

HNK VERTICAL TURNING CENTERS R Series





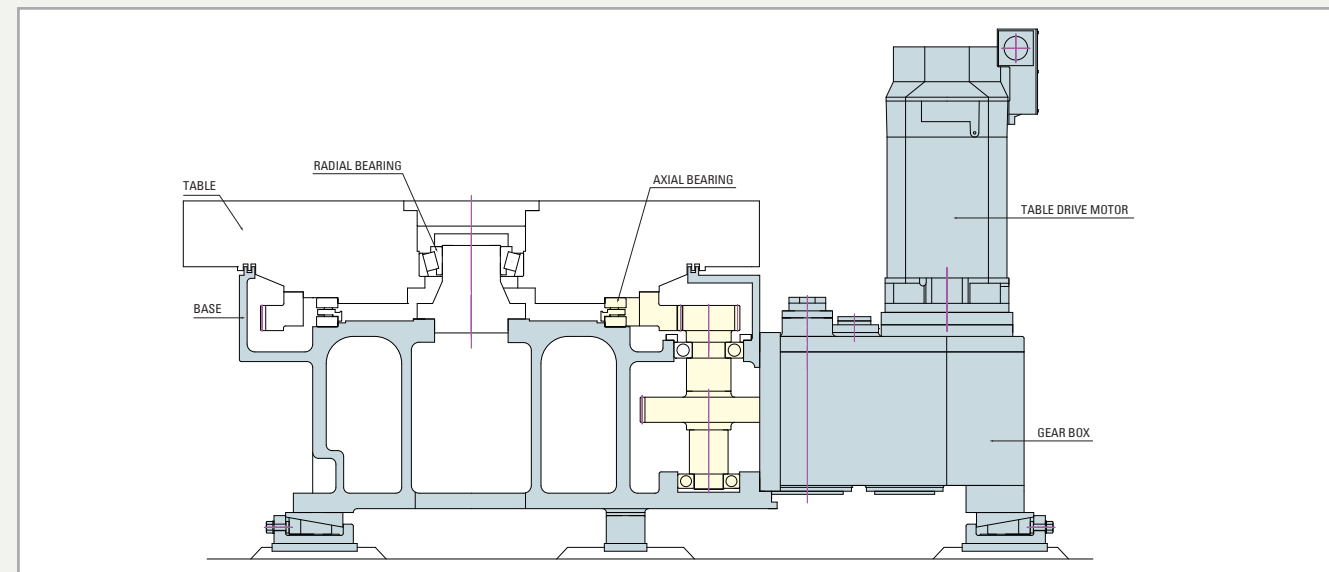
- **Compact Design**
- **Rigid Construction**
- **Accuracy and Reliability**

R Series

Table Base Construction

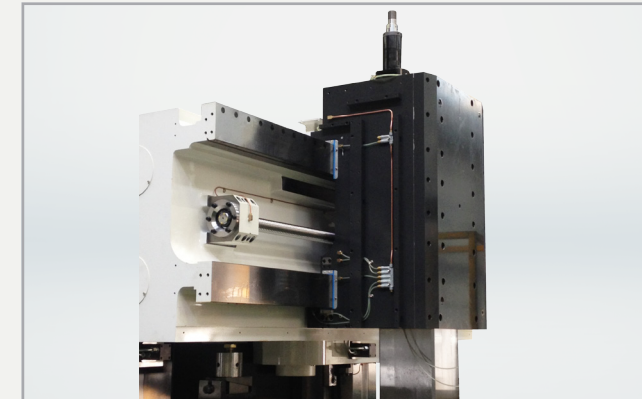
Designed for Heavy Workpiece Loading and Precision Machining - Rigid cast iron structure of table base and heavy duty, high precision taper roller bearings and thrust roller bearings ensure heavy load turning and precision machining.

High Torque Table Drive - Two Speed gearbox drive system offers high torque, heavy duty machining while minimizing gear-wheel noise and gear vibrations.

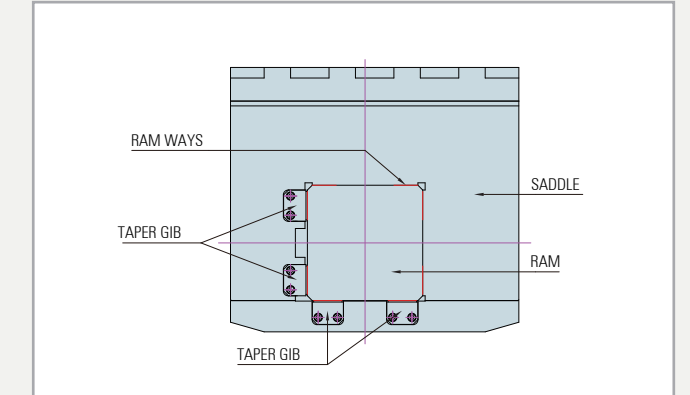


Ram Head

240 x 240mm Square Ram - Hardened and ground forged steel RAM is hydraulically balanced and firmly encased in the heavily ribbed saddle.

