

MEMO



NT & VTC Series

CNC VERTICAL TURNING LATHE



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NT series

- » Two-axis CNC vertical lathe.
- » This model guarantees high rigidity, high speed operation and high accuracy due to the improved machine features such as rigid body construction and the latest control system.



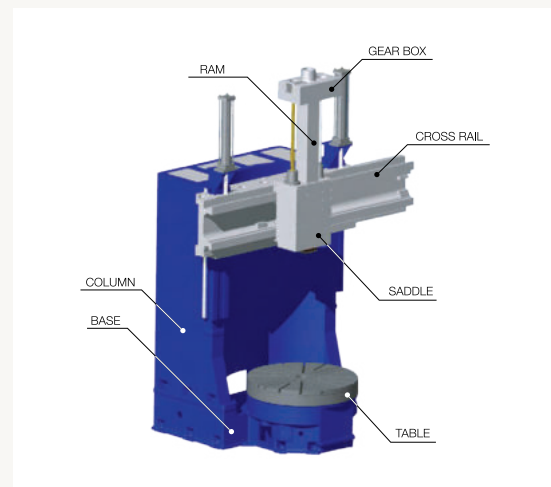
VTC series

- » Three-axis CNC vertical turning center.
- » This model guarantees high rigidity, high speed operation and high accuracy due to the improved machine features such as rigid body construction and the latest control system.



► Main Construction

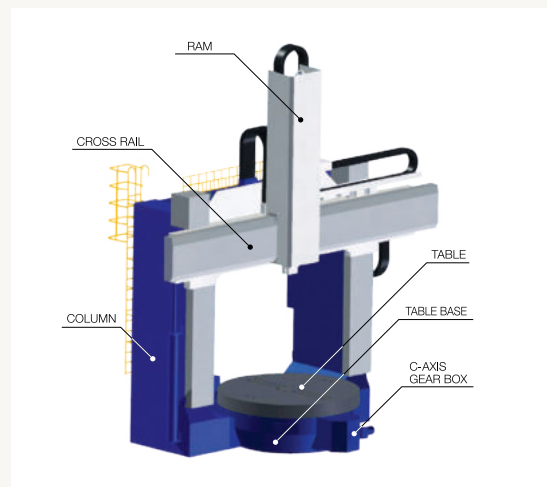
/ Compact-Models



Rigid table base and column construction

The column is bolted to the of table base. This type of construction minimizes any misalignment or out-of squareness to provide high accuracy.

/ Grand-Models



Rigid double column construction

The bottom of double column is fixed on both floor and the table base, and the top is fixed against the top beam. Overall construction design is suitable for heavy loads and heavy duty cutting.

/ Y-axis application as an option



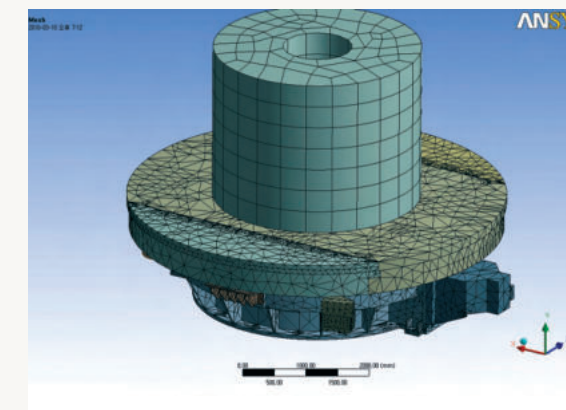
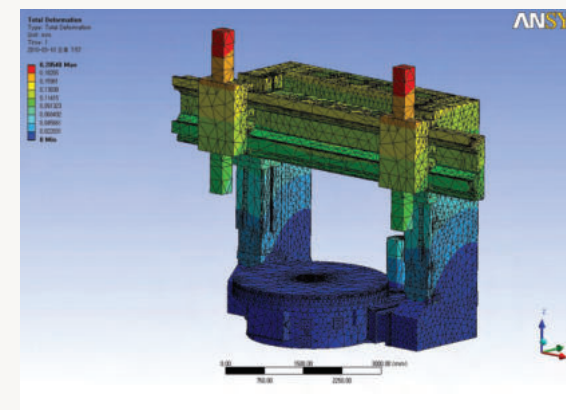
- Y-axis maximizes the capability of VTC-series.
- Easy job loading /unloading on the table.
- Y-axis makes it possible 「off-centered」 cutting process.

/ Column traveling for easy job loading/unloading as an option

- Large models adopt Column Traveling Function for easy loading/unloading of heavy workpieces.

► FEM

From the stage of design, the optimized machine accuracy and cutting condition is achieved by analyzing the rigidity and stress distribution of the structure through FEM system.



/ RAM HEAD

NT & VTC - Series
Turning



VTC-Series
Drilling



VTC - Series
Milling



VTC-Series
Tapping



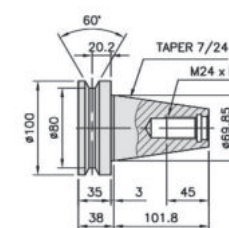
• Rigid RAM Structure

Hardened, ground, and hydraulically balanced forged steel square ram is firmly encased in the heavily ribbed saddle.

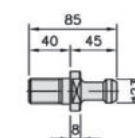
• Live Spindle (VTC-Series)

The VTC models are equipped with live spindle and 0.001° table indexing as standard to offer flexible machining capabilities.

Tool Shank
MAS 403 BT50



Pull Stud Bolt
MAS 403 P50T-I(45°)



▶ Turning Tool Holder

/ NT-Series(Only for 200x200 Ram)



200 HK-01

The Ram head pulls the T-bolt with hydraulic power to clamp tool holder.
To insure accurate positioning and firm clamping of tool holder, Curvic coupling is used between the ram and tool holder.

/ NT, VTC Tool Holder

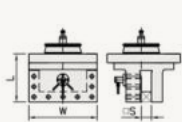


400 TCR-01

In case of Grand Models, the tool holder is clamped by pull stud bolts & 4 sub-clamp wedges which are placed at the middle of Tool holder.

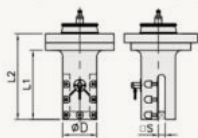
/ Turning Tool Holder(NT/VTC-Series)

• Standard Tool Holder (Thru-tool-coolant type)



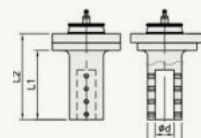
Type	L	W	S
240TCR-01	190	240	40
300TCR-01	230	300	40
350TCR-01	280.7	350	40
400TCR-01	280.7	370	60

• Tool Holder (Thru-tool-coolant type)



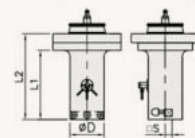
Type	øD	S	L1	L2
240TCR-02	130	32	175	230
300TCR-02	130	32	220	300
350TCR-02	160	32	252	350.7
400TCR-02	200	40	405	500.7

• Holder for Boring bar



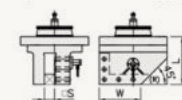
Type	øD	ød	L1	L2
240TCR-04	130	90	175	230
300TCR-04	130	90	220	300
350TCR-04	170	100	252	350.7
400TCR-04	200	110	405	500.7

• Tool Holder (Thru-tool-coolant type)



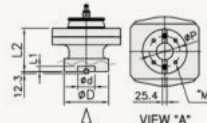
Type	øD	L1	L2	S
240TCR-05	130	175	230	32
300TCR-05	130	220	300	32
350TCR-05	160	252	350.7	32
400TCR-05	200	405	500.7	40

• Tool Holder (right or left) (Thru-tool-coolant type)



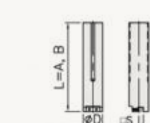
Type	L	W	S
240TCR-06	190	120	40
300TCR-06	230	150	40
350TCR-06	280.7	175	40
400TCR-06	280.7	185	60

• Holder base



Type	øD	L1	L2	ød	øP	M
240TCR-07	160	20	152	80	120	M20
300TCR-07	160	20	185	80	120	M20
350TCR-07	180	20	202.7	80	120	M20
400TCR-07	260	30	250.7	100	180	M24

• Boring bar



Type	øD	L	S
240TCR-08	90	A=300, B=400	25
300TCR-08	90	A=300, B=400	25
350TCR-08	100	A=400, B=500	25
400TCR-08	110	A=400, B=500	25

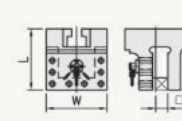
• Boring bar(right or left)



Type	øD	L	S
240TCR-09	90	A=300, B=400	25
300TCR-09	90	A=300, B=400	25
350TCR-09	100	A=400, B=500	25
400TCR-09	110	A=400, B=500	25

