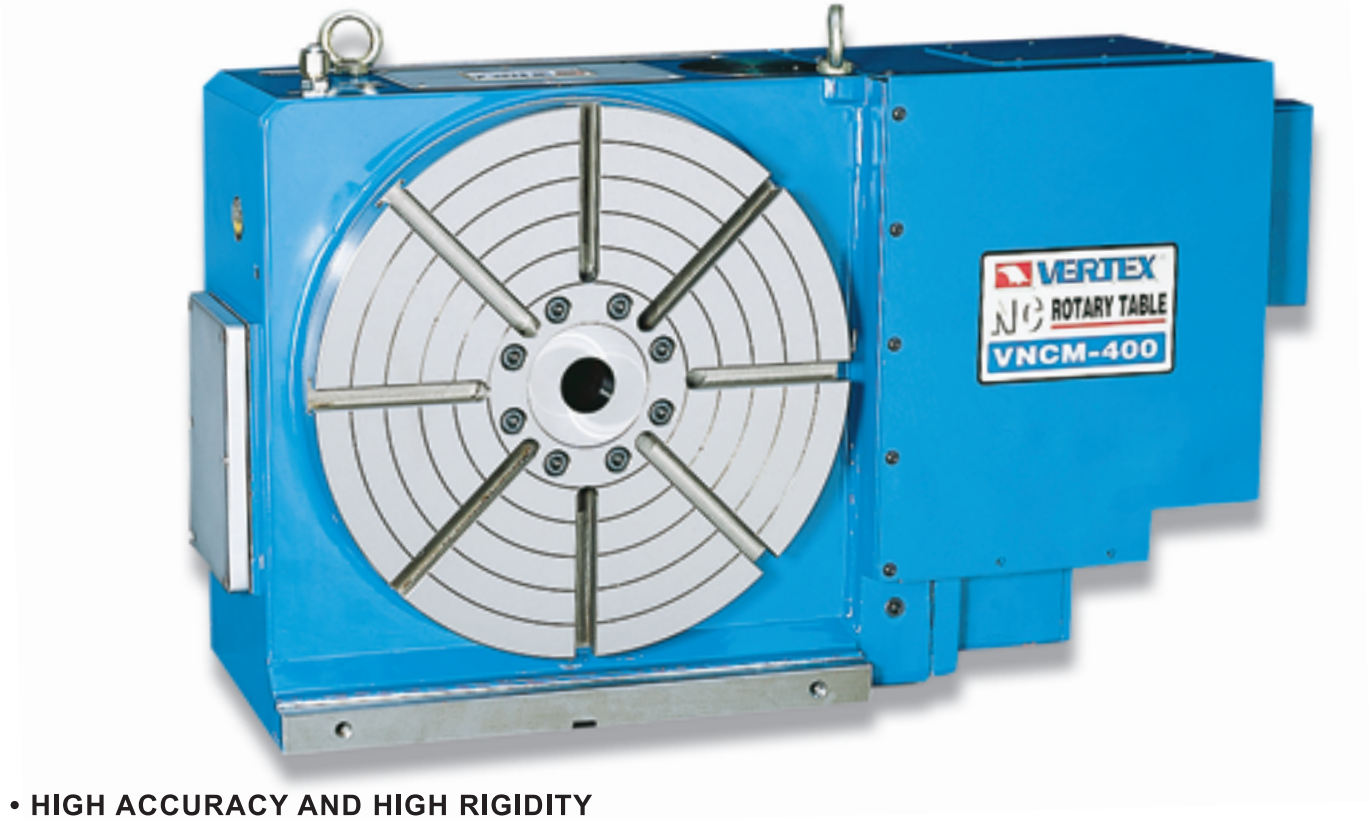
NC-Rotary Table



• HIGH ACCURACY AND HIGH RIGIDITY

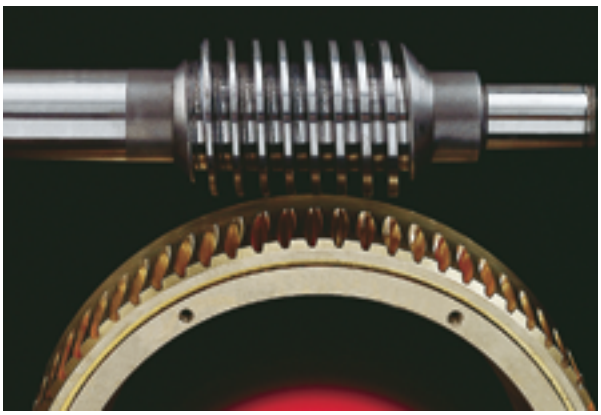
Adoption of niw double-lead worm gear--engagement between worm wheel and worm shaft has been improved, and tooth profile has been modified--has contributed greatly to increased dynamic accuracy. To remove the defect of single-lead worm gear. Close-tolerance taper roller bearing assembly is used, and the rotating slide part is finished in a superprecision manner, which in tum, implements highly improved overall accuracy.

