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HNK VERTICAL TURNING CENTERS

R Series

HNK MACHINE TOOL CO., LTD.

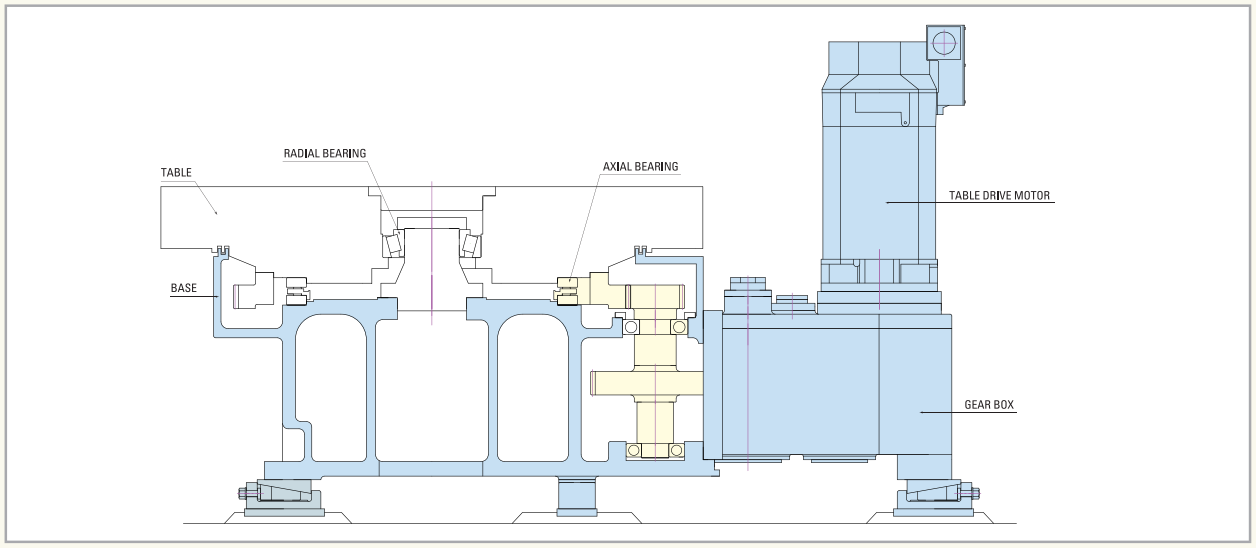
SINCE 1960

R Series

Table Base Construction

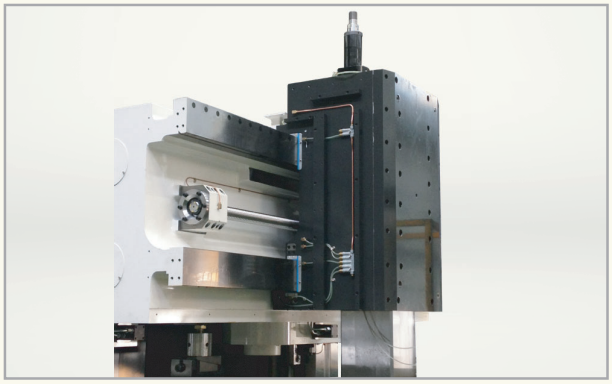
Designed for Heavy Workpiece Loading and Precision Machining - Rigid cast iron structure of table base and heavy duty, high precision taper roller bearings and thrust roller bearings ensure heavy load turning and precision machining.

