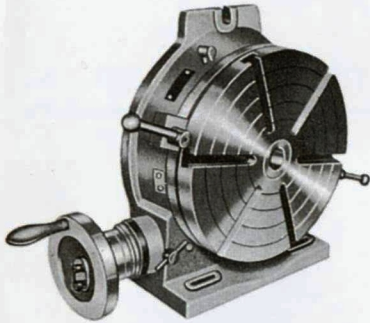


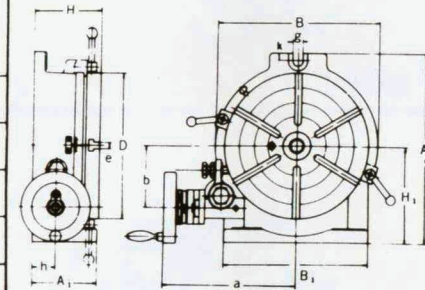
HV,RT H.V. & RT. TYPE Rotary Tables

Two types of Rotary tables are summarized here collectively. The mechanisms common to these tables are shown on some page of their description.

Horizontal & Vertical Rotary Table (HV) This H.V. Type Rotary Table is so designed as to permit machining operations at a higher dimension than that of RT Type Rotary tables. The base can be used in a vertical position to enabling to carry out center work.
Order No. & Dimensions



Order No.	Table			Base dimension			Width of T-slot		Bolt slots g	Center sleeve	Weight kg/lb	Worm Gear ratio
	Outer diameter		Height H	Base dimension		e	Type					
	A	D		A	B							
HV-6	78 3.07	150 5.91	80 3.11	100 3.94	200 7.87	160 6.30	10 0.39	☺	15 0.59	MT-2	12 26.4	90:1
HV-8	100 3.94	200 7.87	105 4.13	135 5.31	265 10.43	220 8.66	12 0.47	☺	17 0.67	MT-3	30.0 66.1	90:1
HV-10	110 4.33	250 9.84	115 4.53	165 6.50	325 12.80	280 11.02	12 0.47	☹	17 0.67	MT-3	48.0 105.8	90:1
HV-12	130 5.12	300 11.81	135 5.32	195 7.68	388 15.27	330 12.99	14 0.55	☹	18 0.71	MT-4	77.0 169.7	90:1
HV-14	130 5.12	350 13.78	140 5.51	230 9.06	450 17.72	380 14.96	14 0.55	☹	18 0.71	MT-4	95.0 209.4	90:1

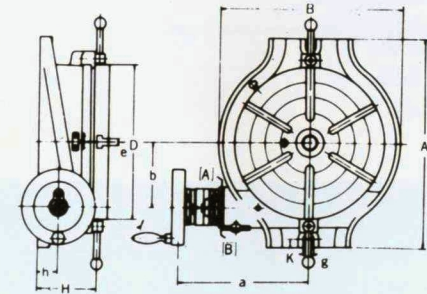
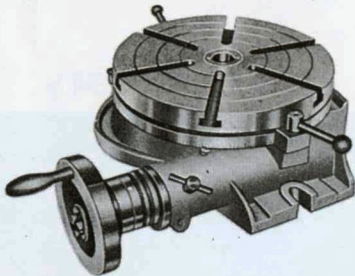


Horizontal Rotary Table (RT)

This Rotary table is widely used for circular cutting work, angle setting, boring, spot-facing and similar work in conjunction with a milling machine. (Refer to Page 2)

