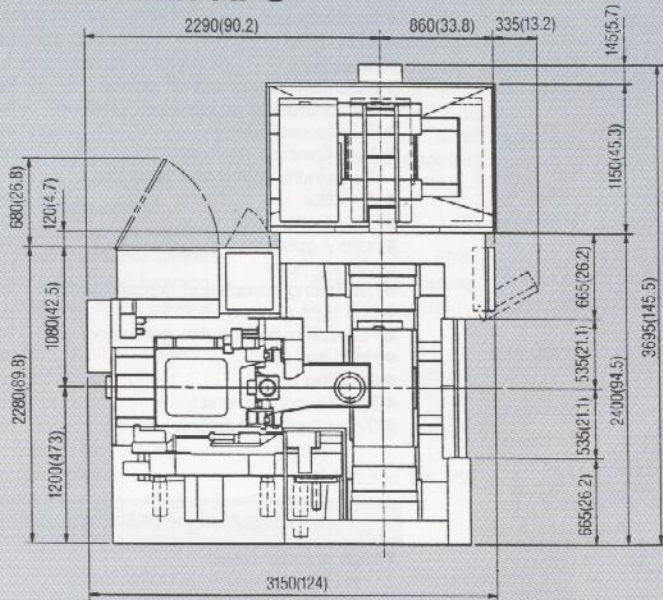
<APC> Pallet table-1 <Option>



<APC> Pallet table-2 <Option>



VK45 II with APC



VK45 II-APC Specification

Pallet

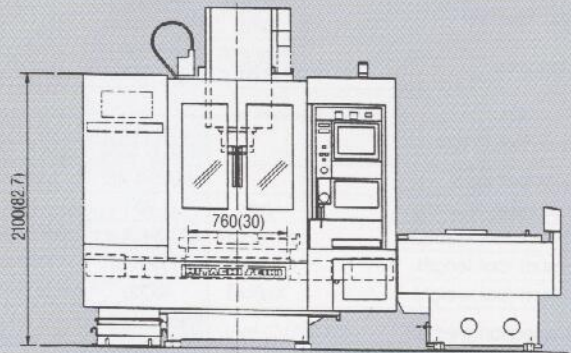
- Pallet size 900×450mm(35.4×17.7inch)
- Pallet loading capacity 500kg(1,100 lbs)

APC (Automatic Pallet Changer)

- Number of pallets 2pcs.
- Pallet change system Parallel shuttle system
- Pallet change time 25sec

Machine weight

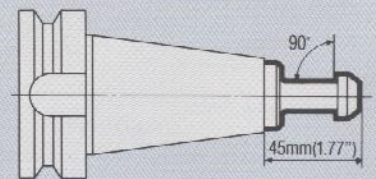
7,500kg(16,500lbs)



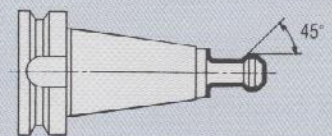
	Standard Table		〈APC〉 Pallet Table-1		〈APC〉 Pallet Table-2	
	VK45 II	VK55 II	VK45 II	VK55 II	VK45 II	VK55 II
A	1120(44)	1400(55)	900(35.4)	1200(47.2)	900(35.4)	1200(47.2)
B	180(7)	200(7.5)	70(2.7)	100(3.6)	70(2.7)	100(3.6)
C	760(30)	1000(40)	760(30)	1000(40)	760(30)	1000(40)
D	485(19.1)	560(22)	450(17.7)	560(22)	450(17.7)	560(22)
E	500(19.7)	600(23.6)	500(19.7)	600(23.6)	500(19.7)	600(23.6)
F	225(8.9)	280(11)	225(8.9)	280(11)	225(8.9)	280(11)
G	275(10.8)	320(12.6)	275(10.8)	320(12.6)	275(10.8)	320(12.6)
H	75(2.95)	80(3.15)	—	—	75(2.95)	80(3.15)
I	—	—	65(2.56)	80(3.15)	—	—
J	—	—	50(2)	100(3.94)	—	—
K×n	—	—	80×10 (3.15×10)	100×10 (3.94×10)	—	—
L×n	—	—	M16×55 (5/8-11)	M16×55 (5/8-11)	—	—
M	—	—	225(9.00)	280(11.00)	225(9.00)	280(11.00)
N	—	—	25(1)	30(1.2)	25(1)	30(1.2)
O×n	100×3 (3.94×3)	100×4 (3.94×4)	—	—	100×3 (3.94×3)	100×4 (3.94×4)
P×n	—	—	80×4 (3.15×4)	100×4 (3.94×4)	—	—