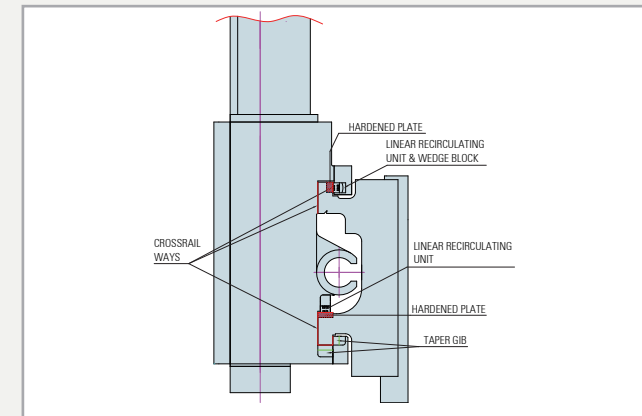


Minimal Surface Friction Design - RAM moves smoothly on a lubricated(automatically metered)Fluoroplastic resin Turcite surface, preventing frictional heat and ensuring precision positioning accuracy.



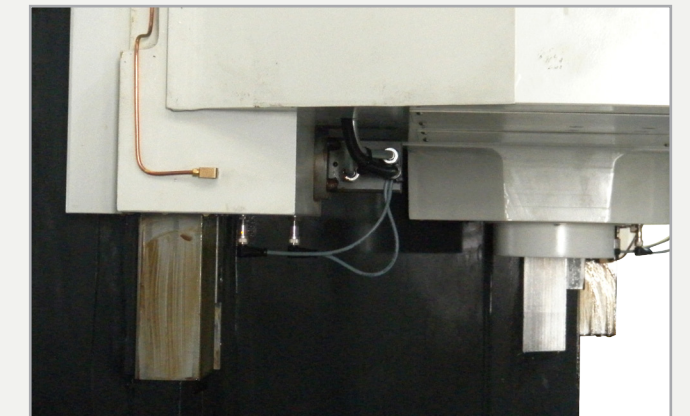
Feed Drive Mechanism

The Box way structure supported by heavy duty linear recirculating unit and Wedge block, keep X axis accuracy more stable in the range of $\pm 0.003\text{mm}/610\text{mm}(0.00012/24")$ for positioning and $\pm 0.002\text{mm}(0.00008")$ for repeatability.



Crossrail

Crossrail ways are ground and its reference way is hardened. The Crossrail is positioned by locating pins and secured by powerful hydraulic clamping system.



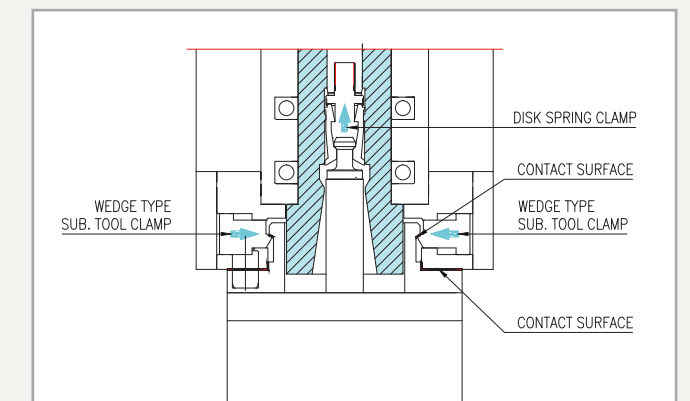
C-axis Indexing by Double Pinion Gears

C-axis is indexed by dual pinion gears so that gear backlash is minimized and accurate C-axis indexing can be achieved.



Tool Clamping System

A center pull stud bolt with 4 wedges of sub-clamping system (hydraulically Powered) generates 7 tons of maximum clamping force.



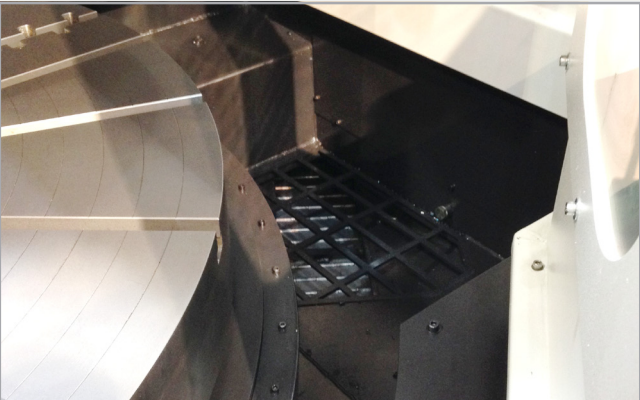
Column Structure

One piece cast iron column with rigid box way design efficiently distributes various loads, even during heavy machining cycles.