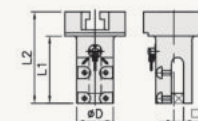
/ Turning Tool Holders(NT-Series)

• Standard Tool Holder (Thru-tool-coolant type)



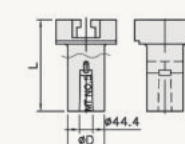
Type	L	W	S
200HK-01	200	200	40

• Tool Holder (Thru-tool-coolant type)



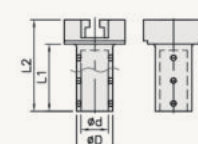
Type	øD	L1	L2	S
200HK-02	130	220	300	32

• Morse Taper Holder



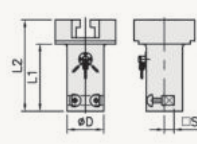
Type	øD	L
200HK-03	130	300

• Holder for Boring bar



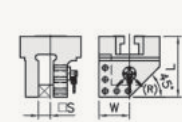
Type	øD	ød	L1	L2
200HK-04	130	90	220	300

• Tool Holder (Thru-tool-coolant type)



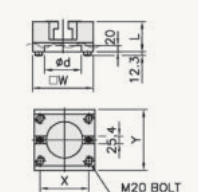
Type	øD	L1	L2	S
200HK-05	130	220	300	32

• Tool Holder (right or left) (Thru-tool-coolant type)



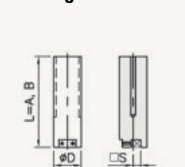
Type	S	L	W
200HK-06	40	200	100

• Holder base



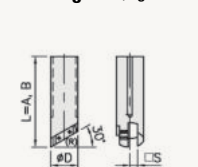
Type	L	d	W	X	Y
200HK-07	100	120	200	160	140

• Boring bar



Type	øD	L	S
200HK-08	90	A=300, B=400	25

• Boring bar (right or left)



Type	øD	L	S
200HK-09	90	A=300, B=400	25

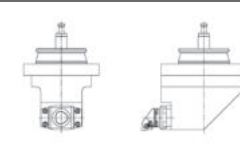
/ Special Tool Holders(Capto Tool)



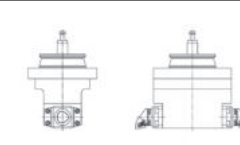
- Capto tool holder is designed to support both of Manual clamping & Automatic clamping.
- Through Coolant System can be applied to Capto tool holder.
- High Pressure Coolant system for Capto tool holder can be applied up to 150 bar.
- Capto tool holder is designed to support both of one-way tool clamping(RH, RV, LH & LV) & two way tool clamping. (RH-LH, RV-LH, RH-RV & RV-LV).

• CAPTO Tool Holder

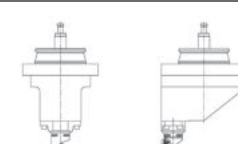
Left Horizontal Type(LH)



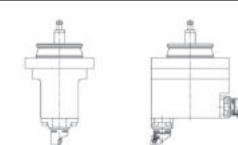
Left Horizontal Type & Right Horizontal Type(LH-RH)



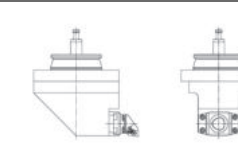
Left Vertical Type(LV)



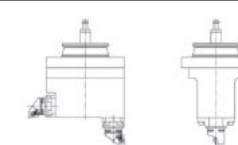
Left Vertical Type & Right Horizontal Type(LV-RH)



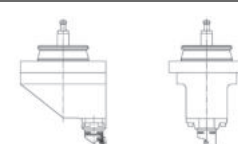
Right Horizontal Type(RH)



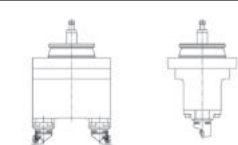
Left Horizontal Type & Right Vertical Type(LH-RV)



Right Vertical Type(RV)

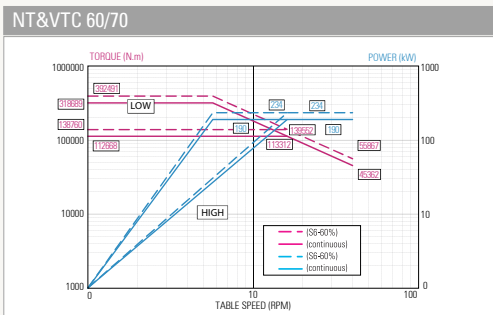
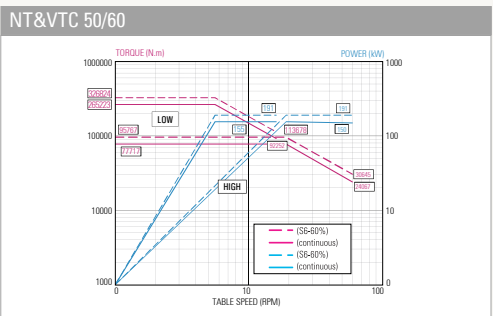
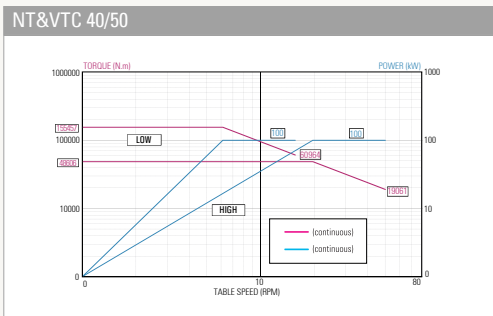
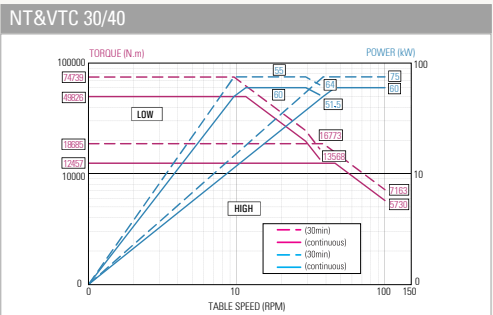
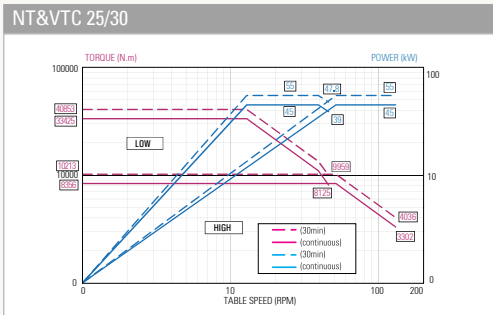
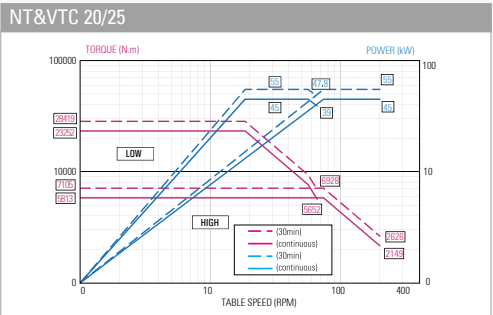
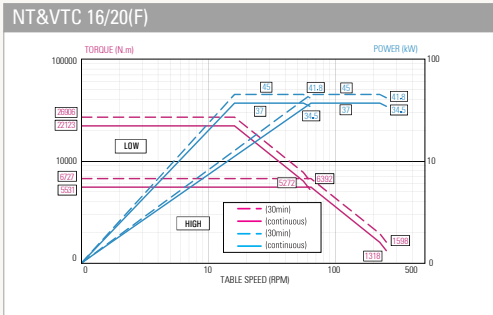
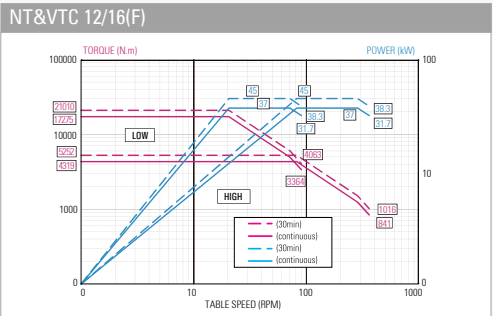
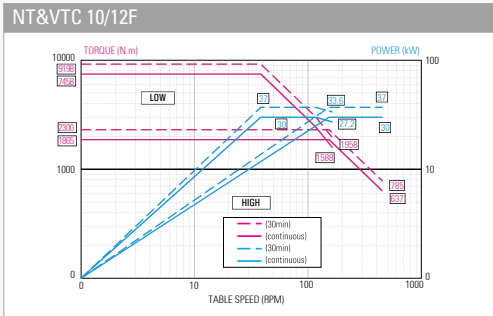