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

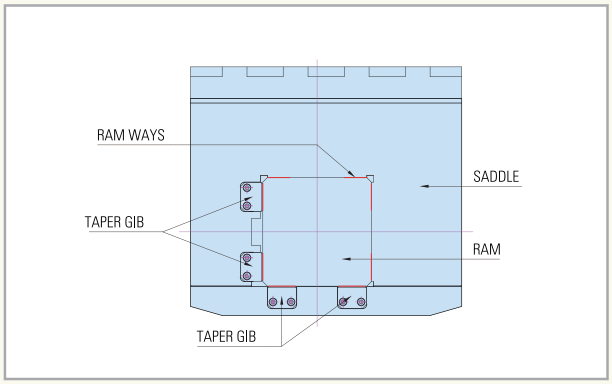


Ram Head

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

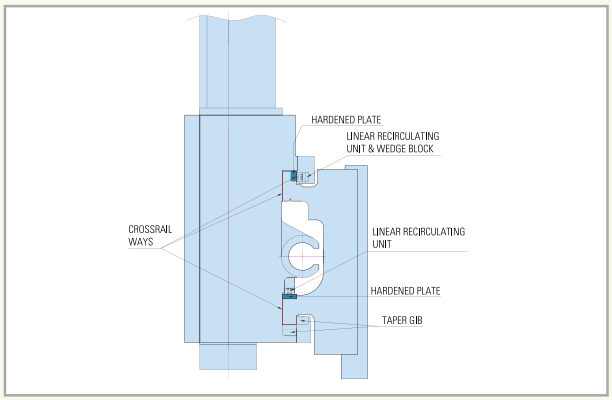


Minimal Surface Friction Design - RAM moves smoothly on a lubricated(automatically metered)Fluoroplastic resin Turcite surface, preventing frictional heat and ensuring precision positioning accuracy.