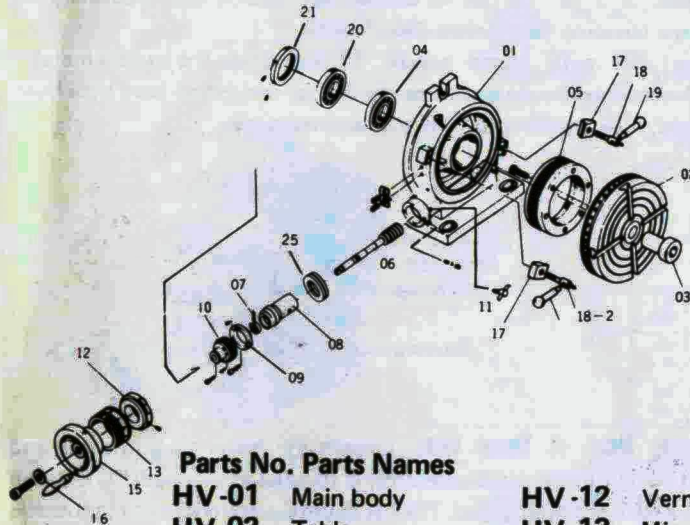
Order No. & Dimensions

Order No.	Table		Base dimension		Width of T-slot		Bolt slots g	Center sleeve	Weight kg/lb	Worm Gear ratio
	Outer diameter D	Height H	Base dimension		e	Type				
			A	B						
RT-6	150 5.91	78 3.07	210 8.27	184 7.24	10 0.39	☺	10 0.39	MT-2	10.0 22.0	90:1
RT-8	200 7.87	105 4.13	280 11.02	250 9.84	12 0.47	☺	14 0.55	MT-3	25.0 55.1	90:1
RT-10	250 9.84	115 4.53	340 13.39	300 11.81	12 0.47	☹	16 0.63	MT-3	37.0 81.5	90:1
RT-12	300 11.81	135 5.32	400 15.75	364 14.33	14 0.55	☹	18 0.71	MT-4	60.0 132.2	90:1
RT-14	350 13.78	140 5.51	460 18.11	420 16.54	14 0.55	☹	18 0.71	MT-4	85.0 187.3	90:1



(HV) Horizontal and Vertical Rotary Table

EXPLODED VIEW



Parts No. Parts Names

HV-01	Main body	HV-12	Vernier ring
HV-02	Table	HV-13	Micro-collar
HV-05	Worm wheel	HV-17	Clamp piece
HV-08	Worm metal	HV-18	Clamp bolt
HV-11	Metal setting screw	HV-19	Clamp handle

Operating Instruction and Function of Each Unit

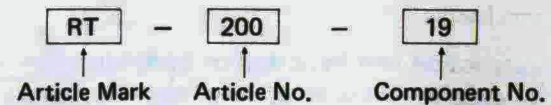
1. The worm gear ratio is 1 : 90.
 - One turn of the handle moves the table by 4°
 - Micro-collar is graduated in steps of 1min.
 - Vernier scale makes settings down to 10 seconds possible.
(20 seconds for HV-150)

2. Dividing of 2 to 100 can be carried out quickly and accurately by attaching a Dividing Mechanism.
3. Center work can also be carried out by using the base in the vertical position in conjunction with a tailstock. (See Page 4.)
4. The worm gear engagement is adjusted by the switch metal in the same manner as that of (RT). (See Page 2.)

*** Suggestions for Order**

The parts names expressed in the operation and service manual are abbreviated for description.

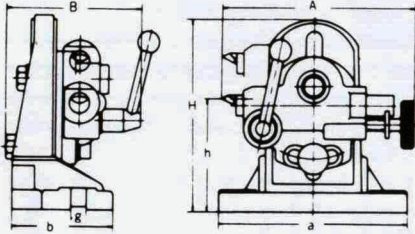
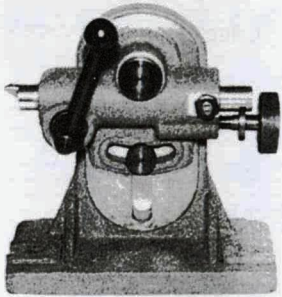
Therefore, when ordering parts for replacement, be sure to specify article marks, article Nos. and component Nos., which are shown in the table of Order No. & Dimensions.



Special Accessories

Tailstock

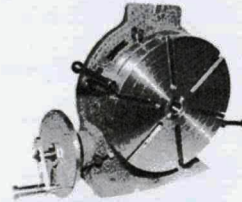
The height can be varied when working with different index centers, while the angle of inclination can be changed for various machining applications. In addition, the tip of the center is finely rotatable. Clamping is made by means of the lever handle.



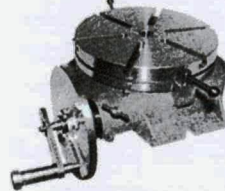
Order No. & Dimensions for Tail Stock Unit: mm/in.