Right Vertical Type & Left Vertical Type(LV-RV)

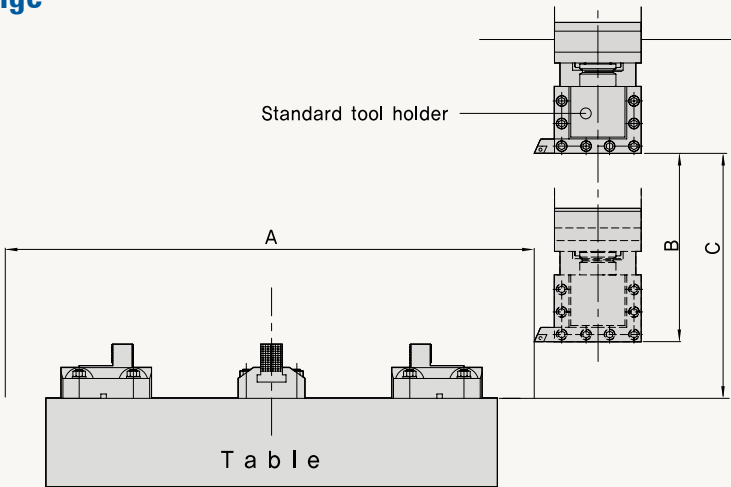


Major Capabilities

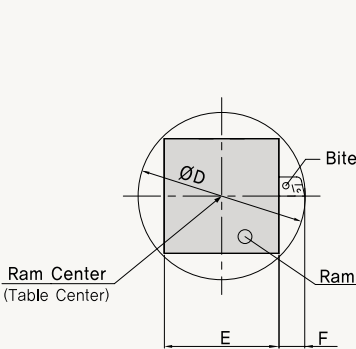
Table Power-Torque Diagram



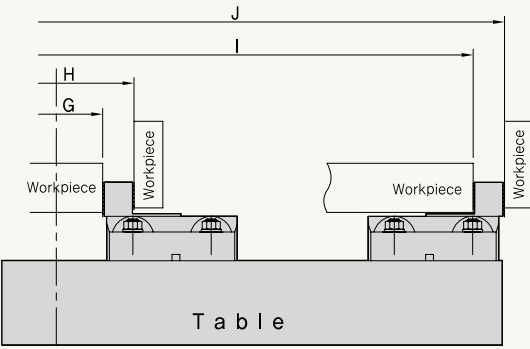
Machining Range



Minimum Boring



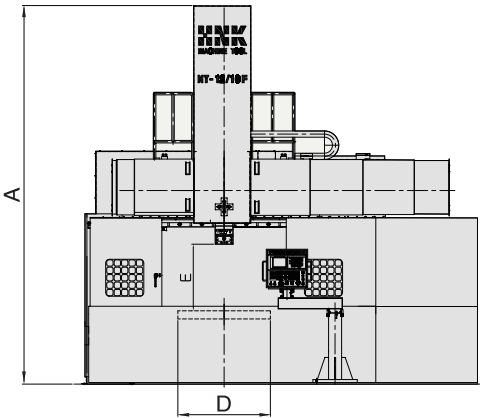
Chuckling Range



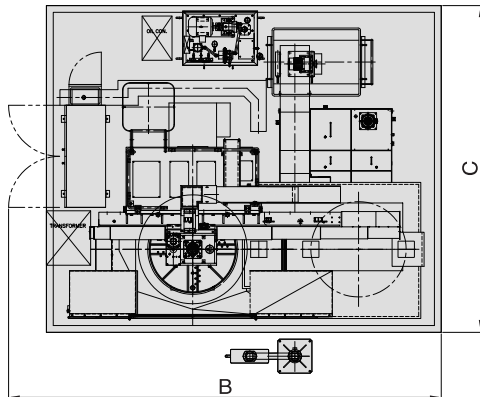
	A	B	C	D	E	F	G	H	I	J
NT&VTC-10/12F	1,250	750	800	285/350	200/240	42/55	190	340	910	1,050
NT&VTC-12/16F	1,600	900	900	285/350	200/240	42/55	190	340	1,150	1,290
NT&VTC-12/16	1,600	900	1,300	285/350	200/240	42/55	190	340	1,150	1,290
NT&VTC-16/20F	2,000	900	900	285/350	200/240	42/55	270	410	1,490	1,620
NT&VTC-16/20	2,000	900	1,660	285/350	200/240	42/55	270	410	1,490	1,620
NT&VTC-20/25	2,500	1,000	1,800	350	240	55	360	500	1,930	2,070
NT&VTC-25/30	3,000	1,200	2,000	350	240	55	540	690	2,480	2,620
NT&VTC-25/35	3,500	1,200	2,000	350	240	55	540	690	2,480	2,620
NT&VTC-30/40	4,000	1,300	2,200	425	300	62	540	690	2,960	3,100
NT&VTC-40/50	5,000	1,500	2,500	495	350	72	780	980	3,900	4,100
NT&VTC-50/60	6,000	2,000	3,000	570	400	85	830	1,010	5,010	5,190
NT&VTC-60/70	7,000	2,200	3,500	570	400	85	1,120	1,300	5,940	6,120
NT&VTC-80/100	10,000	3,000	6,000	720	500	110	2,344	2,470	7,840	8,020
NT&VTC-100/160	16,000	3,000	6,000	720	500	110	2,344	2,470	9,840	10,020

► Dimensions

FRONT VIEW

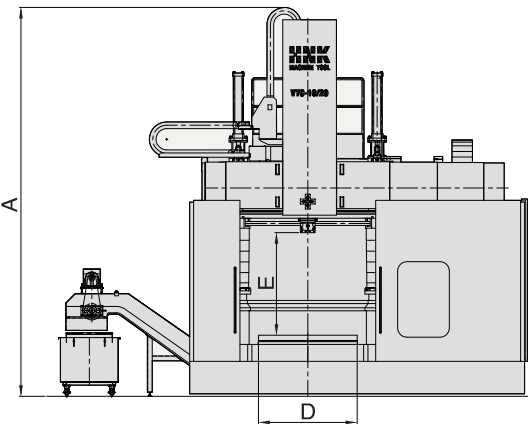


TOP VIEW

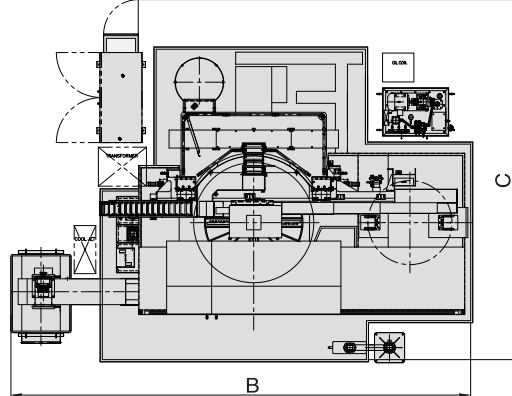


	A	B	C	D	E
NT-10/12F	4,665	4,700	5,150	1,000	800
VTC-10/12F	4,875	4,850	5,150	1,000	800
NT-12/16F	5,200	7,100	4,850	1,250	900
VTC-12/16F	5,320	7,100	4,850	1,250	900
NT-16/20F	5,280	6,350	5,200	1,600	900
VTC-1620F	5,335	6,550	5,200	1,600	900

FRONT VIEW

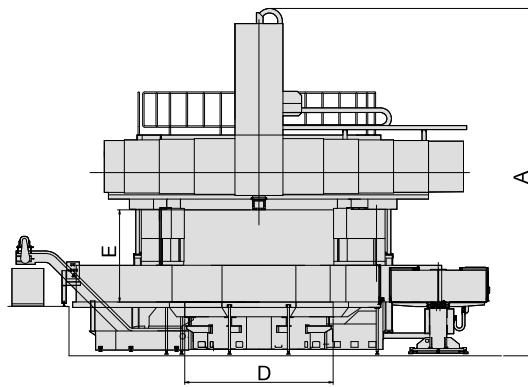


TOP VIEW

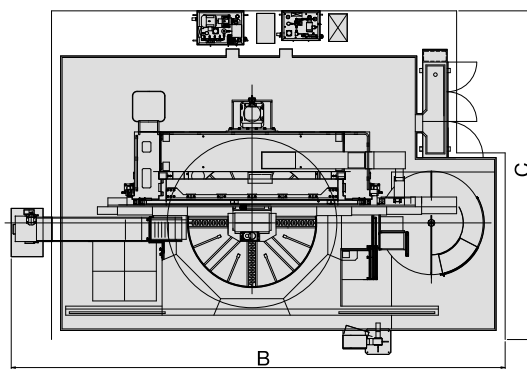


	A	B	C	D	E
NT-12/16	5,500	7,760	5,150	1,250	1,300
VTC-12/16	5,760	7,760	5,150	1,250	1,300
NT-16/20	5,800	8,600	5,200	1,600	1,660
VTC-16/20	6,115	8,600	5,200	1,600	1,660
NT-20/25	6,500	7,650	5,400	2,000	1,800
VTC-20/25	6,720	7,800	5,400	2,000	1,800
NT-25/30	7,110	9,800	7,100	2,500	2,000
VTC-25/30	7,110	9,800	7,100	2,500	2,000