Easy Chip Flow and Removal

Slanted structure and sheet metal are designed for easy chip flow and removal.

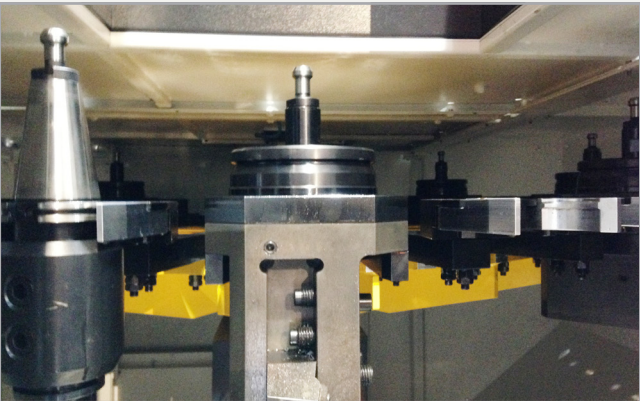


Automatic Tool Changer

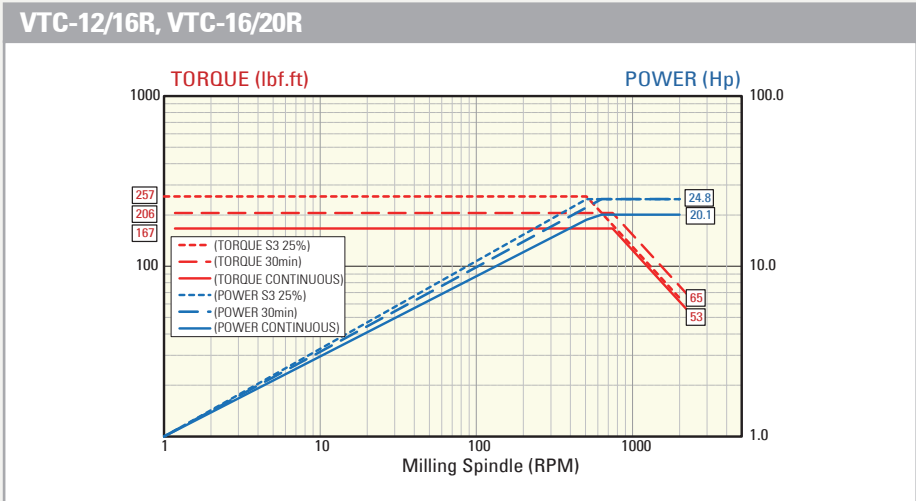
24 tools(7 turning + 16 millings + 1 cover) of storage capacity, including a protection cover, is surrounded by a protection cover with an automatic door to the machining area.



The random indexing function can approach the closest tool accurately by a servo motor for positioning.



