MINIDEX

MINIATURE PRECISION

Air Rotary Indexer

KAMO SEIKO CORPORATION

Offered
Through

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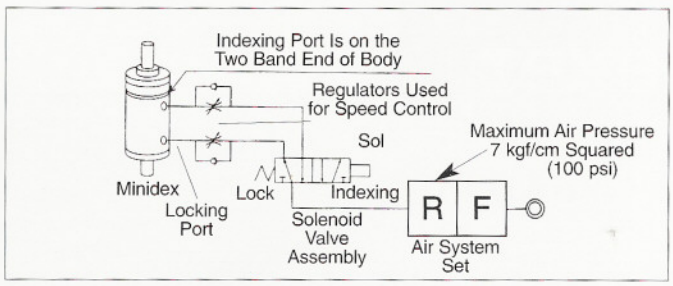
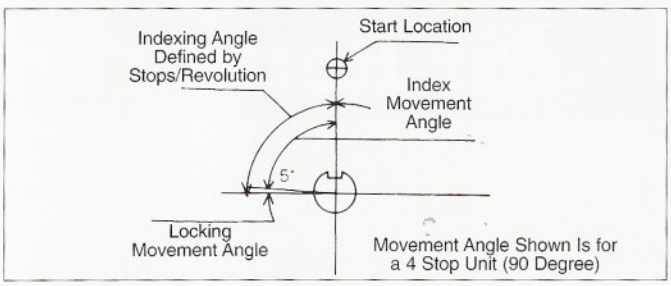
■ MINIDEX CHARACTERISTICS

The Kamo Seiko MINIDEX is an extremely small intermittent motion pneumatically driven actuator. The MINIDEX offers double ended output shafts that are incorporated in a manner that allows the use of an integrated pneumatic drive with both indexing and positioning capability as standard. Stop positions of the MINIDEX are exact with the use of internal locking pins and contribute to accuracy of positioning and repeatability without overrunning or external stops. The compact cylindrical form factor of the MINIDEX allows for installation in limited space without sacrificing performance or accuracy. Available in various stop locations per revolution of output shaft, the MINIDEX is a versatile device unmatched by another device of its size.

■ PLUMBING METHOD

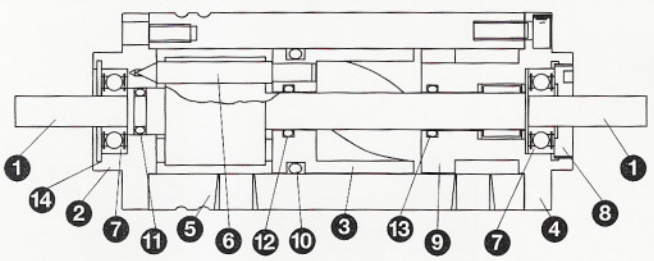


■ INDEXING METHOD



■ INTERNAL CONSTRUCTION (TYPICAL)

1	Output Shaft	8	Preload Nut
2	Hole Cap	9	Cam Assembly
3	Cam Piston	10	Packing
4	Follower Cap	11	O-Ring
5	Housing Tube	12	O-Ring
6	Locating Pin	13	O-Ring
7	Ball Bearing Assembly	14	Snap Ring



■ MOTION PROFILE

One complete index of the MINIDEX is achieved with a compound movement as illustrated below.

FIGURE 1 Start

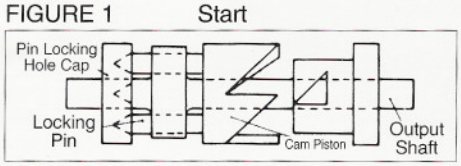


Figure 1 shows the starting position with the lock pins settled in the hole cap.

FIGURE 2 Index

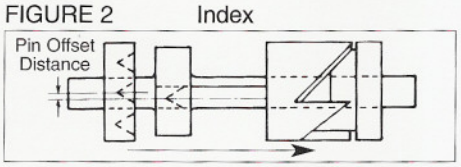


Figure 2 shows piston location after air valve has allowed air in. 95% of index is complete. Pin center line slightly offset from hole center line.

FIGURE 3 Lock

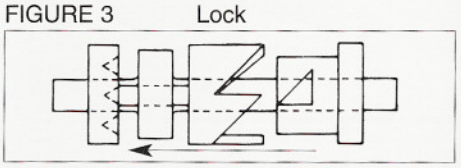
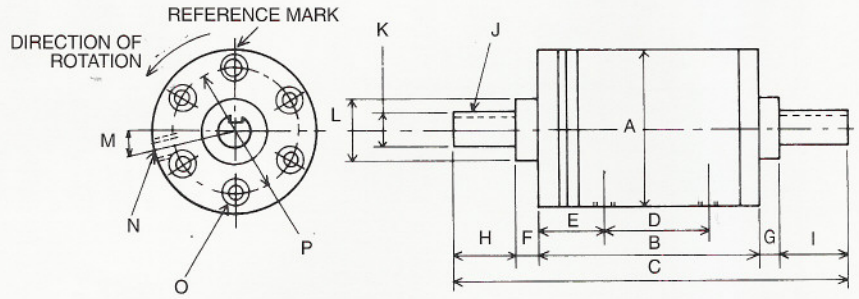


Figure 3 shows the final 5% of motion completed. Pins have seated in holes, shaft is locked, and now at the stopped position.