FRONT VIEW

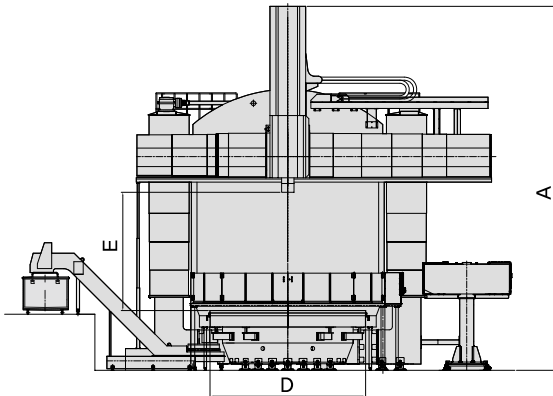


TOP VIEW

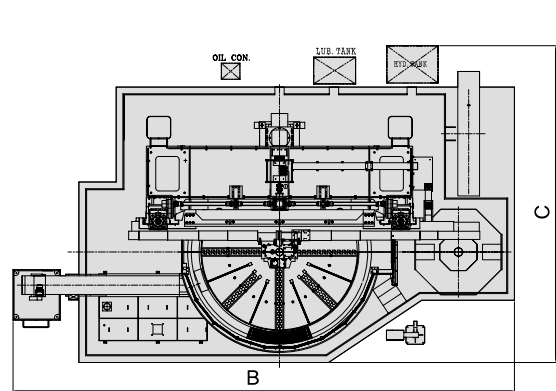


	A	B	C	D	E
NT-25/35	7,200	10,850	6,950	2,500	2,000
VTC-25/35	7,600	10,850	6,950	2,500	2,000
NT-30/40	8,250	11,650	8,100	3,000	2,200
VTC-30/40	8,250	11,650	8,100	3,000	2,200

FRONT VIEW



TOP VIEW



	A	B	C	D	E
NT-40/50	9,200	14,000	9,600	4,000	2,500
VTC-40/50	11,000	14,000	9,600	4,000	2,500
NT-50/60	10,000	15,500	10,000	5,000	3,000
VTC-50/60	11,000	15,200	11,000	5,000	3,000
NT-60/70	12,200	17,000	12,000	6,000	3,500
VTC-60/70	12,500	17,000	12,500	6,000	3,500
NT-80/100	14,700	18,500	14,000	8,000	6,000
VTC-80/100	16,000	18,500	14,000	8,000	6,000
NT-100/160	14,700	24,500	15,000	10,000	6,000
VTC-100/160	16,000	24,500	15,000	10,000	6,000

Machine Specifications

NT-Series (CNC Vertical Lathe)

Item		Unit	Compact Models							Grand Models					
			NT-10/12F	NT-12/16F	NT-12/16	NT-16/20F	NT-16/20	NT-20/25	NT-25/30	NT-30/40	NT-40/50	NT-50/60	NT-60/70	NT-80/100	NT-100/160
Capacity	Table Diameter	mm	1,000	1,250	1,250	1,600	1,600	2,000	2,500	3,000	4,000	5,000	6,000	8,000	10,000
	Max. Swing / Cutting diameter	mm	1,250	1,600	1,600	2,000	2,000	2,500	3,000	4,000	5,000	6,000	7,000	10,000	16,000
	Max. Turning Height*	mm	800	900	1,300	900	1,660	1,800	2,000	2,200	2,500	3,000	3,500	6,000	6,000
Table	Table Speed for Turning (2Steps)*	r.p.m	Max. ~450	Max. ~360	Max. ~360	Max. ~250	Max.~250	Max. ~200	Max. ~130	Max. ~100	Max. ~50	Max. ~50	Max. ~40	Max. ~20	Max. ~15
	Max. Load on Table	kg	4,500	8,000	8,000	10,000	10,000	12,000	20,000	30,000	50,000	60,000	150,000	350,000	450,000
	Max. Table torque	N.m	9,198	21,010	21,010	26,906	26,906	28,419	40,853	74,739	155,457	326,824	392,491	850,000	1,180,000
	Horizontal Travel of Ram Head (X-axis)	mm	-200 ~ +795	-200 ~ +970	-200 ~ +970	-200 ~ +1,170	-200 ~ +1,170	-200 ~ +1,450	-200 ~ +1,700	-200 ~ +2,225	-200 ~ +2,750	-200 ~ +3,300	-200 ~ +3,800	-300 ~ +5,350	-300 ~ +8,350
	Vertical Travel of Ram Head (Z-axis)*	mm	750	900	900	900	900	1,000	1,200	1,300 / 1,500 / 2,000 / 2,200 / 2,500			2,200 / 2,500 / 3,000 / 3,500		
	Rapid Feed of Ram Head (X-axis)*	mm/min	12,000	12,000	12,000	12,000	12,000	10,000	10,000	8,000	8,000	8,000	8,000	6,000	6,000
	Rapid Feed of Ram Head (Z-axis)*	mm/min	12,000	10,000	10,000	10,000	10,000	10,000	10,000	8,000	8,000	8,000	8,000	6,000	6,000
	Feed Rate of Ram Head (X&Z)	mm/min	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000
	Ram Size	mm	200 x 200	200 x 200	200 x 200	200 x 200	200 x 200	240 x 240	240 x 240	300 x 300 / 350 x 350 / 400 x 400			400 x 400 / 500 x 500 / 600 x 600		
	Tool Shank Size	mm	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	60 x 60	60 x 60	60 x 60	60 x 60
Cross Rail	Vertical Travel of Cross Rail	mm	fixed type	fixed type	250 x 3 steps	fixed type	250 x 3 steps	250 x 3 steps	250 x 4 steps	250 x 6 steps	250 x 7 steps	250 x 7 steps	250 x 9 steps	500 x 9 steps	500 x 9 steps
Motor power	Main Motor for Table Drive (cont/30min)	kW	A.C 30/37	A.C 37/45	A.C 37/45	A.C 37/45	A.C 37/45	A.C 45/55	A.C 45/55	A.C 60/75	A.C 100	A.C 155	A.C 190	D.C 265	D.C 265
	Motor for Ram Head(X, Z-axis)	kW	4	4	4	4	4	7	7	6	9	9	14	14	14
CNC Control System		-	Fanuc 31iB [Siemens 840D]							Fanuc 31iB [Siemens 840D]					
Total Weight (Approx)		kg	17,000	19,000	22,000	24,000	26,000	45,000	55,000	80,000	140,000	200,000	280,000	500,000	680,000

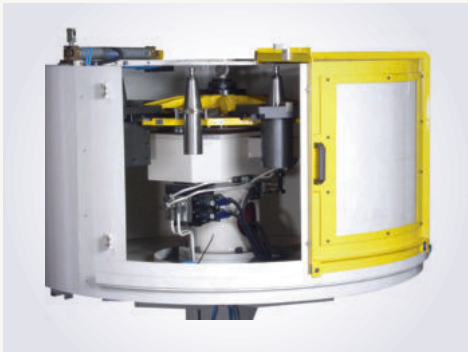
VTC-Series (CNC Vertical Turning Center)