Type of Pull-stud

BT50/CAT50



BT40/CAT40



SPECIFICATIONS

Machine Specifications

Items		VK45 II		VK55 II		
		NT40	(NT50)	(NT40)	NT50	
TRAVEL						
Table longitudinal	(X-axis)	mm(inch)	760(30)	760(30)	1000(40)	1000(40)
Column cross	(Y-axis)	mm(inch)	500(19.7)	500(19.7)	600(23.6)	600(23.6)
Spindle head vertical	(Z-axis)	mm(inch)	500(19.7)	500(19.7)	600(23.6)	600(23.6)
DISTANCE						
Table surface to spindle nose		mm (inch)	150~650 (5.9~25.6)	150~650 (5.9~25.6)	200~800 (7.9~31.5)	200~800 (7.9~31.5)
Column face to spindle center		mm(inch)	508(20)	508(20)	610(24)	610(24)
Table surface to floor surface		mm(inch)	800(31.5)	800(31.5)	900(35.4)	900(35.4)
TABLE						
Work area		mm (inch)	1120×485 (44.1×19.1)	1120×485 (44.1×19.1)	1400×560 (55.1×22.0)	1400×560 (55.1×22.0)
Number of T slots/keyways		pcs/pc	4/1	4/1	5/1	5/1
Maximum loading capacity		kg(lbs)	750(1650)	750(1650)	1000(2200)	1000(2200)
SPINDLE						
Spindle speed		min ⁻¹ (rpm)	60~8000	45~4500	60~8000	45~4500
Number of speed ranges			Stepless	Stepless	Stepless	Stepless
Spindle taper hole			7/24 taper NO.40	7/24 taper NO.50	7/24 taper NO.40	7/24 taper NO.50
FEEDRATE						
Least input increment		mm (inch)	0.001 (0.0001)	0.001 (0.0001)	0.001 (0.0001)	0.001 (0.0001)
Rapid traverse rate	(X,Y-axis) (Z-axis)	m/min(ipm)	30(1180) 20(787)	30(1180) 20(787)	30(1180) 20(787)	30(1180) 20(787)
Cutting feedrate		mm/min (ipm)	1~10000 (0.1~394)	1~10000 (0.1~394)	1~10000 (0.1~394)	1~10000 (0.1~394)
Jog feedrate		mm/min (ipm)	0~5000 (0~200)	0~5000 (0~200)	0~5000 (0~200)	0~5000 (0~200)
ATC						
Type of tool shank			BT40 (CAT, DIN)	BT50 (CAT, DIN)	BT40 (CAT, DIN)	BT50 (CAT, DIN)
Type of pull-stud			MAS-1 45°	MAS-0°	MAS-1 45°	MAS-0°
Tool storage capacity		pcs	20	20	20	20
Maximum tool diameter		mm(inch)	φ110(4.3) ※1	φ110(4.3) ※1	φ110(4.3) ※2	φ110(4.3) ※2
Maximum tool length		mm(inch)	300(11.8)	300(11.8)	300(11.8)	300(11.8)
Maximum tool weight		kg(lbs)	10(22)	20(44)	10(22)	20(44)
Tool selection method			Fixed address Bi-direction	Fixed address Bi-direction	Fixed address Bi-direction	Fixed address Bi-direction
APC(OPTION)						
Number of pallets			2	2	2	2
Pallet change system			Parallel shuttle	Parallel shuttle	Parallel shuttle	Parallel shuttle
Pallet size		mm(inch)	900×450 (35.4×17.7)	900×450 (35.4×17.7)	1200×560 (47.2×22)	1200×560 (47.2×22)
Pallet loading capacity		kg(lbs)	500(11000)	500(11000)	750(1650)	750(1650)
APC position			Machine right side	Machine right side	Machine right side	Machine right side
MOTORS						
Spindle drive motor		kW (HP)	AC5.5/7.5 (7.5/10)	AC5.5/7.5 (7.5/10)	AC5.5/7.5 (7.5/10)	AC7.5/11 (10/15)
Hydraulic pump motors		kW(HP)	1.5(2)	1.5(2)	1.5(2)	1.5(2)
Lubrication pump motor		W(HP)	20(1/50)	20(1/50)	20(1/50)	20(1/50)
Coolant pump motor		W(HP)	180(1/4)	180(1/4)	180(1/4)	180(1/4)
POWER SOURCES						
Electric power supply		V	200/220±10%	200/220±10%	200/220±10%	200/220±10%
		Hz/KVA	50/60/22	50/60/22	50/60/28.5	50/60/28.5
Air pressure source		(kgf/cm ²)	0.5(5)Mpa	0.5(5)Mpa	0.5(5)Mpa	0.5(5)Mpa
		ℓ (gal)/min	100(26)	100(26)	100(26)	100(26)
TANK CAPACITY						
Hydraulic tank		ℓ (gal)	40(10.5)	40(10.5)	40(10.5)	40(10.5)
Lubricant tank		ℓ (gal)	1.5(0.4)	1.5(0.4)	1.5(0.4)	1.5(0.4)
Coolant tank		ℓ (gal)	180(47.4)	180(47.4)	180(47.4)	180(47.4)
Machine weight		kg(lbs)	6500(14300)	6500(14300)	8000(17600)	8000(17600)