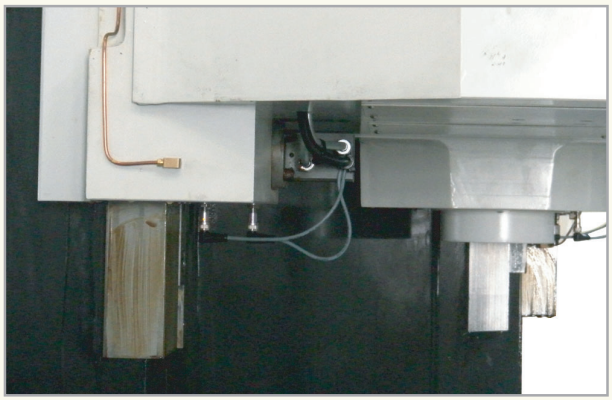
Feed Drive Mechanism

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



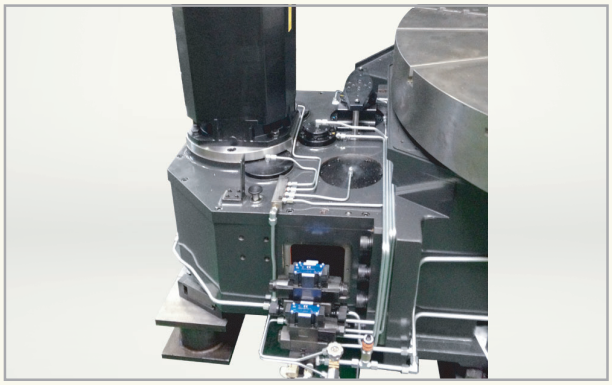
Crossrail

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



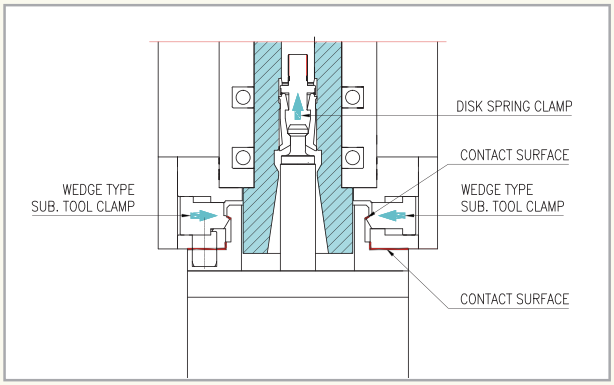
C-axis Indexing by Double Pinion Gears

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