Item		Unit	Compact Models							Grand Models					
			VTC-10/12F	VTC-12/16F	VTC-12/16	VTC-16/20F	VTC-16/20	VTC-20/25	VTC-25/30	VTC-30/40	VTC-40/50	VTC-50/60	VTC-60/70	VTC-80/100	VTC-100/160
Capacity	Table Diameter	mm	1,000	1,250	1,250	1,600	1,600	2,000	2,500	3,000	4,000	5,000	6,000	8,000	10,000
	Max. Swing / Cutting diameter	mm	1,250	1,600	1,600	2,000	2,000	2,500	3,000	4,000	5,000	6,000	7,000	10,000	16,000
	Max. Turning Height*	mm	800	900	1,300	900	1,660	1,800	2,000	2,200	2,500	3,000	3,500	6,000	6,000
Table	Table Speed for Turning (2Steps)*	r.p.m	Max. ~450	Max. ~360	Max. ~360	Max. ~250	Max.~250	Max. ~200	Max. ~130	Max. ~100	Max. ~50	Max. ~50	Max. ~40	Max. ~20	Max. ~15
	Max. Load on Table	kg	4,500	8,000	8,000	10,000	10,000	12,000	20,000	30,000	50,000	60,000	150,000	350,000	450,000
	Table Speed for Indexing (C-axis)	rpm	0 ~ 3	0 ~ 3	0 ~ 3	0~2.5	0~2.5	0 ~ 2	0 ~ 1	0 ~ 0.5	0~0.3	0 ~ 0.3	0 ~ 0.3	0 ~ 0.3	0 ~ 0.3
		deg	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001	0.001
	Max. Table torque	N.m	9,198	21,010	21,010	26,906	26,906	28,419	40,853	74,739	155,457	326,824	392,491	850,000	1,180,000
	Horizontal Travel of Ram Head (X-axis)	mm	-200 ~ +795	-200 ~ +970	-200 ~ +970	-200 ~ +1,170	-200 ~ +1,170	-200 ~ +1,450	-200 ~ +1,700	-200 ~ +2,225	-200 ~ +2,750	-200 ~ +3,300	-200 ~ +3,800	-300 ~ +5,350	-300 ~ +8,350
	Vertical Travel of Ram Head (Z-axis)*	mm	750	900	900	900	900	1,000	1,200	1,300 / 1,500 / 2,000 / 2,200 / 2,500			2,200 / 2,500 / 3,000 / 3,500		
	Rapid Feed of Ram Head (X-axis)*	mm/min	12,000	12,000	12,000	12,000	12,000	10,000	10,000	8,000	8,000	8,000	8,000	6,000	6,000
	Rapid Feed of Ram Head (Z-axis)*	mm/min	12,000	10,000	10,000	10,000	10,000	10,000	10,000	8,000	8,000	8,000	8,000	6,000	6,000
	Feed Rate of Ram Head (X&Z)	mm/min	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000	1 ~ 3,000
	Milling Spindle Speed	r.p.m	Max.~2,500	Max.~2,500	Max.~2,500	Max.~2,500	Max.~2,500	Max.~2,500	Max.~2,500	Max.~2,000	Max.~2,000	Max.~2,000	Max.~1,500	Max.~1,500	Max.~1,500
	Milling Spindle Taper	-	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50	ISO 50
	Ram Size	mm	240 x 240	240 x 240	240 x 240	240 x 240	240 x 240	240 x 240	240 x 240	300 x 300 / 350 x 350 / 400 x 400			400 x 400 / 500 x 500 / 600 x 600		
	Tool Shank Size	mm	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	40 x 40	60 x 60	60 x 60	60 x 60	60 x 60
Cross Rail	Vertical Travel of Cross Rail	mm	fixed type	fixed type	250 x 3 steps	fixed type	250 x 3 steps	250 x 3 steps	250 x 4 steps	250 x 6 steps	250 x 7 steps	250 x 7 steps	250 x 9 steps	500 x 9 steps	500 x 9 steps
Motor power	Main Motor for Table Drive (cont/30min)	kW	A.C 30/37	A.C 37/45	A.C 37/45	A.C 37/45	A.C 37/45	A.C 45/55	A.C 45/55	A.C 60/75	A.C 100	A.C 155	A.C 190	D.C 265	D.C 265
	Motor for Milling Spindle (cont/30min)	kW	A.C 11/15	A.C 15/18.5	A.C 15/18.5	A.C 15/18.5	A.C 15/18.5	A.C 18.5/22	A.C 18.5/22	A.C 22/26	A.C 22/26	A.C 22/26	A.C 37/45	A.C 45/55	A.C 45/55
	Motor for Ram Head (X, Z-axis)	kW	4	4	4	4	4	7	7	6	9	9	14	14	14
	Motor for Table Indexing (C-axis)	kW	4	4	4	4	4	7	7	6	9	9	14	16	16
CNC Control System		-	Fanuc 31iB [Siemens 840D]							Fanuc 31iB [Siemens 840D]					
Total Weight (Approx)		kg	18,000	20,000	23,000	25,000	29,000	48,000	60,000	85,000	146,000	210,000	292,000	520,000	700,000

* The items with star mark(*) can be changed according to the customer's requirements

▶ Accessories

Standard Accessories



Automatic Tool (Tool holder) Changer

Large Tool Storage Capacity

As a standard item, ATC has a useful function to change tool holders, and various attachment such as Right Angular Attachment, Universal Angular Attachment and Grinding Attachment

Number of Tool Pots

- NT-Series(12pots)
- VTC-Series (12pots for 5 Turning + 1 Cover + 6 Milling)
- Option : 16/24/30/36 pots



Splash Guard (Compact models)



Hinge Type Chip Conveyor



Oil Chiller



Manual Chuck

Optional Accessories



Automatic Pallet changer(A.P.C)



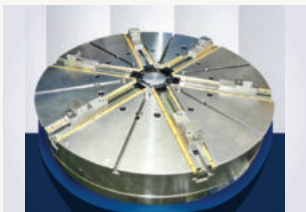
Right Angular Attachment



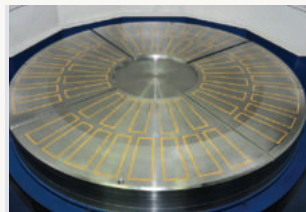
Universal Angular Attachment



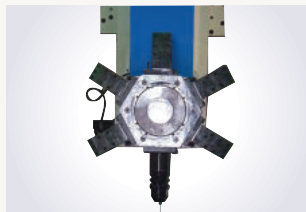
Grinding Attachment



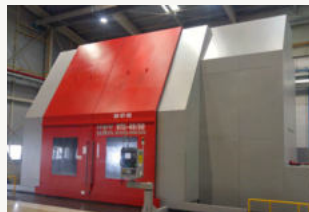
Hydraulic Chuck



Magnetic Chuck



Turret Head



Full Cover



TSC Unit



Operator Elevator



Tool Length Measuring Device



Auto. Workpiece Measuring Device

Standard Accessories

- Automatic Tool Changer(12pots)
- Standard Turning Tool Holders(2pcs)
- Table Bearing Cooling Unit
- Chip Conveyor(Hinge Type)
- Chip Bucket
- External Coolant System
- Splash Guard
 - Full Type(Compact Models)
 - Table Type(Grand Models)
- 4-jaw Independent Manual Chuck
- Hydraulic Power Unit
- X-axis Steel Cover
- Work Light
- Patrol Light(3 colors)
- Foundation Bolts & Nuts
- Maintenance Tool Kits

Optional Accessories

- Hydraulic Chuck (3Jaw/6Jaw)
- Automatic Pallet Changer
- Automatic Tool Changer (16/24/30/36 pots)
- Thru-the-tool-coolant-device
- Turning Tool Holders
- Grinding Attachment
- Scale Feedback System (X, Z-axis)
- Automatic Power Off
- Transformer
- Work Probe
- Tool Setter
- Half Type Splash Guard(Grand Models)
- Full type Splash Guard(Grand Models)

VTC-Series Only

- Thru-the-Spindle-Coolant-Device(T.S.C)
- Right Angular Attachment (Auto. Tool Change)
- Universal Angular Attachment
- Milling Spindle Speed(3,000 / 4,000rpm)

CNC Control Fanuc 31i

Standard Specifications		Optional Specifications
Max. controlled axes (NT, 2axes / VTC, 3axes)	Direct input of coordinate system shift	Increment system 1/10 (0.0001mm, 0.00001")
	Manual absolute on and off	Tool retract recover
Simultaneously controlled axes (2axes)	G code system(A)	Manual linear/circular interpolation
Inch/Metric conversion	Sub program call(10 fold nested)	Polar coordinate Interpolation
Mirror image	Canned cycles (G90, G92, G94)	Continuous threading
Backlash compensation	Custom macro B	Variable lead threading
Pitch error compensation	Chamferring/corner R	Circular threading
MDI operation	Auxiliary Function (M8-digit)	Polygon turning
Program number search	Spindle speed function (S5-digit)	Rapid traverse ball shaped acceleration /deceleration
Sequence number search	Spindle speed output (S5-digit)	Linear acceleration/deceleration before cutting feed interpolation
Dry run	Constant surface speed control	Optional block skip (9)
Single block	1st spindle orientation	Program restart
JOG feed	Tool function(T4 digit)	Cylindrical interpolation
Incremental feed (x1, x10, x100, x1000)	Tool offset pairs (99 pairs)	Helical interpolation
Manual handle feed(1unit/each path)	Tool nose radius compensation(G40-G42)	Interruption type custom macro
Positioning-G100	Tool offset value counter input	Multiple repetitive cycle
Linear interpolation	Part program storage length 1Mb	Workpiece coordinate system
Circular interpolation	Number of registerable program(1,000)	Addition of custom macro common variables (#100-#199-#500-#999)
Dwell	Part program editing	Rigid tapping
Threading, synchronous cutting	Background editing	Manual guide I
Skip function-G31	Status display	Tool offset pairs (200/400 pairs)
Reference position return-G28	Clock function	Tool life management function
Reference position return check-G27	Self-diagnosis function	Automatic tool offset
2nd reference position return	Alarm display	Direct input of tool offset value measured B
Rapid traverse override (F0, 25, 50, 100%)	Alarm history display	Part program storage length(2/4/8 Mb)
Feed per minute/Feed per revolution	Help function	Number of registerable programs (1000/2000)
Tangential speed constant control	Servo setting screen	External workpiece number search 9999
Cutting feedrate clamp	Language display English / Korean	Dynamic graphic
Automatic acceleration/deceleration	Data protection key	
Coordinate system shift	Graphic function	