Order No.	Center Height		Suitable for
	Max	Min.	
TS-1	131 5.15	97 3.81	HV-150
TS-2	166 6.53	103 4.05	HV-200 HV-250
TS-3	210 8.26	160 6.29	HV-300
TS-4	300 11.81	210 8.27	HV-350 HV-400 HV-500

Dividing Mechanism



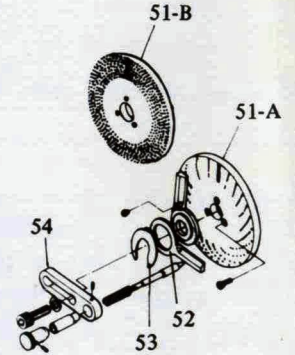
HV with DP



RT with DP

DP SETS

- Dividing Plates (A plate and B plate) each 1
- Sector 1
- Crank handle 1
- Sector spring 1



Order No. & Dimensions

Unit: mm/in

Order No.	Major dimension of DM				Weight kg/lb	Shipping measurement ft	Applicable table
	Dividing plate set screw	Inner diameter of sector arm	Outer diameter of spring clip	Groove width in handle plate			
DP-1	PCD. 32 1.26 ϕ	21 0.83	18 0.71	9 0.03	2.5 5.51	0.12	HV ϕ RT ϕ
DP-2	(3holes) PCD. 46 1.81	28.7 1.12	44 1.73	10 0.39	4 8.82	0.12	HV ϕ RT ϕ
DP-3-4	(3holes) PCD. 46 1.81	28.7 1.12	44 1.73	10 0.39	4 8.82	0.12	HV 10.12 RT 14 CS- 6.8

In case of An Optional DM Device Attached

Indexing of 2 to 100 can be made accurately and quickly.

Equation of Indexing

Since the worm ratio is 1 : 90, when the handle is made to rotate a 360° revolution, the table therefore will rotate a 1/90 revolution. The relationships between handle revolution 'N' and dividial number 'T' to be sought are shown in the following equation:

$$N = \frac{90}{T}$$

Remarks: The index table on Page 6 is made on the basis of this equation.

(Example)

In case where the operator wants to index the position divided into 29 equal parts. Hints on operation As for 29 dividial numbers, the number of crank handle revolutions (N) is $3\frac{9}{29}$ as shown in the table on Page 6, so that the handle should be rotated a full 360° revolution three times plus an interval of nine holes (in this time, it means hole intervals not hole numbers). After setting this point as a start point, rotate the handle a full 360° revolution three times plus an interval of nine holes. When the procedure is repeated in turn as many as 29 times, the indexing of dividing into 29 equal parts is thus achieved.

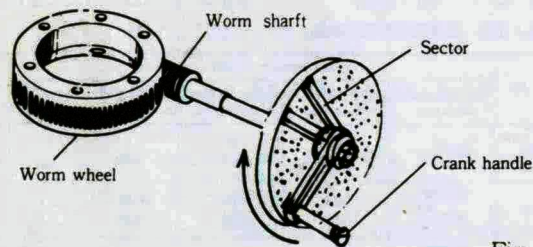


Fig. 4

Operations of Crank Handle and Sector

In case of the Example 'Division into 29 Equal Parts' aforesaid, it is natural that indexing operation should proceed with the intervals of nine holes after setting the index plate (B plate) on which a row of 87 holes are provided. But in this method, the operator has to count nine holes' intervals one by one. He must feel inefficient. In this viewpoint, it is necessary to use a device called 'sector' to avoid such troublesome procedures. The following will describe some necessary procedures for operation of the sector.

- Loosen the crank handle lock nut, adjust its length so as to cause the index pin to fall in the train of 87 holes, and retighten it.
- Loosen the set-screws of the sector, open two arms in accordance with the interval of nine holes (total numbers of holes are ten), and retighten with set-screws.
- First, bring the left arm of the sector near to the index pin's left side.
- Next, rotate the crank handle clockwise to apply it to the right arm of the sector so that the index pin will fall in the hole located at this right arm's left side surface.
- Rotate the sector clockwise this time, and put the right side surface of the left arm to the left side of the index pin. In this time, the relationships between the index pin and the sector's left arm in their positions are the same as in Par. c). The index plate hole that actually accommodates the index pin is located at the point where goes across ten holes to the right away from the hole as in Par. c).
- Repeat the same procedures as necessary.