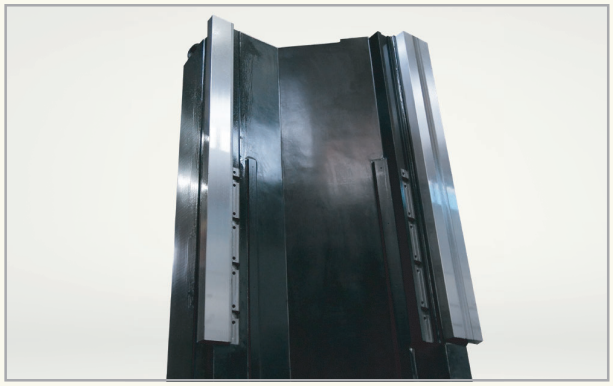
Tool Clamping System

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



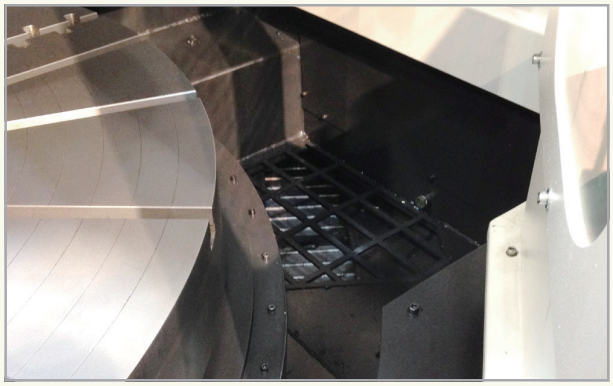
Column Structure

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.

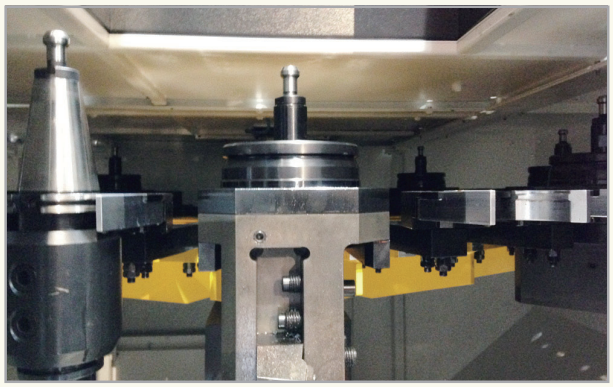
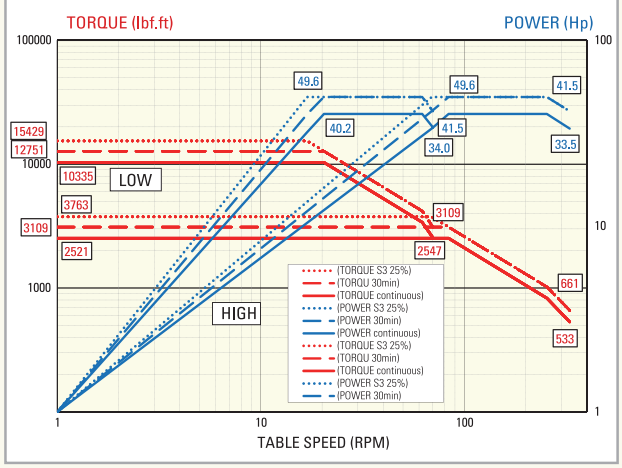
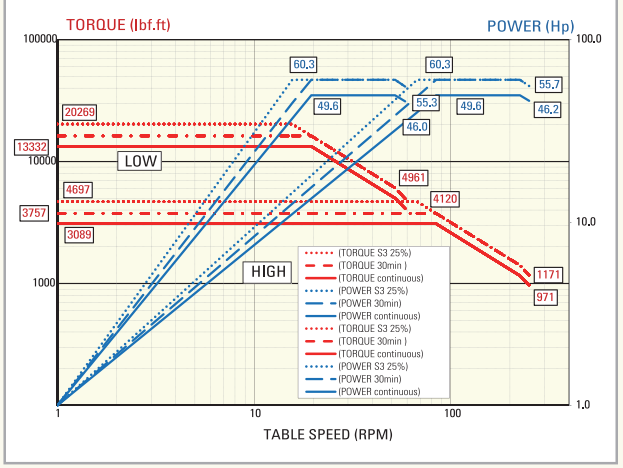