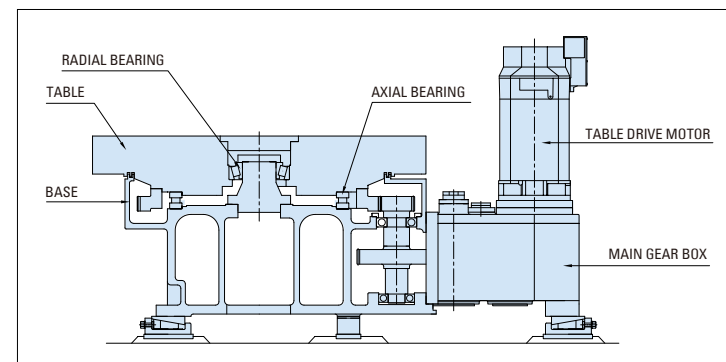
VTC-R series

- Compact Design / Rigid Construction / Accuracy and Reliability



Table Base Construction

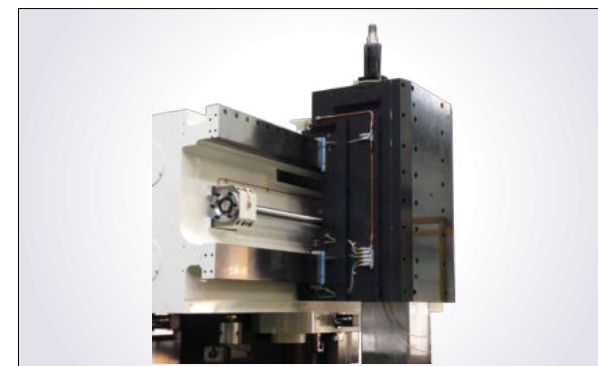
- **Designed for Heavy Workpiece Loading and Precision Machining** : Rigid cast iron structure of table base and heavy duty, high precision taper roller bearings and thrust roller bearings ensure heavy load turning and precision machining.
- **High Torque Table Drive** : Two Speed gearbox drive system offers high torque, heavy duty machining while minimizing gear-wheel noise and gear vibrations.



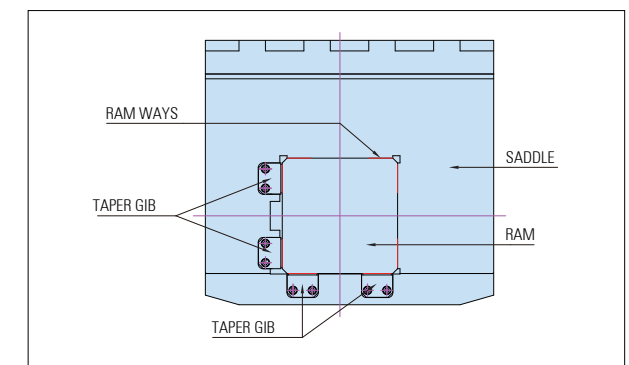
CNC VERTICAL TURNING CENTER

/ Ram Head

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

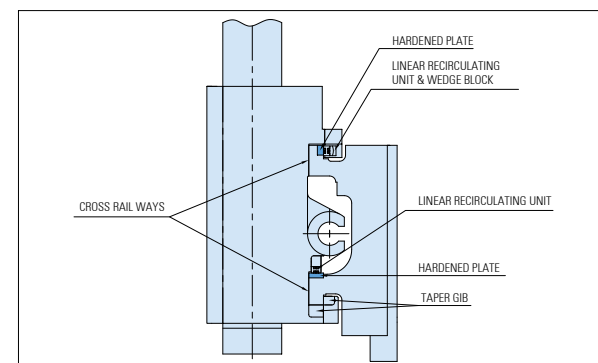


Minimal Surface Friction Design : RAM moves smoothly on a lubricated(automatically metered) Fluoroplastic resin Turcite surface, preventing frictional heat and ensuring precision positioning accuracy.



/ 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.



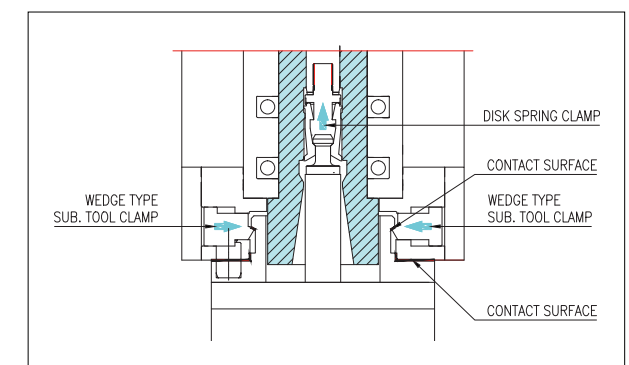
/ C-axis Indexing by Double Pinion Gears

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



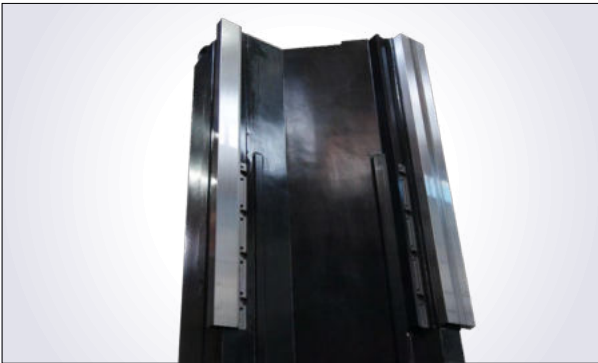
/ Tool Clamping System

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



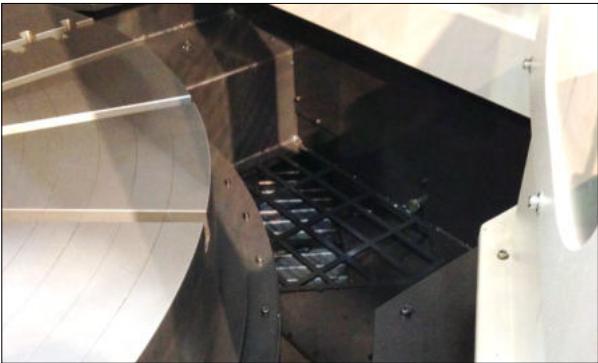
Column Structure

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.