Spindle Torque Chart



Machining Range

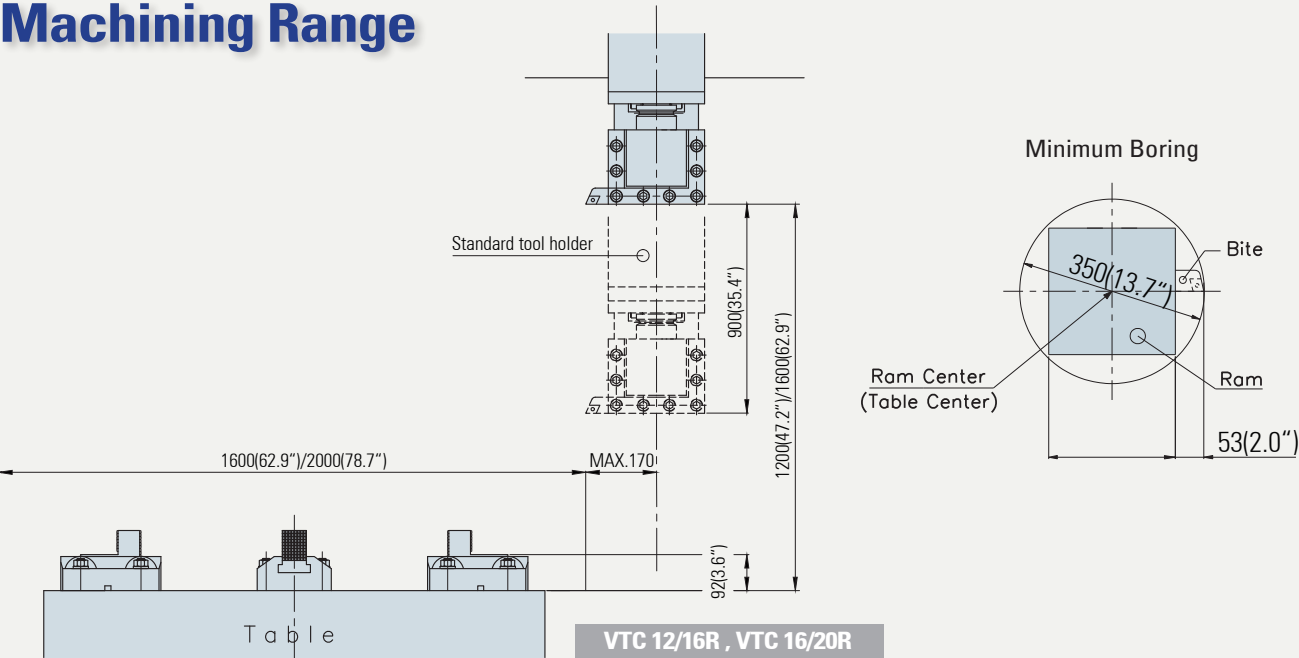


Table Torque Chart

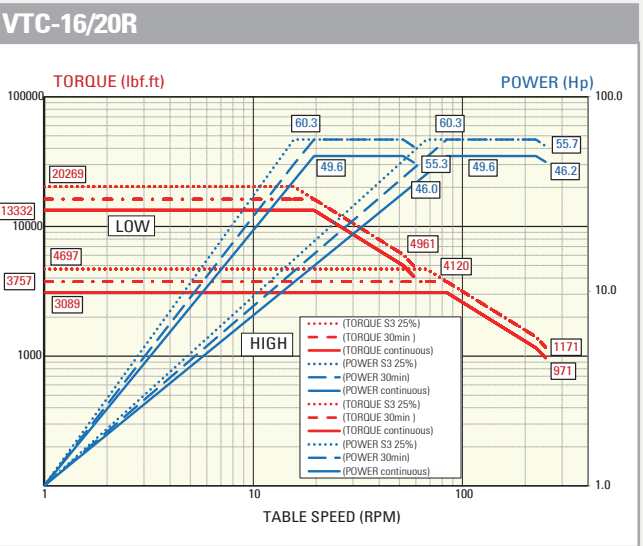
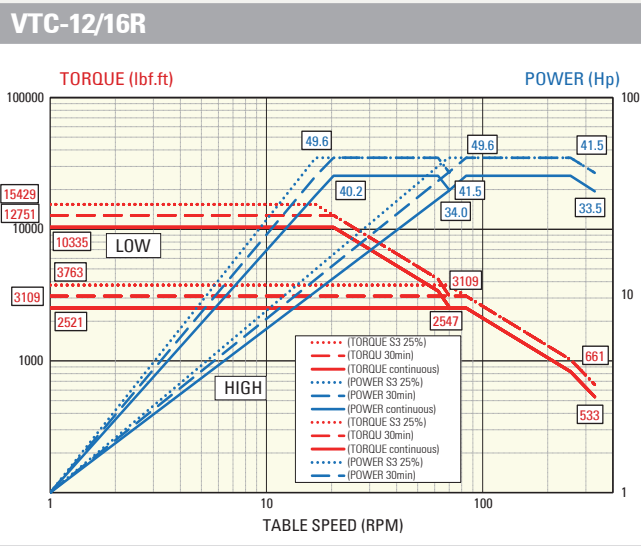
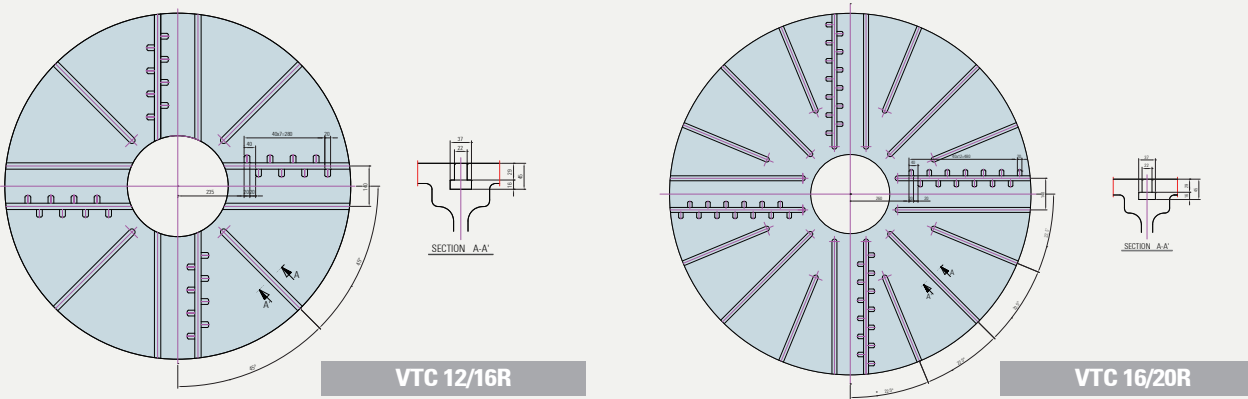