Table Torque Chart

VTC-12/16R

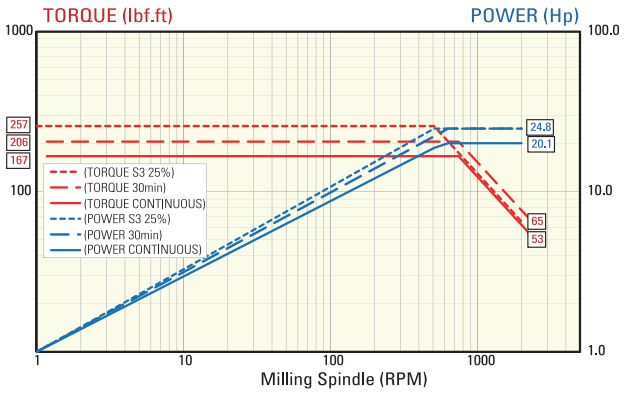


VTC-16/20R

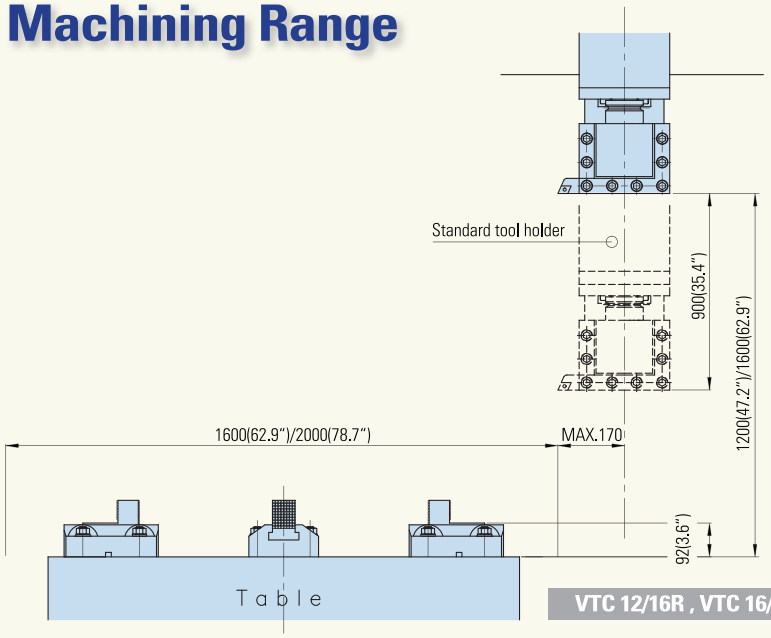


Spindle Torque Chart

VTC-12/16R, VTC-16/20R



Machining Range



VTC 12/16R , VTC 16/20R

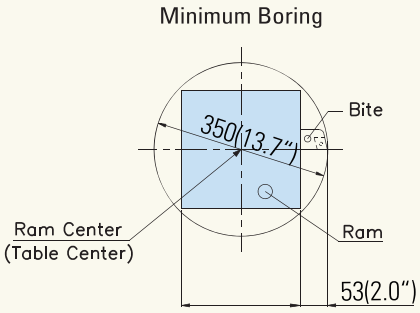
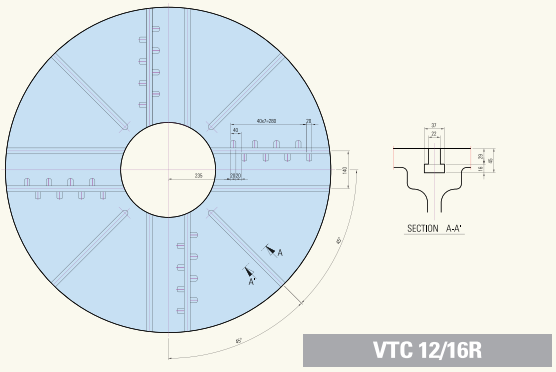
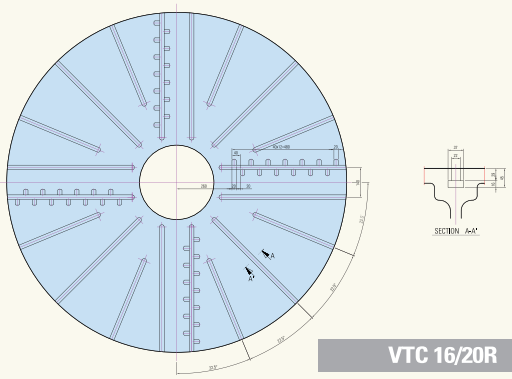