Standard Accessories	
● Flood coolant	1set
● Chip conveyor (Spiral type)	1pc
● Splash guard	1set
● ATC Cover	1set
● Work light	1pc
● Automatic power cut-off device	1set
● Circuit breaker w/leakage detection	1set
● Spindle override	1set
● Auto Override memory (for spindle speed and feedrate)	1set
● W-Setter	1set
● Easy-Setter	1set
● Safety guard	1set
● Melody horn	1set
● Machining completion precall function	1set
● Call light (yellow)	1set
● Portable manual pulse generator	1set
● Hand-tool kit	1set
● Leveling pads	1set
● Spindle cooling unit	1set
● Direct tapping function	1set

Optional Accessories	
● High spindle speed	NT50 80~8000min ⁻¹ (rpm) NT40 120~12000min ⁻¹ (rpm) 200~20000min ⁻¹ (rpm)
● High column +150mm(5.9") (Z stroke+100mm(4")) (VK45II)	
● X long stroke	VK45II 1000mm(40") VK55II 1250mm(50")
● Pull-stud bolt 45° MAS1 BT50 30° MAS2 BT50	
● External power transformer 32kVA	
● Coolant unit	Jet coolant, Coolant gun, Oil hole coolant, Spindle-through coolant, (DIN Standard or Center-through)
● Oil mist unit	Oil mist coolant continuous type Needle one-shot type
● Spiral conveyor	
● Outside chip conveyor	Flat type, Scraper type, Aluminum chip disposal Chip discharge; X direction (left side) Y direction (rear side)
● Magnetic roller conveyor (for sludge disposal)	
● Tool edge air blow	
● Sub table	
● Clamps	
● APC unit (parallel shuttle type)	
● NC index table	
● Power supply for A.P.C.	
● Pallet pool line	
● Spindle load meter	
● Spindle speed meter	
● Workpiece counter	
● Additional call light	
● Buzzer alarm device	
● Run hour meter	
● Weekly timer	
● Closed loop	
● Automatic centering & measuring device	
● In-process measuring device	
● Cleaning tool for automatic measurement	
● Printer for automatic measurement	
● Tool length measuring device	
● Cutting monitor	

※1 Maximum tool diameter when adjacent pots are empty is φ180mm(7.1") (VK45 II).
 ※2 Maximum tool diameter when adjacent pots are empty is φ240mm(9.45") (VK55 II).
 ※Specifications are subject to change for improvement without notice.

Specifications of CNC Unit SEICOS M III

Standard Specifications

Controlled axes	3 axes (simultaneous 3 axes)
Interpolation function	Positioning, linear & circular interpolation
Programming method	Absolute/incremental programming
Least input increment	0.001mm (0.0001")
Tape code	EIA/ISO automatic recognition
Programmable functions	Preparatory function G2/3-digit, Miscellaneous function M2/3-digit, Tool function T2-digit
Spindle speed command	S-code speed direct input
Feedrate command	F-code feedrate direct input
Feedrate override	0-200%
Override cancel	
Auto override memory	
Rapid traverse override	0%, 1%, 25%, 50%, 100%
Manual feed function	Rapid, Jog, Handle
Manual pulse generator	3 magnifications (1, 10, 100/50=in.) selectable
Tool position offset	G45-G48
Tool length offset	G43, G44, G49
Tool diameter offset	G40-G42
Tool dia. offset memory C	
No. of tool offsets	32
CRT display	12" Plasma thin display
Part program storage & editing	
Part program storage length	80m
Background editing	
Canned cycles	G73, G74, G76, G80-G89
Reference point return	Manual/Auto G27-G29
2nd reference point return	G30
Mirror image	CRT setting
Optional block skip	1 pc
Stored stroke check	Type 1
Stored pitch error compensation	
Coordinate system setting	G92
Local coord. system setting	G52
Work coord. system selection	G54-G59
Machine coord. system setting	G53
I/O interface	RS232C *
Registerable programs	100
Part program collation	
Circular radius designation	
Dwell	
Memory lock key	
Buffer register	
Single block	
Cycle start/Feed hold	
NC diagnostic function	
Z-axis command cancel	
Exact stop	G09, G61, G64
Decimal point programming	
Dry run	
Backlash compensation	
Program number search	
Sequence No. search, collation and stop	
Label skip	
Machine lock, M-function lock	
Manual absolute	ON fixed
Optional stop	
Programmable data input	G10
Circular cutting	(including spiral circular cutting)
Optional angle chamfering and corner-R designation	
Custom macro	Common variables 100
Machining completion precall	(including run hour display)
Follow-up	
Stroke check before movement	
Inch/Metric selection	
Japanese/English selection	
Clock function	
Coordinate system rotation	