Table Dimensions

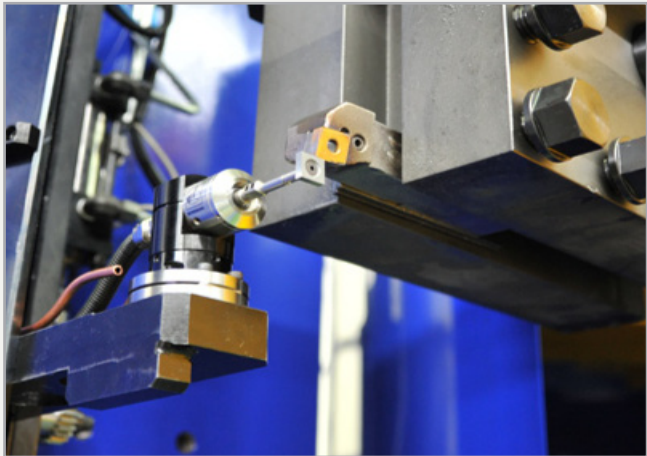


Optional Accessories

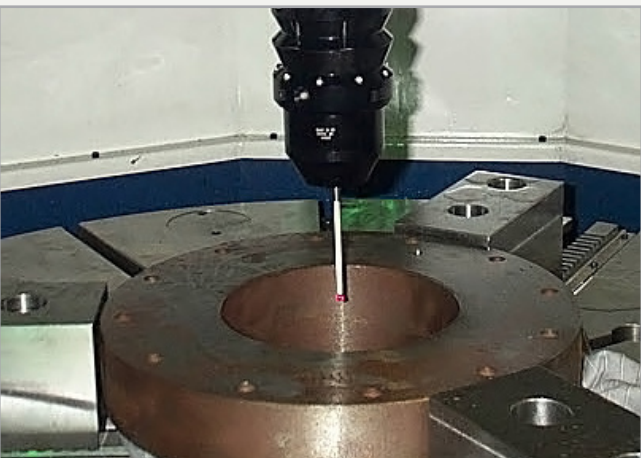
Chip Conveyor



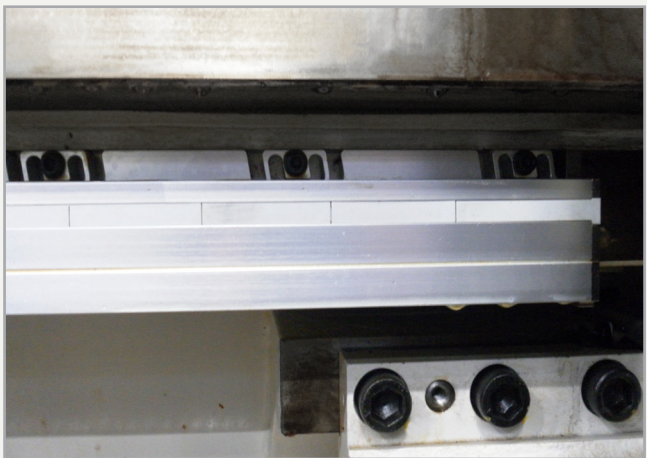
Tool Probe System



Work Probe System



Scales



RAA



High Pressure TSC Units



Turning Tool Holders

	240TCR-01 	240TCR-02
	240TCR-04 	240TCR-05
	240TCR-06 	
	240TCR-07 	240TCR-08 A=400 B=40
		240TCR-09 A=400 B=40

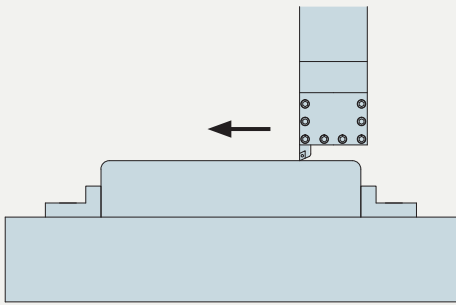
Power Cutting Capability (VTC-16/20R)

X-axis

Condition		
Workpiece	Material	SCM440
	Size(Inch)	Ø770mm(30.3")
Tool	Bite	PCLNL 3232
	No. insert	CNMG 190612
Power	Table power(hp)	37/45(50/60)

Cutting test result

Z-axis Position	Table (rpm)	Cutting Speed m/min (Inch/min)	Cutting Depth mm(Inch)	Cutting Width mm(Inch)	Feed for revolution mm(Inch) / rev
490(19.3")	30	72.5(2855")	6(0.23")	100(3.9")	1(0.039")
	30	72.5(2855")	8(0.31")	100(3.9")	1(0.039")
	30	72.5(2855")	10(0.39")	100(3.9")	1(0.039")