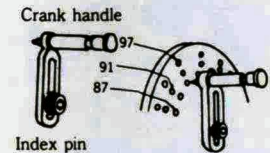


Fig. 5

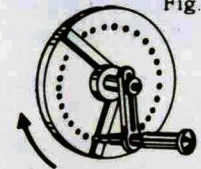


Fig. 6

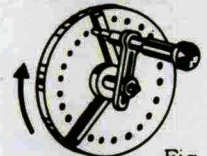


Fig. 7

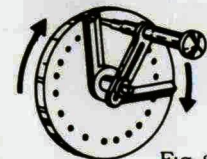


Fig. 8

Index Table (For worm ratio 1:90)

DP-1 For HV-6

T	H	N	T	H	N	T	H	N	T	H	N	T	H	N	T	H	N
1			22	B - 33	4 3/33	43		2 4/43	64			82	C - 41	1 4/41	100	A - 20	18/20
2		45	23	B - 23	3 21/23	44	C - 43		65	C - 39	1 15/39	83					
3		30	24	A - 20	3 15/20	45		2	66	B - 33	1 12/33	84					
4	A - 20	22 10/20	25	A - 20	3 12/20	46	B - 23	1 22/23	67			85					
5		18	26	C - 39	3 18/39	47	C - 47	1 43/47	68			86	C - 43	1 2/43			
6		15	27	A - 18	3 6/18	48	A - 16	1 14/16	69	B - 23	1 7/23	87	B - 29	1 1/29			
7	B - 21	12 8/21	28			49	C - 49	1 41/49	70	B - 21	1 6/21	88					
8	A - 20	11 5/20	29	B - 29	3 3/29	50	A - 20	1 16/20	71			89					
9		10	30		3	51			72	A - 20	1 5/20	90					
10		9	31	B - 31	2 28/31	52			73			91					
11	B - 33	8 6/33	32	A - 16	2 13/16	53			74	C - 37	1 8/37	92					
12	A - 20	7 10/20	33	B - 33	2 24/33	54	A - 18	1 12/18	75	A - 20	1 4/20	93	B - 31	30/31			
13	C - 39	6 30/39	34	A - 17	2 11/17	55	B - 33	1 21/33	76			94	C - 47	45/47			
14	B - 21	6 9/21	35	B - 21	2 12/21	56			77			95	A - 19	18/19			
15		6	36	A - 20	2 10/20	57	A - 19	1 11/19	78	C - 39	1 6/39	96	A - 16	15/16			
16	A - 16	5 10/16	37	C - 37	2 16/37	58	B - 29	1 16/29	79			97					
17	A - 17	5 5/17	38	A - 19	2 7/19	59			80	A - 16	1 2/16	98	C - 49	45/49			
18		5	39	C - 39	2 12/39	60	A - 20	1 1/20	81	A - 18	1 2/18	99	B - 33	30/33			
19	A - 19	4 14/19	40	A - 20	2 15/20	61											
20	A - 20	4 10/20	41	C - 41	2 8/41	62	B - 31	1 14/31									
21	B - 21	4 6/21	42	B - 21	2 3/21	63	B - 21	1 9/21									