• SLEEVE TYPE CLAMPING MECHANISM

with this system, the Rotary Table is clamped by applying hydraulic pressure to the outer circumference of the turn table. Since the sleeve is positioned closest to the workpiece, the table clamp force is enlarged. This system is not only advantageous for heavy duty cutting but also helps improve the machining accuracy and extend the service life of the Rotary Table.

- This rotary table has been speifically developed to fulfill the requirements of a frlly automatic machinging process in association with a machine tool. they are used for miling, frinding and drilling of spindles, slots, plannes or bores in the radial or axial direction of the workpiece.
- Can be equipped with stepping motor or DC/AC servo motors.
- Carefully designed, rigid construction to assure high and constant indexing accuracy.
- Can to operate as function M or as 4th axis or more, in machining units or numerically controlled machines, and are equally capable of being fitted to any other type of non-NC machine-tools.
- Hardened and ground steel worm, mounted on high precision combined radial-axial bearings.
- Worm mounted on an axial support system, which allows adjustment and suppression of any backlash existing between the worn and the worm-wheel after long-time service.
- High precision

  Axial and radial runout within 0.01mm Cumulative indexing accurace within 15 sec.



DOUBLE LEAD WORM GEARS SYSTEM
• New design/special material

PROGRAMMABLE SERVO MOTOR CONTROLLER

● SPECIFICATIONS

Unit:mm

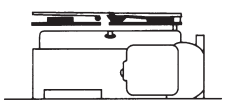
ORDER NO.	VNCM-150 L/R	VNCM-220 L/R	VNCM-250 L/R	VNCM-320 L/R	VNCM-400 L/R
Right-hand type	O	O	O	O	O
Left-hand type	O	O	O	O	O
Turntable diameter	∅160	∅225	∅250	∅320	∅400
Table height(Horizontal pos.)	150	165	165	220	250
Table center height(Vertical pos.)	135	160	160	210	255
Center bore diameter	∅35H7	∅40H7	∅40H7	∅40H7	∅40H7
T-slot size	12H7	12H7	12H7	14H7	14H7
Guide-block size	14h7	14h7	14h7	18h7	18h7
Number of worm wheel teeth	72	72	72	72	72
Servo motor type	FANUC α 3	FANUC α 6	FANUC α 6	FANUC α 18 FANUC α 6	FANUC α 12
Speed reduction ratio	1/90	1/180	1/180	1/180 1/360	1/180
Table gyration angle per 1 pulse	0.001°	0.001°	0.001°	0.001°	0.001°
Table rotation speed	22.2r.p.m./ (Motor 2,000r.p.m.)	11.1r.p.m./ (Motor 2,000r.p.m.)	11.1r.p.m./ (Motor 2,000r.p.m.)	11.1r.p.m./ (Motor 2,000r.p.m.) 5.5r.p.m./ (Motor 2,000r.p.m.)	11.1r.p.m./ (Motor 2,000r.p.m.)
Clamp method & Clamp torque (kg-m)	8/ (Air 5kg/cm^2)	50/ (Hydraulic 35kg/cm^2)	50/ (Hydraulic 35kg/cm^2)	85/ (Hydraulic 35kg/cm^2)	180/ (Hydraulic 35kg/cm^2)
Load capacity, horizontal(kg)	150	250	250	350	500
Load capacity, vertical(kg)	75	100	100	150	200
Inertia force (kg-cm-sec^2)	4.3	12.3	12.3	38.5	99.8
Max.torque capacity of worm gear (kg-m)	15	48	48	78	170
Max. workpiece diameter	160	225	225	320	400
Cumulative indexing accuracy sec.	20"	15"	15"	15"	15"
Repeatability sec.	4"	4"	4"	4"	4"
Inertia force(convert into motor shaft) kg-cm-sec^{2}X10^{-2}	0.2	0.24	0.34	1.85 1.35	1.94
Net weight (kg)	55	75	75	200	300
CODE NO.	4001-001	4001-002	4001-003	4001-004	4001-005

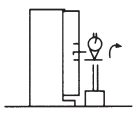
• Other makers' servo motors can be installed.