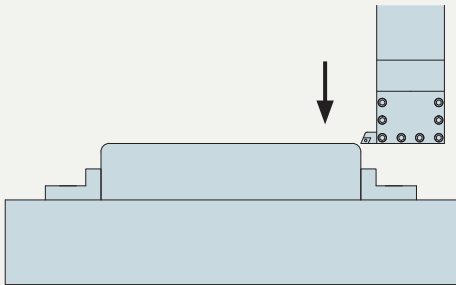


Z-axis

Condition		
Workpiece	Material	SCM440
	Size(Inch)	Ø770mm(30.3")
Tool	Bite	PCLNL 3232
	No. insert	CNMG 190612
Power	Table power(hp)	37/45(50/60)

Cutting test result

X-axis Position	Table (rpm)	Cutting Speed m/min (Inch/min)	Cutting Depth mm(Inch)	Cutting Width mm(Inch)	Feed for revolution mm(Inch) / rev
785(31")	30	72.5(2855")	6(0.23")	100(3.9")	1(0.039")
	30	72.5(2855")	8(0.31")	100(3.9")	1(0.039")

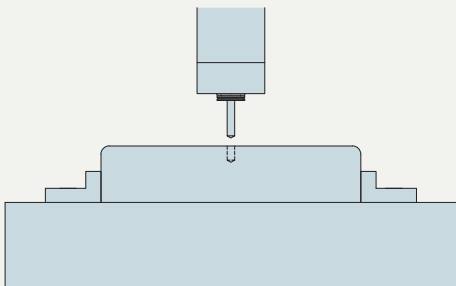


Ø26.5 Drilling

Condition		
Workpiece	Material	SCM440
	Size(Inch)	Ø770mm(30.3")
Tool	Drill Dia.	Ø26.5
Power	Milling Spindle Power(hp)	15/18.5(20.1/24.8)

Cutting test result

X,Z-axis Position	Spindle (rpm)	Cutting Speed m/min (Inch/min)	Cutting Depth mm(Inch)	Feed for revolution mm(Inch) / rev
X : Table center Z : 460~510(18.1~20.1")	200	16.6(650")	50(1.96")	0.15(0.006")

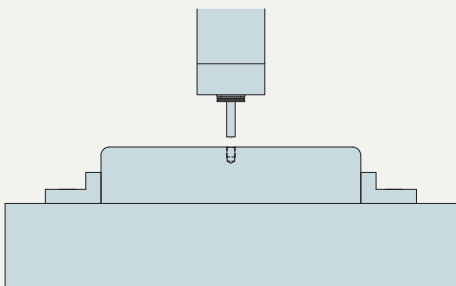


M30 Tapping

Condition		
Workpiece	Material	SCM440
	Size(Inch)	Ø770mm(30.3")
Tool	Tap Dia.	M30 - P3.5
Power	Milling Spindle power(hp)	15/18.5(20.1/24.8)

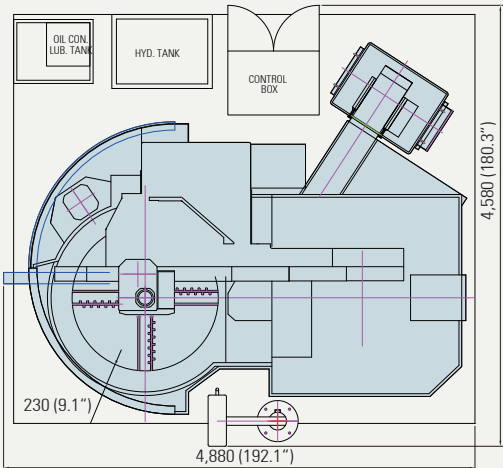
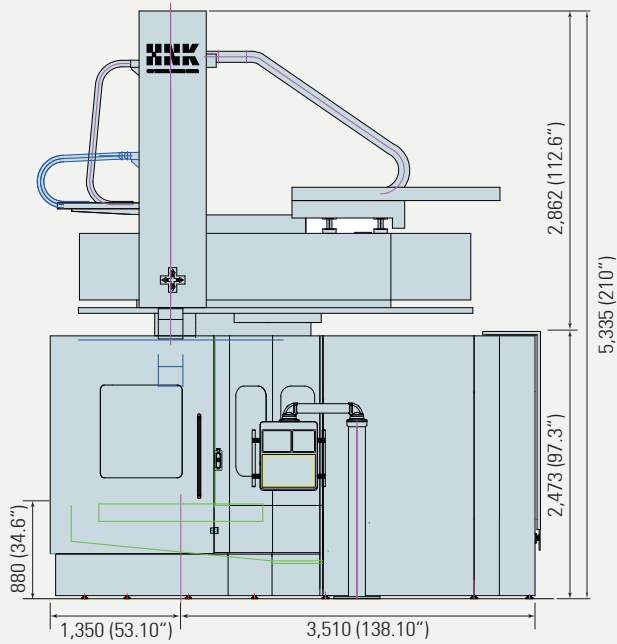
Cutting test result