DP-2 For HV-8

DP-3 For HV-10.12.14

DP-4 For CS-6.8

T	H	N	T	H	N	T	H	N	T	H	N	T	H	N	T	H	N
2		45	17	A - 34	5 10/34	32	A - 32	2 26/32	48	A - 32	1 28/32	65	B - 91	1 35/91	81	B - 81	1 9/81
3		30	18		5	33	B - 99	2 72/99	49	A - 49	1 41/49	66	A - 44	1 16/44	82	A - 41	1 4/41
4	A - 26	22 13/26	19	A - 38	4 28/38	34	A - 34	2 22/34	50	A - 30	1 24/30	67	B - 99	1 36/99	83	B - 83	1 7/83
5	A - 28	22 14/28	20	A - 26	4 13/26	35	A - 28	2 16/28	51	A - 34	1 26/34	68	A - 67	1 23/67	84	A - 28	1 2/28
6		18		A - 28	4 14/28		B - 63	2 36/63	52	A - 26	1 19/26	68	A - 34	1 11/34	85	A - 34	1 2/34
7	A - 28	12 24/28	21	A - 28	4 8/28	36	A - 26	2 13/26	53	A - 53	1 37/53	69	A - 46	1 14/46	86	A - 43	1 2/43
8	B - 77	12 66/77	22	B - 77	4 22/77	37	A - 28	2 14/28	54	A - 30	1 20/30	70	B - 69	1 21/69	87	B - 87	1 3/87
9	A - 28	11 7/28	23	A - 44	4 4/44	38	A - 37	2 16/37		B - 63	1 42/63		A - 28	1 8/28	88	A - 44	1 1/44
10	A - 44	11 11/44	24	B - 77	4 7/77	39	A - 38	2 14/38	55	A - 44	1 28/44	71	B - 63	1 18/63	89	B - 89	1 1/89
11		10	25	A - 46	3 42/46	40	A - 26	2 8/26	56	B - 77	1 49/77	72	B - 71	1 19/71	90	B - 91	1 90/91
12	A - 44	8 8/44	26	B - 69	3 63/69	41	B - 91	2 28/91	57	A - 28	1 17/28	73	A - 32	1 8/32	91	A - 46	45/46
13	B - 77	8 14/77	27	A - 28	3 21/28	42	A - 28	2 7/28	58	A - 38	1 22/38	74	A - 44	1 11/44	92	A - 93	90/93
14	A - 26	7 13/26	28	B - 44	3 33/44	43	A - 44	2 11/44	59	B - 87	1 48/87	75	B - 73	1 17/73	93	A - 47	45/47
15	A - 28	7 14/28	29	A - 30	3 18/30	44	A - 41	2 8/41	60	A - 59	1 31/59	76	A - 37	1 8/37	94	A - 38	36/38
16	A - 26	6 24/26	30	A - 26	3 12/26	45	A - 28	2 4/28	61	A - 34	1 17/34	77	A - 30	1 6/30	95	A - 32	30/32
17	B - 91	6 84/91	31	B - 91	3 42/91	46	B - 63	2 9/63	62	A - 32	1 16/32	78	A - 38	1 7/38	96	B - 97	90/97
18	A - 28	6 24/28	32	A - 30	3 10/30	47	A - 43	2 4/43	63	B - 61	1 29/61	79	B - 77	1 13/77	97	A - 49	45/49
19	B - 77	6 33/77	33	B - 63	3 21/63	48	A - 44	2 2/44	64	B - 93	1 42/93	80	A - 39	1 6/39	98	A - 44	40/44
20		6	34	A - 28	3 6/28	49	A - 44	2 2/44	65	A - 49	1 21/49	81	B - 91	1 14/91	99	B - 99	90/99
21		6	35	B - 87	3 9/87	50	A - 46	1 44/46	66	B - 77	1 33/77	82	A - 79	1 11/79	100	A - 30	27/30
22		6	36		3	51	B - 69	1 66/69	67	A - 32	1 13/32	83	A - 32	1 4/32			
23		5 20/32	37	B - 93	2 84/93	52	A - 47	1 43/47	68	A - 26	1 10/26	84	B - 63	1 7/63			

Description of In the index table.

This table is the one being calculated for the index plate with hole numbers shown below.

Description of codes used in the index table

- T : Desired dividural number
- N : Number of revolution of the crank handle
- H : Hole number of the index plate
- : Option
- A : Using A plate
- B : Using B plate

Number of holes

DP-1

- A Plate....15, 16, 17, 18, 19, 20
- B Plate.... 21, 23, 27, 29, 31, 33
- C Plate....37, 39, 41, 43, 47, 49

DP-2-3-4

- A Plate....26, 28, 30, 32, 34, 37, 38, 39, 41, 43, 44, 46, 47, 49, 51, 53, 57, 59
- B Plate.... 61, 63, 67, 69, 71, 73, 77, 79, 81, 83, 87, 89, 91, 93, 97, 99