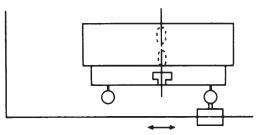
● ACCURACY STANDARD

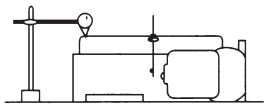
Unit:mm

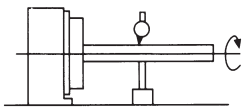
NO.	Inspection Item		Inspection Item
1	Table top flatness (concave)	Per overall length	0.01
2	Table top runout		0.015
3	Parallelism of table top and frame bottom	Per overall length	0.02
4	Table spindle center rnout		0.01
5	Center bore runout	Hole end	0.01
		Per 100mm	0.01
6	Perpendicularity of table top to frame bottom	Per overall length	0.02
7	Perpendicularit of table top to frame bottom guide block	Per overall length	0.02
8	Cumulative indexing accuracy		15"
9	Parallelism of center line between headstock and tailstock to frame bottom guide block	Per 300mm	0.02
10	Height difference of both center lines of headstock (Tailstock center line should be higher)		0.02

1 

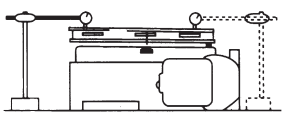
4 

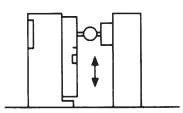
7 

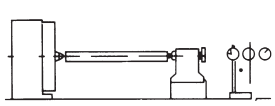
2 

5 

8 An optical measuring instrument should be used for indexing accuracy measurements.

3 

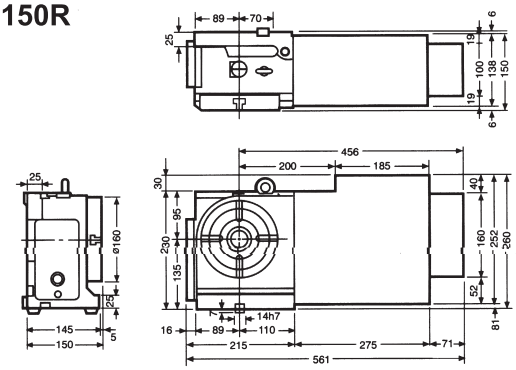
6 

9 

NC-Rotary Table

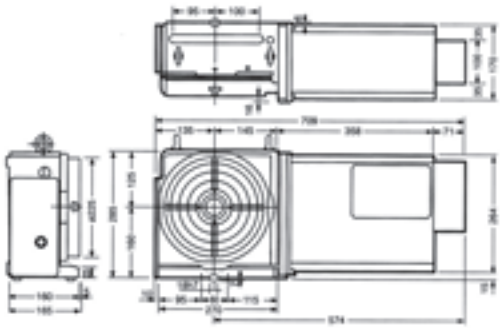
VNCM-150R

VNCM-150R



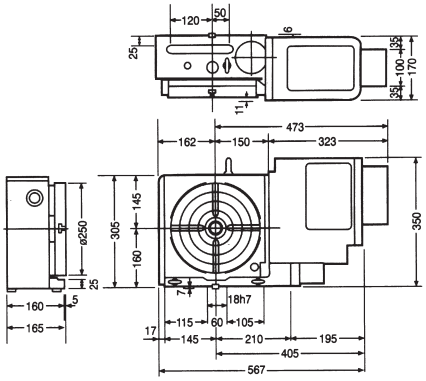
VNCM-220R

VNCM-220R



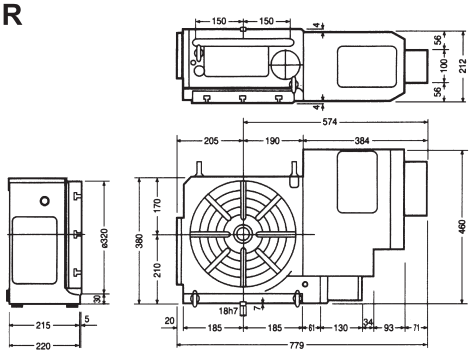
VNCM-250R

VNCM-250R



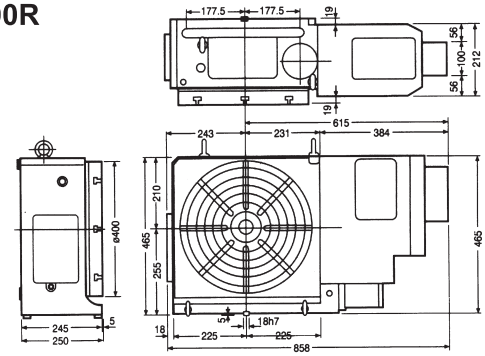
VNCM-320R

VNCM-320R



VNCM-400R

VNCM-400R



NC-Rotary Table

- Motor case setted on the back of the body, increased the space for moving forward and backward, suitable for large or small NC machine using.
- Use of precision lead worm gear assures highly accurate dividing independently of table rotating direction. Further, no backlash will be produced.