Table Dimensions



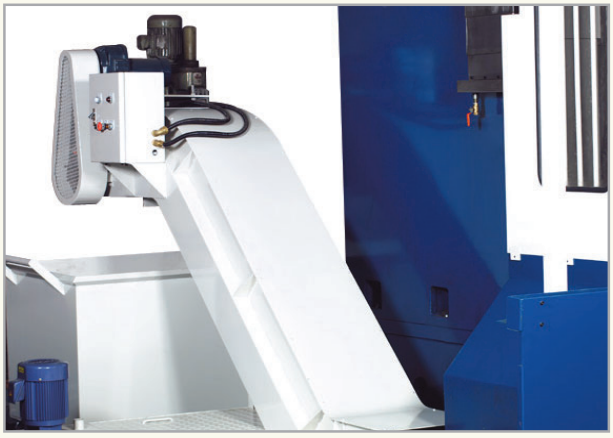
VTC 12/16R



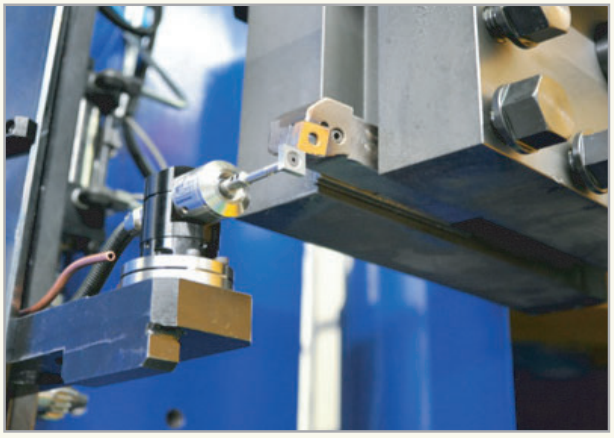
VTC 16/20R

Optional Accessories

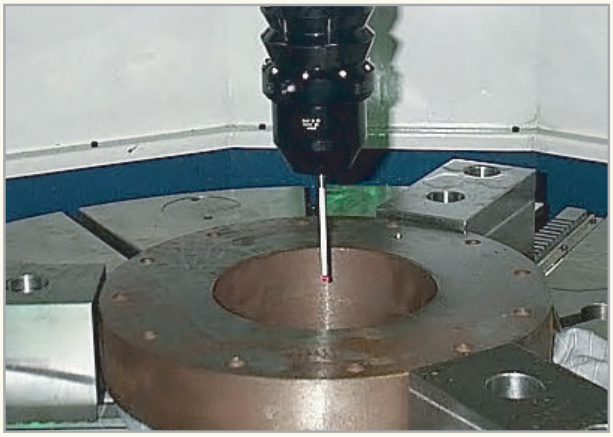
Chip Conveyor



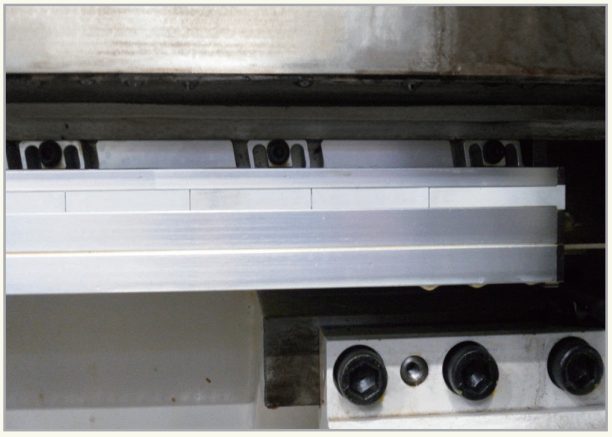
Tool Probe System



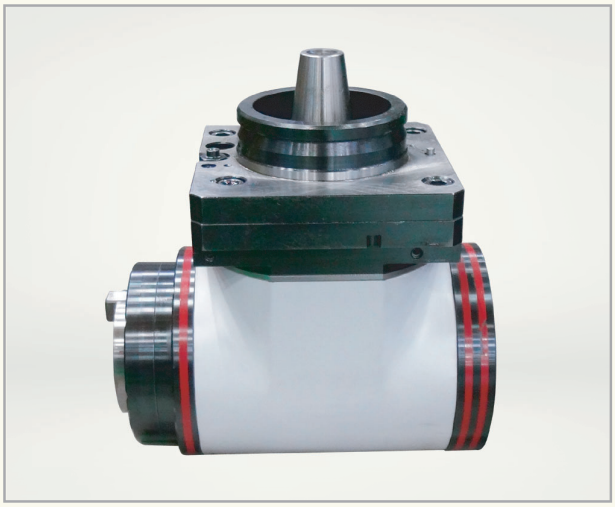
Work Probe System



Scales



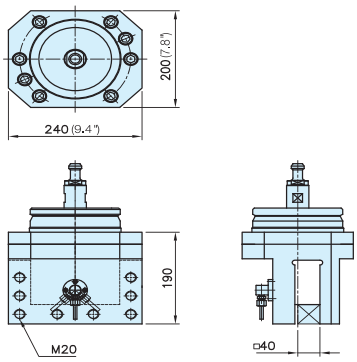
RAA



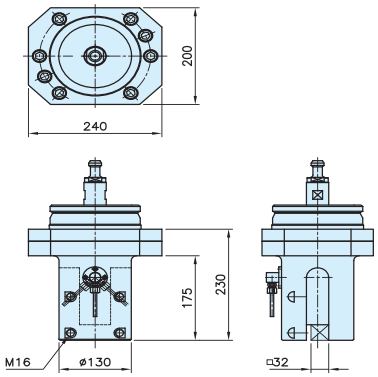
High Pressure TSC Units

Turning Tool Holders

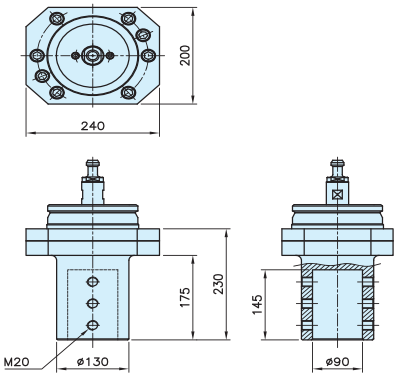
240TCR-01



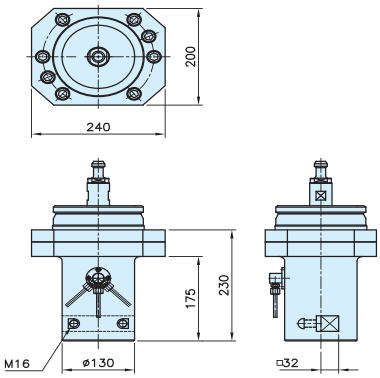
240TCR-02



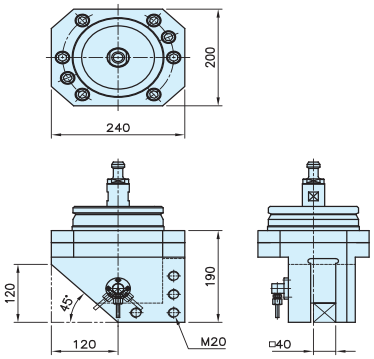
240TCR-04



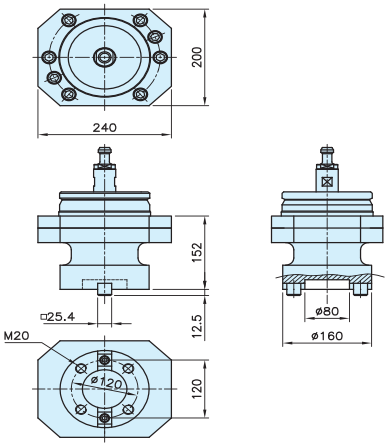
240TCR-05



240TCR-06