X,Z-axis Position	Spindle (rpm)	Cutting Speed m/min (Inch/min)	Cutting Depth mm(Inch)	Feed for revolution mm(Inch) / rev
X : Table center Z : 460~495(18.1~19.5")	50	4.7(180")	35(1.37")	3.5(0.13")

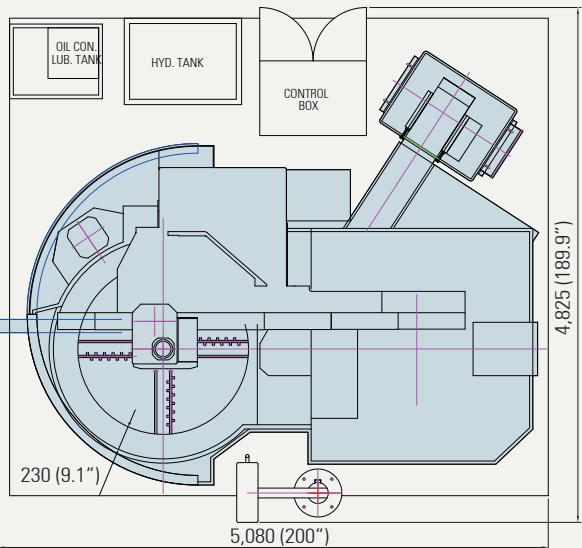
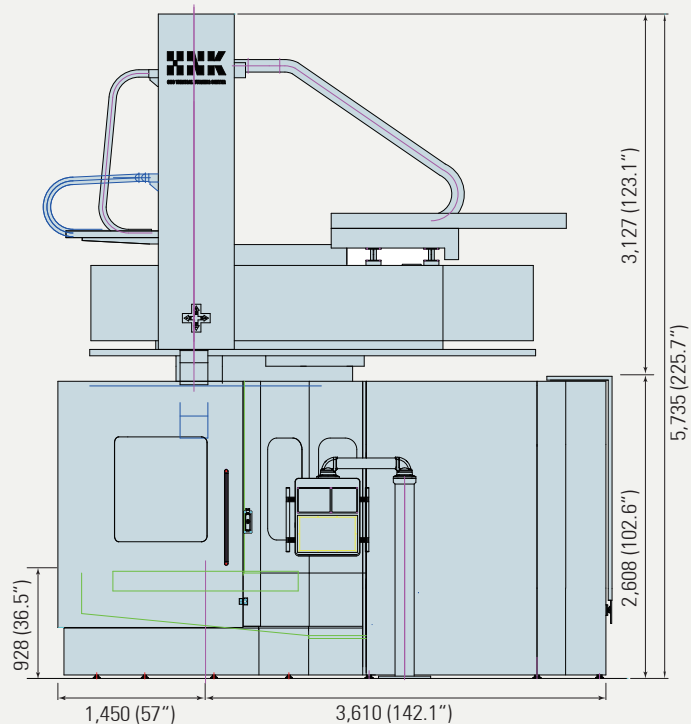


Machine Dimensions

VTC-12/16R



VTC-16/20R



Main Specifications

Item			Unit	VTC-12/16R	VTC-16/20R
Capacity	Table Diameter		mm(inch)	1,200 (47.2")	1,600 (63")
	Max. Swing/Max. Turning Diameter		mm(inch)	1,600 (63")	2,000 (78.7")
	Max. Turning Height		mm(inch)	Max. 1,200 (47.2")	Max. 1,600 (63")
Table	Table Speed for Turning (2 steps)		r.p.m	Max. 330	Max. 250
	Max. Load on Table		kg(lbs)	7,000 (14,400)	8,000 (17,600)
	Table Speed for Indexing (C-axis)		deg/min	1,080	1,080
	Table Indexing Control (C-axis)		deg	0.001	0.001
Ram Head	Horizontal Travel of Ram Head (X-axis)		mm(inch)	-100 ~ +970 (-3.9"~+38.1")	-100 ~ +1,170 (-3.9"~+46")
	Vertical Travel of Ram Head (Z-axis)		mm(inch)	900 (35.4")	900 (35.4")
	Rapid Feed of Ram Head	X-axis	mm(inch)/min	12,000 (472.4")	12,000 (472.4")
		Z-axis	mm(inch)/min	10,000 (393.7")	10,000 (393.7")
	Feed Rate of Ram Head (X&Z)		mm(inch)/min	0 ~ 3,000 (0"~118.1")	0 ~ 3,000 (0"~118.1")
	Milling Spindle Speed		r.p.m	Max. 2,000	Max. 2,000
	Ram Size		mm(inch)	240 × 240 (9.4"x9.4")	240 × 240 (9.4"x9.4")
	Milling Spindle Taper		-	ISO 50	ISO 50
	Tool Shank Size		mm(inch)	40 × 40 (1.5"x1.5")	40 × 40 (1.5"x1.5")
Cross Rail	Vertical Travel of Cross Rail		mm(inch)	600 (300 × 2 Step) (23.6" (11.8" × 2 Step))	750 (250 × 3 Step) (29.5" (9.8" × 3 Step))
Motor Power	Main Motor for Table Drive		kW(hp)	A.C 30/37 (40/50)	A.C 37/45 (50/60)
	Main Motor for Milling Spindle		kW(hp)	A.C 15/18.5 (20/25)	A.C 15/18.5 (20/25)
	Motor for Ram Head (X-axis)		kW(hp)	A.C SERVO 4 (5.36)	A.C SERVO 4 (5.36)
	Motor for Ram Head (Z-axis)		kW(hp)	A.C SERVO 4 (5.36)	A.C SERVO 4 (5.36)
CNC Controller			FANUC 0i-TD (8.4" TFT LCD)		