- Wide range of machining is accomplished by connecting the Drive Table with Mcode of machining center.
- When used with machining center, the Drive Table will widen the range of applications; circular cutting dividing into equal parts, dividing into unequal parts, lead cutting, can cutting etc.
- MACHINE ZERO AND WORK ZERO. Zero Retum Function to either Zero.
- BACKLASH COMPENSATION.
- BUILT-IN PNEUMATIC BRAKE FUNCTION.

Order No. & Dimensions

Unit:mm

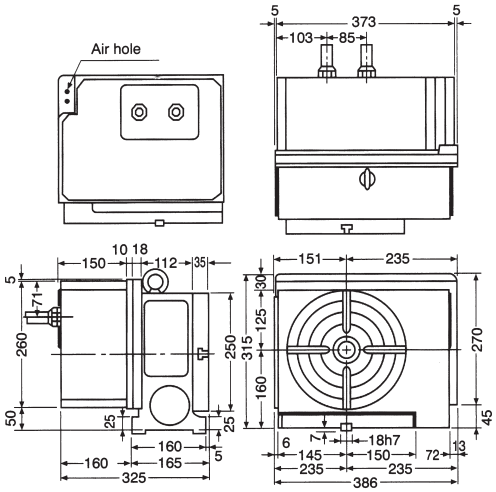
Item	Order No.	VNCX-10
Table diameter		250
Table height		315
Center height		160
Center hole diameter		32
Table reference groove width		14
Key way		18
Clamping force (kgf-m)	Pneumatic	20
Allowable work diameter		250
Center bore runout	Horizontal setup	200
	Vertical setup	100
Allowable work inertia (kgf-cm sec2)		12.5
Total reduction ratio		1:90
Rotary speed (rpm)		11.1
Allowable machine torque (kgf-m)		48
CODE NO.		4001-010

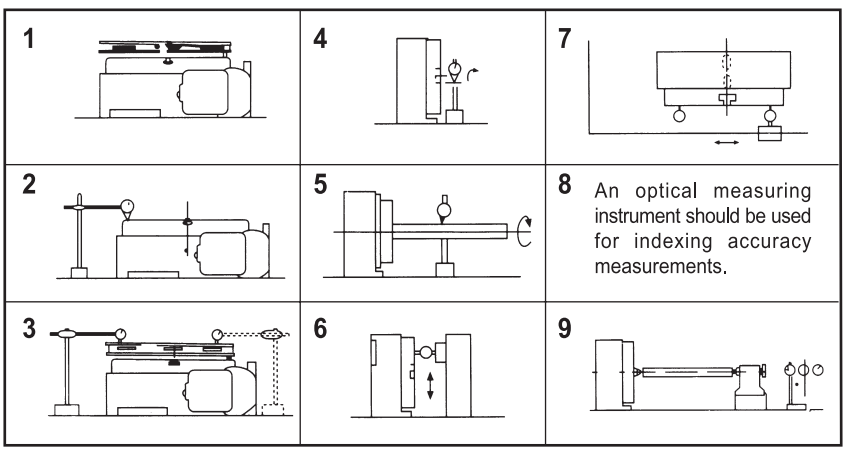
ACCURACY STANDARD

Unit:mm

NO.	Inspection Item		Tolerance
1	Table top flatness (concave)	Per overall length	0.01
2	Table top runout		0.015
3	Parallelism of table top and frame bottom	Per overall length	0.02
4	Table spindle center rnout		0.01
5	Center bore runout	Hole end	0.01
		Per 100mm	0.01
6	Perpendicularity of table top to frame bottom	Per overall length	0.02
7	Perpendicularity of table top to frame bottom guide block	Per overall length	0.02
8	Cumulative indexing accuracy		15"
9	Parallelism of center line between headstock and tailstock to frame bottom guide block	Per 300mm	0.02
10	Height difference of both headstock and tailstock center lines (Tailstock center line should be higher)		0.02