240TCR-07



240TCR-08

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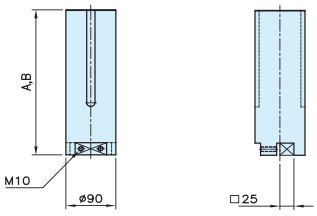
B=40



240TCR-09

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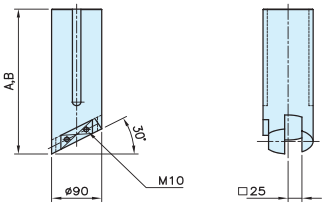


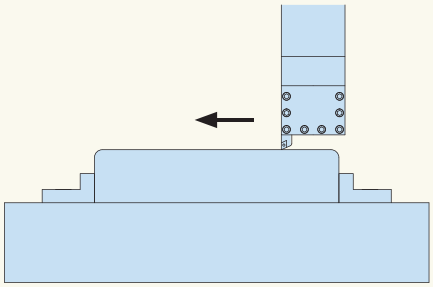
Power Cutting Capability (VTC-16/20R)

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")

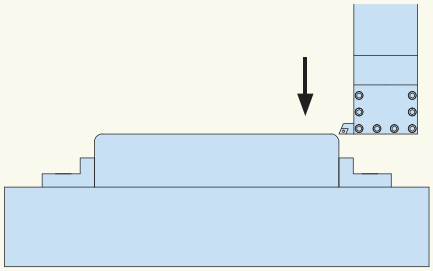


Z-axis

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")

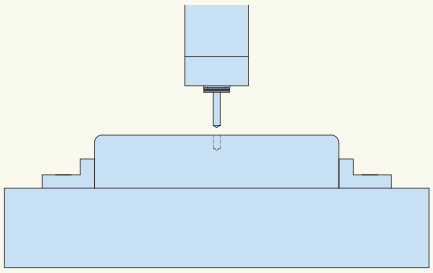


Ø26.5 Drilling

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")

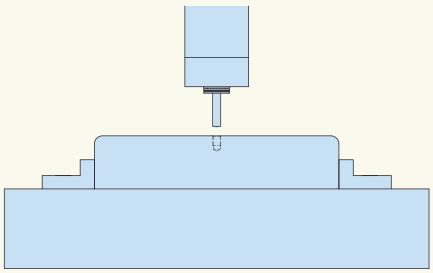


M30 Tapping

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)

