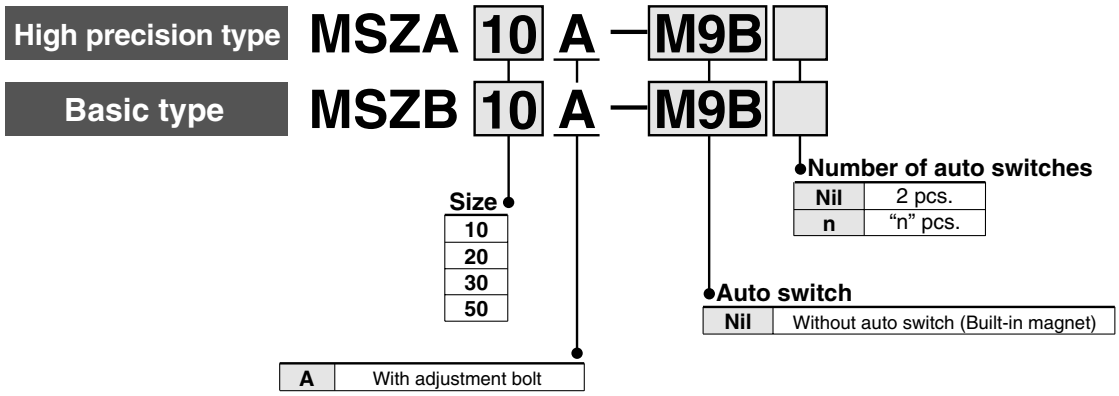
3-Position Rotary Table

Series MSZ

Size : 10, 20, 30, 50

How to Order



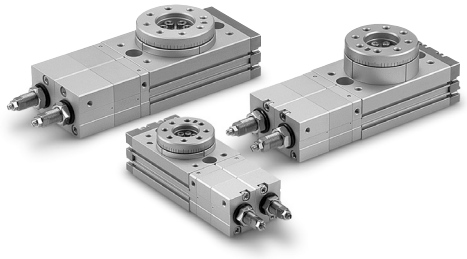
Applicable Auto Switch/Refer to pages 7 to 11 for detailed auto switch specification.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model		Lead wire length (m)*			Applicable load	
					DC		AC	Perpendicular	In-line	0.5 (Nil)	3 (L)	5 (Z)		
Reed switch	—	Grommet	No	2-wire	24 V	5 V, 12 V	100 V or less	**A90V**	**A90**	●	●	—	IC circuit	Relay, PLC
			Yes	3-wire (NPN equiv.)	—	5V	—	**A96V**	**A96**	●	●	—		—
				2-wire	24 V	12 V	100 V	**A93V**	**A93**	●	●	—	—	Relay, PLC
Solid state switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**M9NV**	**M9N**	●	●	○	IC circuit	Relay, PLC
				3-wire (NPN)				**M9PV**	**M9P**	●	●	○		
				2-wire		12 V		**M9BV**	**M9B**	●	●	○	—	
	Diagnostic indication (2-color display)			3-wire (NPN)		5 V, 12 V		**F9NWV**	**F9NW**	●	●	○	IC circuit	
				3-wire (NPN)				**F9PWV**	**F9PW**	●	●	○		
				2-wire		12 V		**F9BWV**	**F9BW**	●	●	○	—	
	Improved water resistance (2-color display)							—	**F9BA****	—	●	○		

** Although it is possible to attach a water resistant auto switch, this is not a water- resistant-type rotary table.

* Lead wire length symbols: 0.5 m ·····Nil (Example) M9N
3 m ····· L (Example) M9NL
5 m ····· Z (Example) M9NZ

* Auto switches marked with a "○" symbol are produced upon receipt of orders.



Specifications

Size	10	20	30	50
Fluid	Air (non-lube)			
Maximum operating pressure	1MPa			
Minimum operating pressure	0.2 MPa			
Ambient and fluid temperature	0 to 60°C (with no freezing)			
Cushion	None			
Rotation angle adjustment range	0 to 190°			
Center position adjustment range	±10°			
Port size	M5 x 0.8			

Allowable Kinetic Energy and Rotation Time Adjustment Range

Size	Allowable kinetic energy (mJ)	Rotation time adjustment range for stable operation (s/90°)
10	7	0.2 to 1.0
20	25	
30	48	
50	81	

If a kinetic energy exceeding the allowable value is applied to the product, it may come damaged and unusable. Care should be taken in designing, adjusting and operating the system so that the kinetic energy will not exceed the allowable values.

Weight

Unit: g

Size	10	20	30	50
Basic type	730	1350	1730	2660
High precision type	760	1450	1850	2820

Note) Excluding the weight of auto switches.