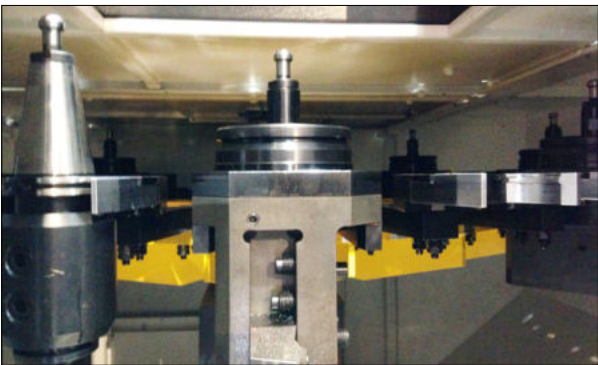
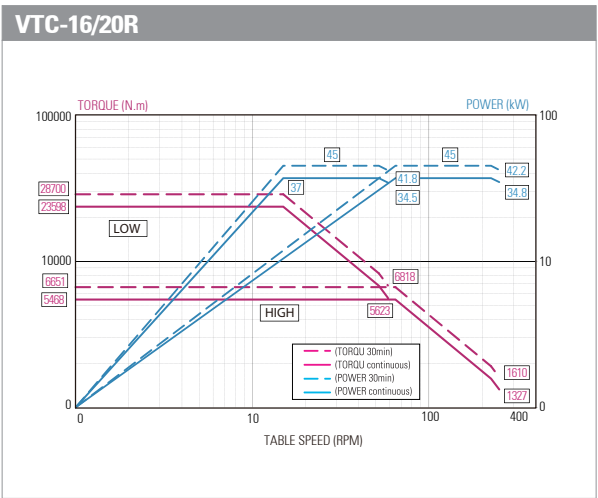
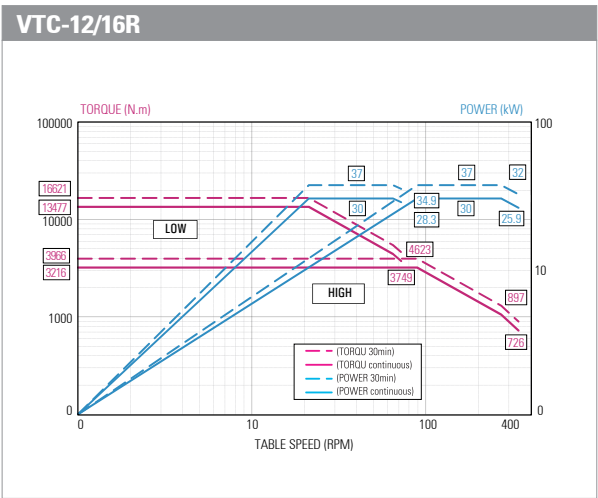
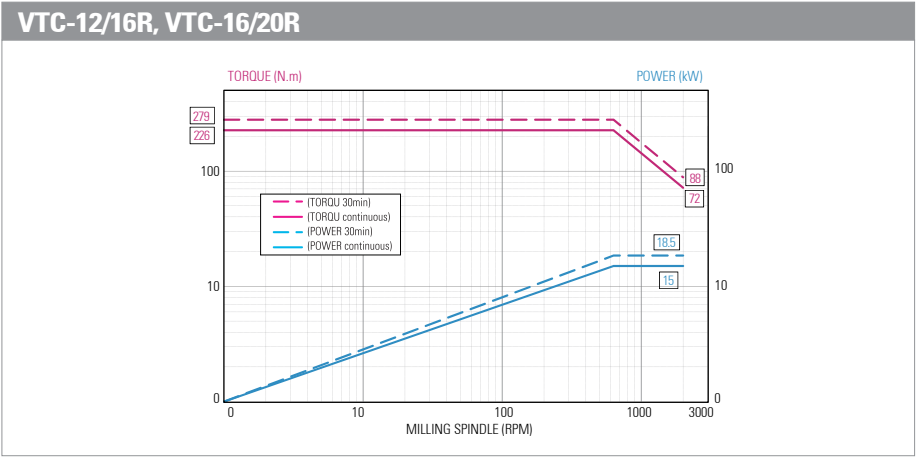


Table Power-Torque Diagram



Spindle Power-Torque Diagram



Machining Range

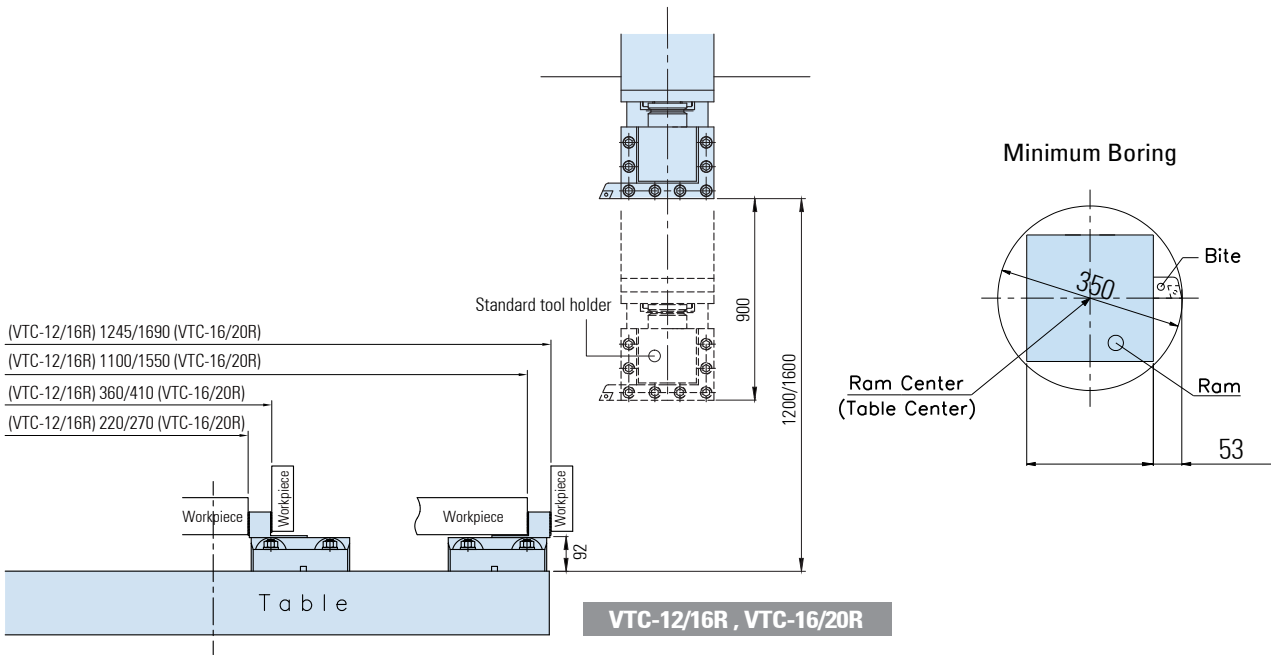
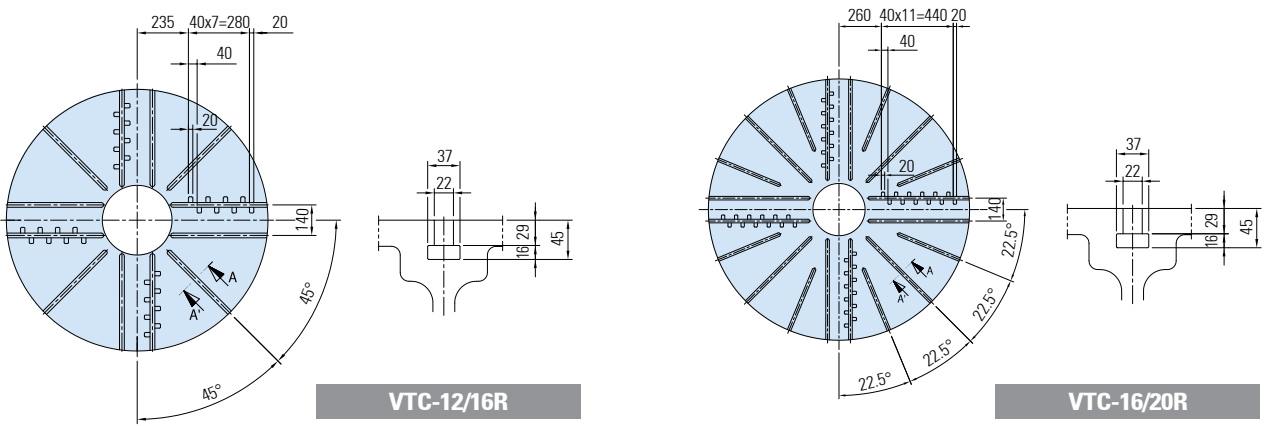


Table Dimensions



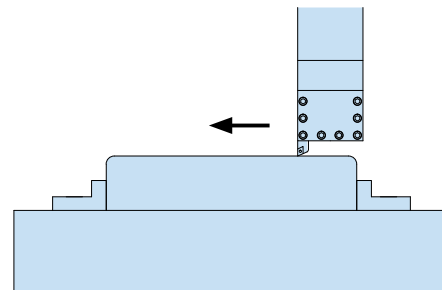
► Power Cutting Capability (VTC-16/20R)

X-axis

Condition		
Workpiece	Material	SCM440
	Size	Ø770mm
Tool	Bite	PCLNL 3232
	No. insert	CNMG 190612
Power	Table power	37/45

Cutting test result

Z-axis Position	Table (rpm)	Cutting Speed m/min	Cutting Depth mm	Cutting Width mm	Feed for revolution mm / rev
490	30	72.5	6	100	1
	30	72.5	8	100	1
	30	72.5	10	100	1

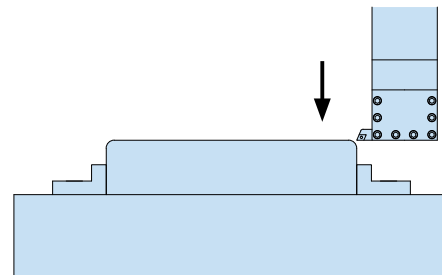


Z-axis

Condition		
Workpiece	Material	SCM440
	Size	Ø770mm
Tool	Bite	PCLNL 3232
	No. insert	CNMG 190612
Power	Table power	37/45