■ SPECIFICATIONS

ITEM \ MODEL		UNIT	MD20	MD30	MD50	MD75	NOTES
Index Number		stops	2,3,4,6,8	2,3,4,5,6,8,10,12	2,3,4,5,6,8,10,12	2,3,4,5,6,8,10,12	
Index Accuracy		arc • min	±12	±8	±6	±4	arc minutes
Index Speed		seconds	0.5	0.5	1.0	1.5	no load (t)
Maximum Air Pressure		kg/cm² (psi)	7 (100)	7 (100)	7 (100)	7 (100)	
Index Torque			AIR PRESSURE DEPENDENT — SEE CHART				
Internal Volume		cm³ (ci)	10 (.61)	18 (1.1)	150 (9.2)	220 (13.4)	
Body Weight		kg (lbs)	0.5 (1.1)	0.8 (1.8)	4.5 (10)	12 (26)	
Minimum Holding Torque		N • m (lb • in)	0.49 (4.4)	2.94 (26)	11.7 (104)	51 (450)	at 60 psi
Load Inertia		kg•cm² (in•lb•sec²)	50 (.044)	100 (.089)	1000 (.885)	6000 (5.31)	maximum value
Operating Load	Axial	N (lbs)	9.8 (2.2)	24.5 (5.5)	58.8 (13.2)	98.0 (22.4)	load at shaft end
	Radial	N (lbs)	14.7 (3.3)	29.4 (13.2)	98.0 (22.0)	196 (44)	load at shaft end
Lubrication			NR	NR	NR	NR	

■ DIMENSIONS



MD SERIES DIMENSIONS

MODEL NO. \ LETTER	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
MD20	37	93	143	35	35	4	4	20	25	3×1.8×16	8h7	22h7	67°30′	M5	4–M4 ×10	30
MD30	50	112	164	58	32	7	5	20	20	3×1.8×16	8h7	28h7	22°30′	Rc 1/8	4–M5 ×12	40
MD50	70	182	250	85	61	2	2	32	32	4×2.5×25	12h7	36h7	20°	Rc 1/4	6–M6 ×13	58
MD75	100	260 (215)	370 (325)	135 (105)	65	3	3	52	52	5×3×40	17h7	50h7	on line	Rc 1/4	6–M8 ×15	70

Note: Dimensions in ( ) for MD75 are for models with 6 stops or more.

■ MODEL SELECTION

MD (20, 30, 50, 75), (NUMBER OF STOPS)

Example: MD30-4 is defined as a Model MD30 with 4 stops per revolution.

■ INERTIA / INDEX TIME RELATIONSHIP

When designing the MINIDEX into an application, the load inertia, J_L should be within the specified values. There is a correlation between indexing time and load inertia so care should be taken in determining the MINIDEX model and the indexing time to load inertia relationship.

$$J_L \text{ (inertia of load)} = \frac{1}{2} \bullet \frac{W}{g} \bullet R^2$$

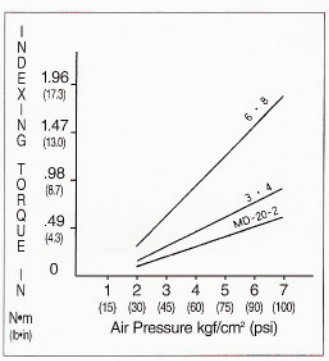
J_L = Inertia of load (lb-in-sec²)
W = Disc weight (lb)
g = Gravity (386 in/sec²)
R = Disc radius (in)

$$\textbf{Move Time} = t + \frac{J_L \bullet (3 - t)}{Jmax} = \text{seconds}$$

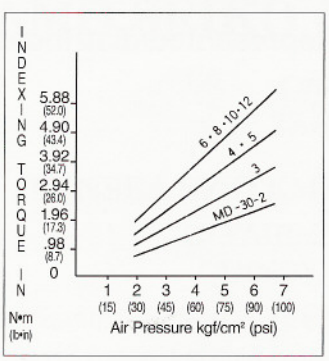
t = Minimum move time (sec)
J_L = Inertia of load (lb-in-sec²)
Jmax = Maximum allowable inertia (lb-in-sec²)

MODEL NO. \ VALUE	t (sec)	Jmax (in•lb•sec³)
MD20	0.5	0.044
MD30	0.5	0.089
MD50	1.0	0.885
MD75	1.5	5.310

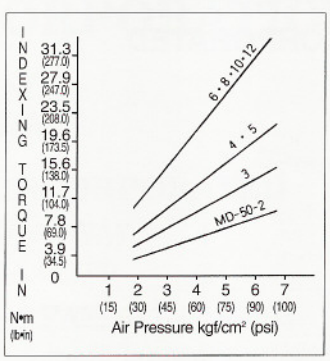
■ AIR PRESSURE / INDEX TORQUE RELATIONSHIP



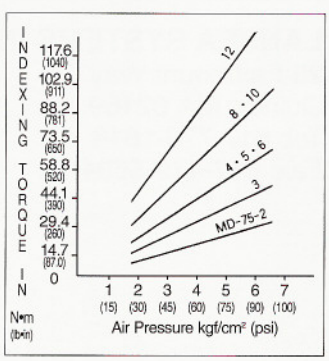
MD20



MD30



MD50



MD75