Options

Additional one axis	Including simultaneous control of additional axis
Extended part program editing	Program copy function
Helical interpolation	Including additional axis
High speed skip function	
Hypothetical axis interpolation	
Unidirectional positioning	
3-dimensional tool offset	G40, G41
Number of tool offsets	64
Number of tool offsets	100
Number of tool offsets	200
Number of tool offsets	400 (Program storage L 160m/525ft.)
Registerable programs	200 (Program storage L 160m/525ft.)
Registerable programs	400 (Program storage L 320m/1050ft.)
Registerable programs	800 (Program storage L 1000m/3281ft.)
Registerable programs	1000 (Program storage L 1000m/3281ft.)
Part program storage length	Total 160m (525ft.)
Part program storage length	Total 320m (1050ft.)
Part program storage length	Total 500m (1640ft.)
Part program storage length	Total 1000m (3281ft.)
Part program storage length	Total 2000m (6562ft.)
Part program storage length	Total 4000m (13,123ft.)
Tape reader without reel	
Manual pulse generators	3, independent (conventional type)
Manual pulse generators	3, independent (handle type)
2nd miscellaneous function B	3 digits
3rd, 4th ref. point return	
Stored stroke check	Type 2
Block restart	
Machining stop point return	Retract and return
Additional optional block skip	Total 9
External data input	
Custom macro	Common variables 200
Custom macro	Common variables 300
Custom macro	Common variables 600
Interruption type custom macro	
Automatic corner override	
Scaling	
Programmable mirror image	
Polar coordinate programming	
Polar coordinate interpolation	
Manual handle interruption	
DNC connection circuit	
High resolution detection I/F	0.1m (0.00001")
Cylindrical interpolation	
Exponential interpolation	
Additional work coord. systems	60 sets
Cutting monitor	(Part program storage 160m)
Tool life management/spare tool call function	
Machining time display function	
Tool offset by tool No. designation	
Macro print function	Printer with RS232C required
Retrace	Reverse feed
High speed high precision control	
• High speed machining	G05
• Multi buffer	
• Linear acc/decel before feedrate interpolation	
• Linear acc/decel after feedrate interpolation	
• Exponential acc/decel after feedrate interpolation	
• Acc/decel before pre-read interpolation	
Screen guide special canned cycles	
• Deep-hole drilling cycle	G73, G83
• Circular cutting	G302, G305
• Drilling pattern cycle	G70-G72, G77
• Square plane cutting	G324-G326
• Pocket cycle	G327-G333

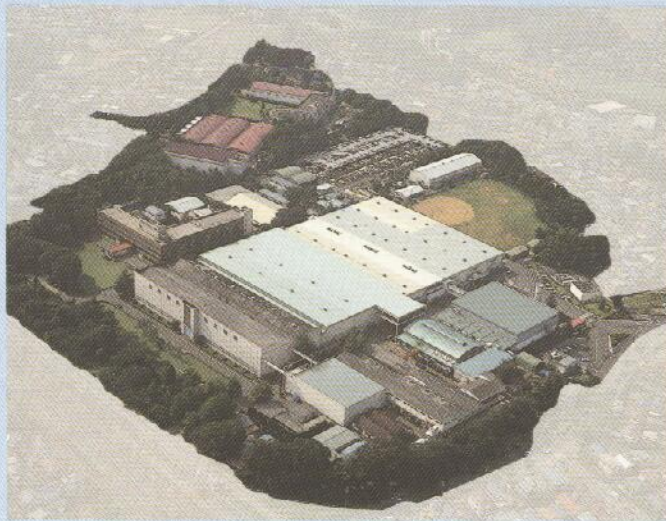
*Interface only. No connection cable to I/O unit included.

**Specifications are subject to change for improvement without notice.

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