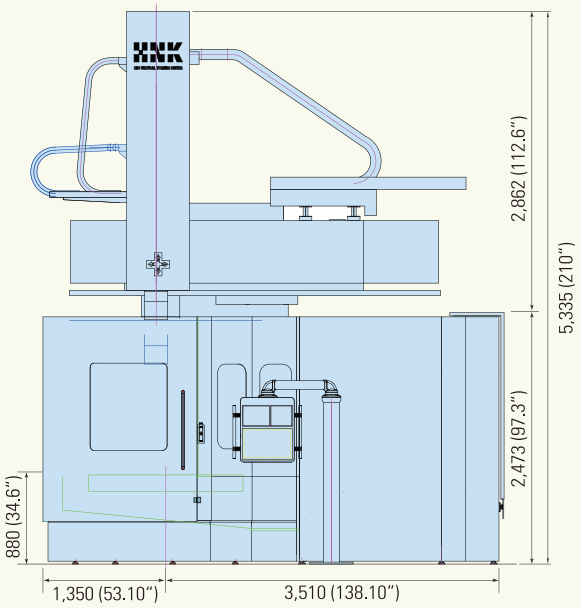
Cutting test result

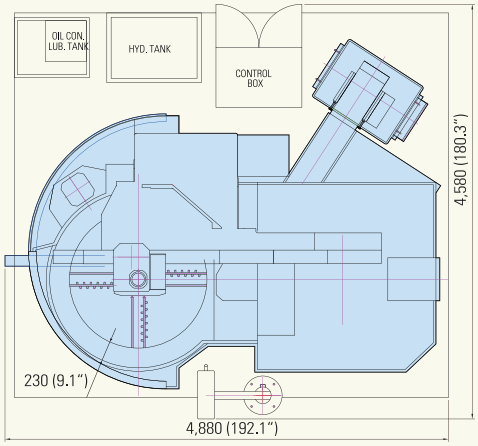
X.Z-axis Position	Spindle (rpm)	Cutting Speed m/min (Inch/min)	Cutting Depth mm(Inch)	Feed for revolution mm(Inch) / rev
X : Table center **Z : 460~495**(18.1~19.5")	50	4.7(180")	35(1.37")	3.5(0.13")



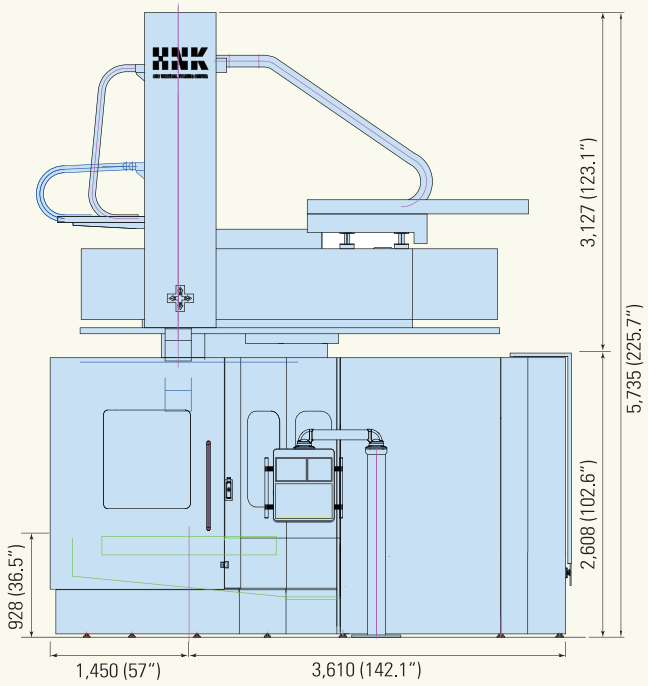
Machine Dimensions

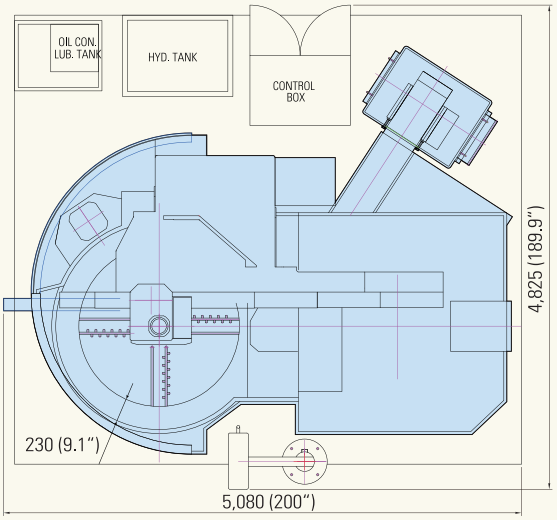
VTC-12/16R





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 (15,400)	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	

HNK

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Printed in Korea April 2016