Standard Accessories

- Automatic Tool Changer (24 pots - 7 turning + 16 millings)
- Standard Turning Tool Holders
240TCR-01 (2 EA)
- Table Bearing Cooling Unit
- External Coolant System
- Splash Guard
- 4-jaw Independent Manual Chuck
- Hydraulic Power Unit
- X-axis Steel Cover
- Work Light
- Patrol Light (3 Colors)
- Foundation Bolts & Nuts
- Maintenance Tool Kit

Optional Accessories

- Chip Conveyor (Hinge Type)
- Coolant-thru Spindle Device
- Turning Tool Holders
- Scale Feed Back System (X, Z-axis)
- Automatic Power Off for N.C
- Transfomer
- Work Probe
- Tool Setter
- Right Angular Attachment

CNC System Specifications (FANUC 0i-TD)

Standard Specifications		
Controlled Axis		
Max. controlled axes	: 3 axes	
Simultaneously controlled axes	: 2 axes	
Least input increment	: 0.001mm	
Inch / Metric conversion		
Chamfering on/off		
Backlash compensation		
Pitch error compensation		
Operation		
MDI operation		
Program number search		
Sequence number search		
Dry run		
Single block		
JOG feed		
Incremental feed	x1, x10, x100	
Manual handle feed		
Interpolation Function		
Positioning	G00	
Linear interpolation		
Circular interpolation		
Dwell		
Threading, synchronous cutting		
Skip function	G31	
Reference position return	G28	
Reference position return chuck	G27	
2nd Reference position return		
Thread cutting retract		
3rd/4th Reference position return		
Handle interruption		
Program restart		
Sequence number comparison and stop		
Polar coordinate interpolation		
Helical interpolation		
Cylindrical interpolation		
Feed Function		
Rapid traverse rate	Max. 10m/min	
Rapid traverse override	F0, 25, 50, 100%	
Feed per minute / Feed per revolution		
Tangential speed constant control		
Cutting feed rate clamp		
Automatic acceleration/deceleration		
Override cancel		
Manual per revolution feed		
Program Input		
Optional block skip	1	
Max. programmable dimension	8 - digit	
Program number	04 - digit	
Sequence number	N5 - digit	
Input unit 10 time multiply		
Rotary axis roll-over function		
Coordinate system shift		
Direct input of coordinate system shift		
Manual absolute on and off		
G code system		A
Sub program call		4 folds nested
Canned cycles		G90, G92, G94
Custom macro B		
Chamfering / corner R		
G code system B,C		
Multiple repetitive cycle		
Canned cycle		
Workpiece coordinate system		
Workpiece coordinate system preset		
Auxiliary/Spindle Speed Function		
Auxiliary function		M8 - digit
Spindle speed function		S5-digit, binary output
Spindle serial output		S5-digit
Constant surface speed control		
1st Spindle orientation		
Rigid tap		
2nd Spindle orientation		
Tool Function/Tool Compensation		
Tool function		T4 digits
Tool offset pairs		99 pairs
Tool nose radius compensation		
Tool offset value counter input		
Tool geometry/wear offset		
Editing Operation		
Part program storage length		1MB
Number of registerable programs		63
Part program editing		
Multi part program editing		
Run hour and parts count display		
Setting and Display		
Status display		
Clock function		
Self-diagnosis function		
Alarm display		
Configuration		
Language display		English
Data protection key		
External work piece number search		9999
Memory card interface		For maintenance
Graphic function		
Data Input / Output		
Reader / puncher interface		RS 232C
External message		
USB memory input/output		USB MEMORY
Interface function		
Embedded ethernet		
Other		
Status output signal		
Setting and display unit		8.4" TFT LCD
Manual pulse generator		
Auto data backup 1		



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