VNCX-10



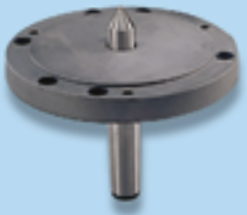


● Optional accessories (For NC ROTARY TABLE)

VHR-100M
VHR-101M
VHR-110F
MITSUBISHI MOTOR
& FANUC MOTOR

Servo controller
+
Servo motor

Hydraulic unit



Flange & Center for VNCM-320, 400

Automatic power chuck

Flanged scroll chuck

VHR-110F
VHR-112F

Stepping controller
+
Stepping motor

VHR-20

Air-hydraulic
for the table clamp (VNCM-320, 400)

Automatic tailstock

Manual tailstock

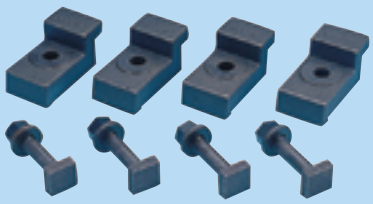
VHR-116S

SIEMERS MOTOR

VHR-10

Hydraulic unit

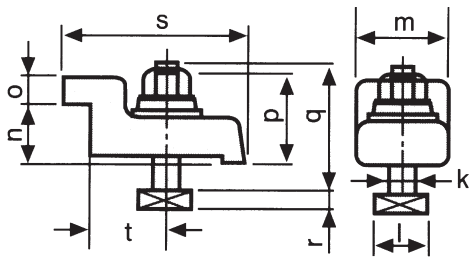
Standard accessories

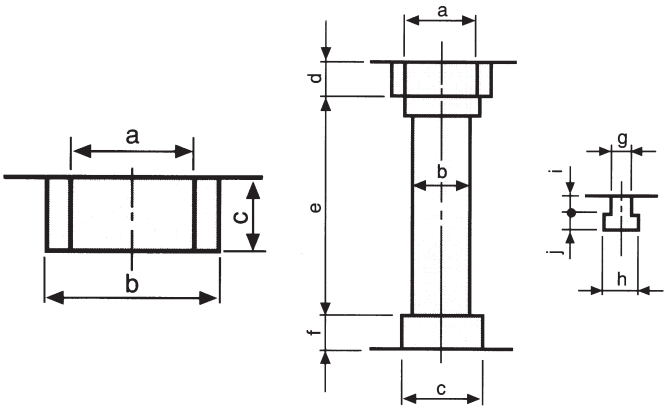


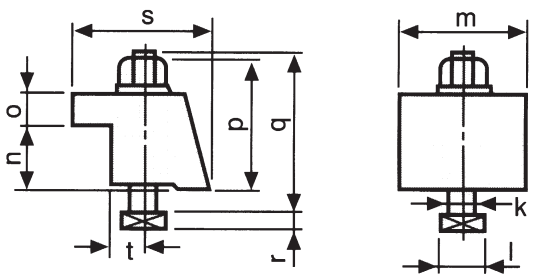
Clamping blocks and bolts

ORDER NO.	Suitable for	CODE NO.
VHR-10	NC Rotary table	4002-010
VHR-20	NC Rotary table	4002-020
VHR-100M	VNCM-150, 220, 250 MITSUBISHI MOTOR	4002-030
VHR-101M	VNCM-320, 400 MITSUBISHI MOTOR	4002-031
VHR-110F	VNCM-150, 220, 250 FANUC MOTOR	4002-040
VHR-112F	VNCM-320, 400 FANUC MOTOR	4002-041
VHR-116S	VNCM-150, 220, 250 SIEMERS MOTOR	4002-042
VHR-117S	VNCM-320, 400 SIEMERS MOTOR	4002-043

● CLAMPING BLOCKS AND BOLTS







Unit:mm

ORDER NO.	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t
VNCM-150	∅35H7	∅40	∅35	16	114	20	12H7	19	11	8	∅12	□23	40	25	15	57	75	8	52	15
VNCM-220/250	∅40H7	∅32	∅45	20	124	20	12H7	19	11	8	∅16	□28	40	25	12	43	63	11	80	33
VNCM-320	∅40H7	∅42	∅50	20	139	30	14H7	23	14	9	∅16	□28	46	30	15	46	70	11	90	31
VNCM-400	∅40H7	∅41	∅50	20	164	30	14H7	23	14	9	∅16	□28	46	30	15	46	70	11	90	31