Cutting test result

X-axis Position	Table (rpm)	Cutting Speed m/min	Cutting Depth mm	Cutting Width mm	Feed for revolution mm / rev
785	30	72.5	6	100	1
	30	72.5	8	100	1

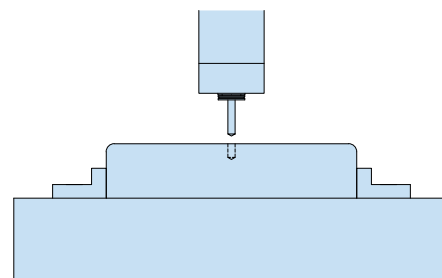


Ø26.5 Drilling

Condition		
Workpiece	Material	SCM440
	Size	Ø770mm
Tool	Drill Dia.	Ø26.5
Power	Milling Spindle Power	15/18.5

Cutting test result

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

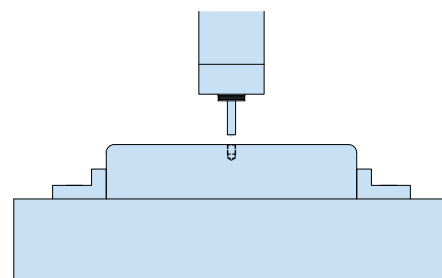


M30 Tapping

Condition		
Workpiece	Material	SCM440
	Size	Ø770mm
Tool	Tap Dia.	M30 - P3.5
Power	Milling Spindle power	15/18.5

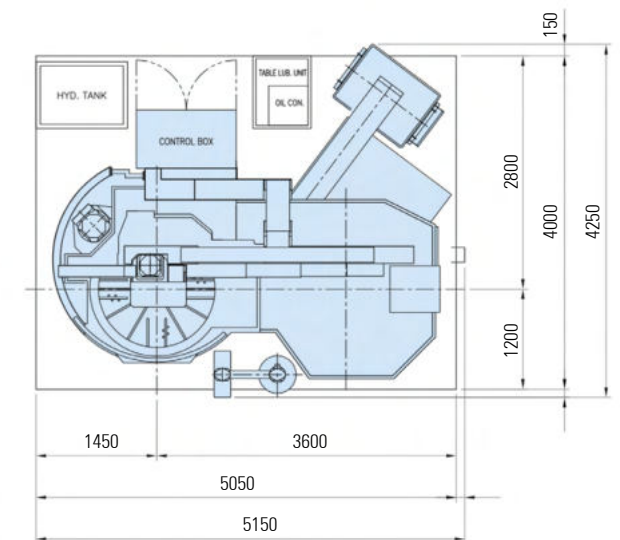
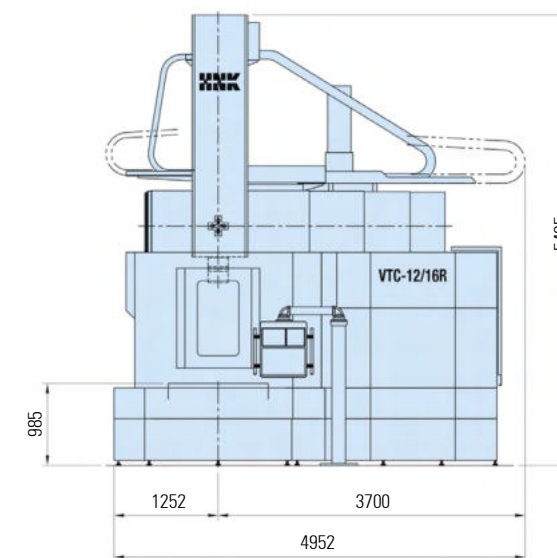
Cutting test result

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

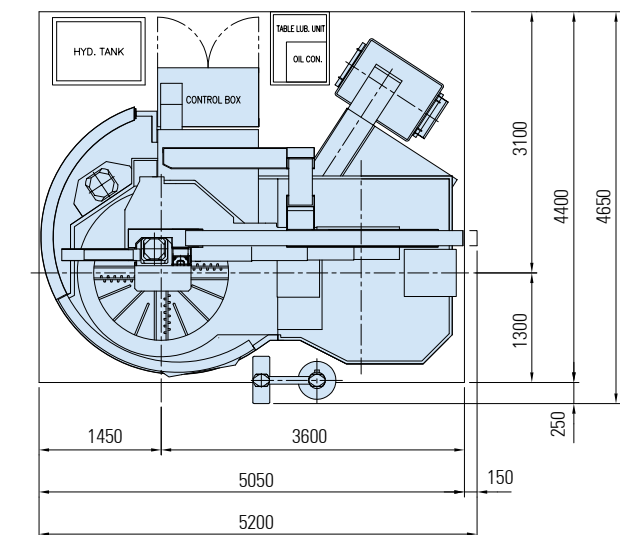
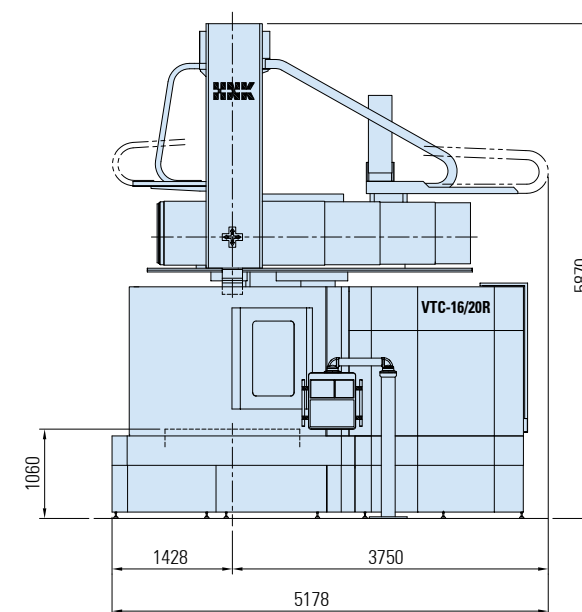


► Machine Dimensions

VTC-12/16R



VTC-16/20R



► Main Specifications

Item		Unit	VTC-12/16R	VTC-16/20R
Capacity	Table Diameter	mm	1,200	1,600
	Max. Swing/Max. Turning Diameter	mm	1,600	2,000
	Max. Turning Height	mm	Max. 1,200	Max. 1,600
Table	Table Speed for Turning (2 steps)	r.p.m	Max. ~ 340	Max. ~ 250
	Max. Load on Table	kg	7,000	8,000
	Table Speed for Indexing (C-axis)	r.p.m	0 ~ 3	0 ~ 3
	Table Indexing Control (C-axis)	deg	0.001	0.001
Ram Head	Horizontal Travel of Ram Head (X-axis)	mm	-100 ~ +970	-100 ~ +1,170
	Vertical Travel of Ram Head (Z-axis)	mm	900	900
	Rapid Feed of Ram Head	X-axis mm/min	12,000	12,000
		Z-axis mm/min	10,000	10,000
	Feed Rate of Ram Head (X&Z)	mm/min	0 ~ 3,000	0 ~ 3,000
	Milling Spindle Speed	r.p.m	Max. 2,000	Max. 2,000
	Ram Size	mm	240 × 240	240 × 240
	Milling Spindle Taper	-	ISO 50	ISO 50
	Tool Shank Size	mm	40 × 40	40 × 40
Cross Rail	Vertical Travel of Cross Rail	mm	300 × 2Steps	250 × 3Steps
Motor Power	Main Motor for Table Drive	kW	A.C 30/37	A.C 37/45
	Main Motor for Milling Spindle	kW	A.C 15/18.5	A.C 15/18.5
	Motor for Ram Head (X-axis)	kW	A.C SERVO 4	A.C SERVO 4
	Motor for Ram Head (Z-axis)	kW	A.C SERVO 4	A.C SERVO 4
CNC Control System		FANUC Oi-T [FANUC 31i]		

► Standard Accessories

- Automatic Tool Changer (24 pots - 7 turning + 1 Cover + 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)
- TSC (thru-the-spindle-coolant-device)
- Turning Tool Holders
- Scale Feed Back System (X, Z-axis)
- Automatic Power Off for N.C
- Transformer
- Work Probe
- Tool Setter
- Right Angular Attachment
- Universal Angular Attachment
- Hydraulic Chuck

► CNC System Specifications (FANUC Oi-T)

/ 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 check	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	400 (1,000)
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	10.4" TFT LCD
Manual pulse generator	
Auto data backup 1	
Part Program Storage Size	512 Kbyte (2Mb)