Piping and speed conrol

1) A single 3-position pressure center solenoid valve or two 3-port solenoid valves are used. (Refer to Figure 1 or Figure 2.)
2) A meter-out-type speed controller is used for ports **A** and **B** and a meter-in speed controller is used for ports **C** and **D**. (Figures 1 and 2 show the state at which pressure is applied to ports **B** and **D**.)

Figure 1 3-position pressure center solenoid valve: 1 pc.

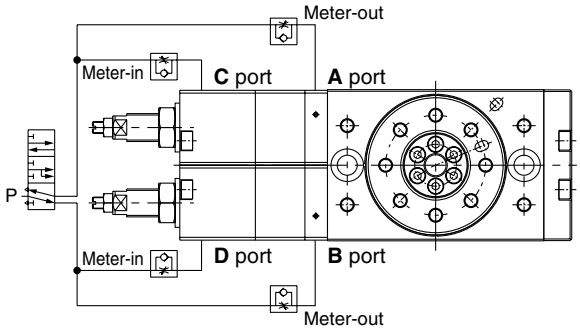
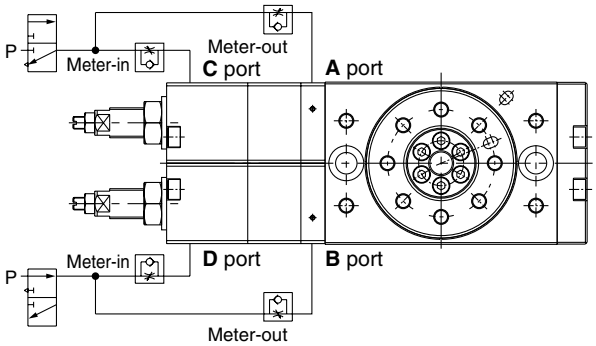


Figure 2 3-position solenoid valve: 2 pcs.



∗ The table return position under the power-off state changes depending on the solenoid valve type. Please refer to back matter 6 for details.

3) Figure 3 shows the rotation range and Table 1 shows the active speed controller.

Figure 3 Each operational contents

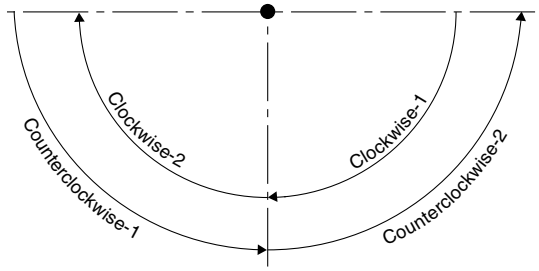


Table 1 Pressure port and active speed controller

Operating	Pressure port		Speed countroller
	A, C	**B, D**	
Clockwise-1	●	●	**C** port
Clockwise-2	●	—	**B** port
Counterclockwise-1	●	●	**D** port
Counterclockwise-2	—	●	**A** port

Angle Adjustment

1) Stop positions are adjusted with the adjusting bolts shown in Figure 4.
   ① Adjusting bolts “a” and “b” are used for adjusting the rotation ends. Adjusting bolts “c” and “d” are used for adjusting the center position.
   ② Figure 5 shows angle ranges adjusted with each adjusting bolt.

2) Angle adjustment
   Supply air when adjusting the angle (a low pressure of approx. 0.2 MPa is recommended).
   ① First adjust both rotation end positions.
   - Apply pressure to ports A and C to adjust adjusting bolt “b”.
   - Apply pressure to ports B and D to adjust adjusting bolt “a”.
   - Lock the bolts with fixing nuts after adjustment.

   ② Next, apply pressure to ports A to D to adjust the center position.
   - Loosen the fixing nuts for adjusting bolts “c” and “d”.
   - Tighten adjusting bolts “c” and “d” almost completely (allowing manual table rotation).
   - Follow the appropriate procedure (R or L) shown in Table 2.

Figure 4 **Adjusting bolt position**

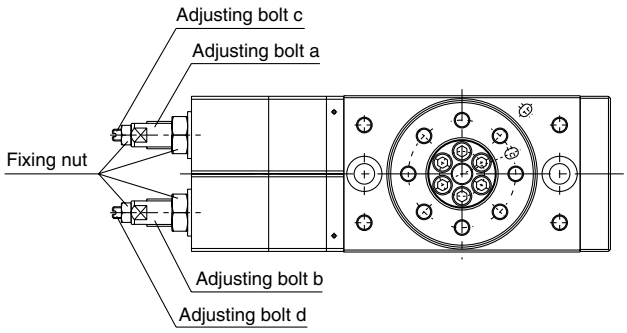


Figure 5 **Angle adjustment Range**

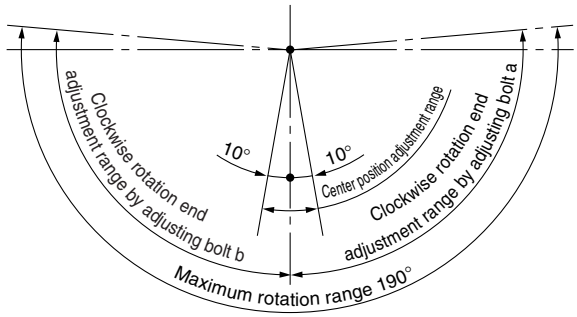


Table 2 **Center position adjustment**

	R: Clockwise adjustment	L: Counterclockwise adjustment
1	Manually rotate the table counterclockwise until resistance is felt.	Manually rotate the table clockwise until resistance is felt.
2	Rotate the table clockwise when adjusting bolt “d” is loosened. Set it to the desired position.	Rotate the table counterclockwise when adjusting bolt “c” is loosened. Set it to the desired position.
3	Loosen adjusting bolt “c” until resistance is felt. (Make sure that there is no rotation backlash in the table.)	Loosen adjusting bolt “d” until resistance is felt. (Make sure that there is no rotation backlash in the table.)
4	Tighten both adjusting bolts “c” and “d” to approx. 45°. Note 1)	Tighten both adjusting bolts “c” and “d” to approx. 45°. Note 1)
5	Lock adjusting bolts “c” and “d” with fixing nuts. Note 2)	Lock adjusting bolts “c” and “d” with fixing nuts. Note 2)

Note 1) Since the position of the adjusting bolt shifts with changing the screw clearance, pre-tighten the fixing nuts.
Note 2) If the table has a rotation backlash after tightening the nut, readjust it.

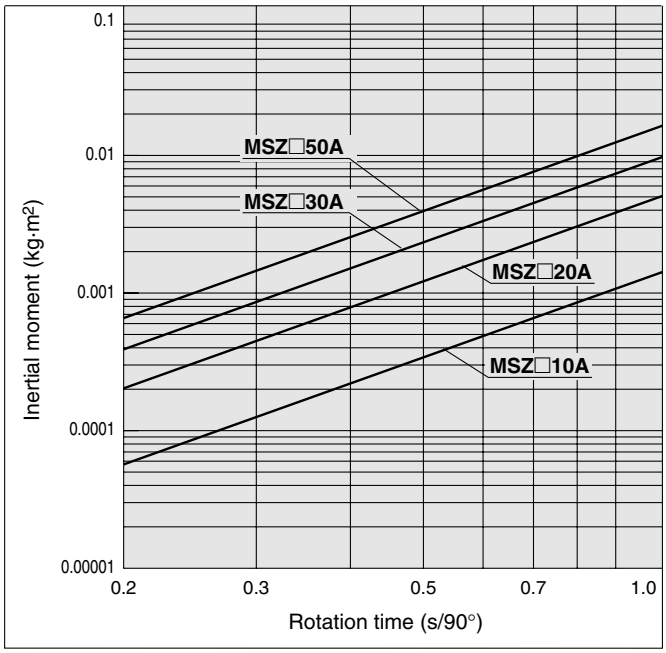
Adjusting angle per rotation of angle adjusting screw

size	Adjusting bolt a, b (End position adjustment)	Adjusting bolt c, d (Center position adjustment)
10	10.2°	5.1°
20	9.0°	3.6°
30	8.2°	3.3°
50	8.2°	4.1°

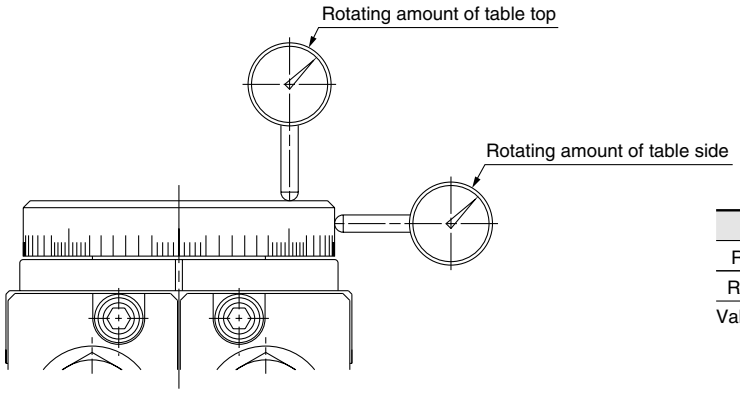
A piping, speed control, and angle adjustment manual is attached to the product.

Kinetic Energy/Rotation Time

(3) Model selection Select models by applying the inertial moment and rotation time which have been found to the charts below.



Rotation Accuracy: Displacement Values at 180° (Reference values)



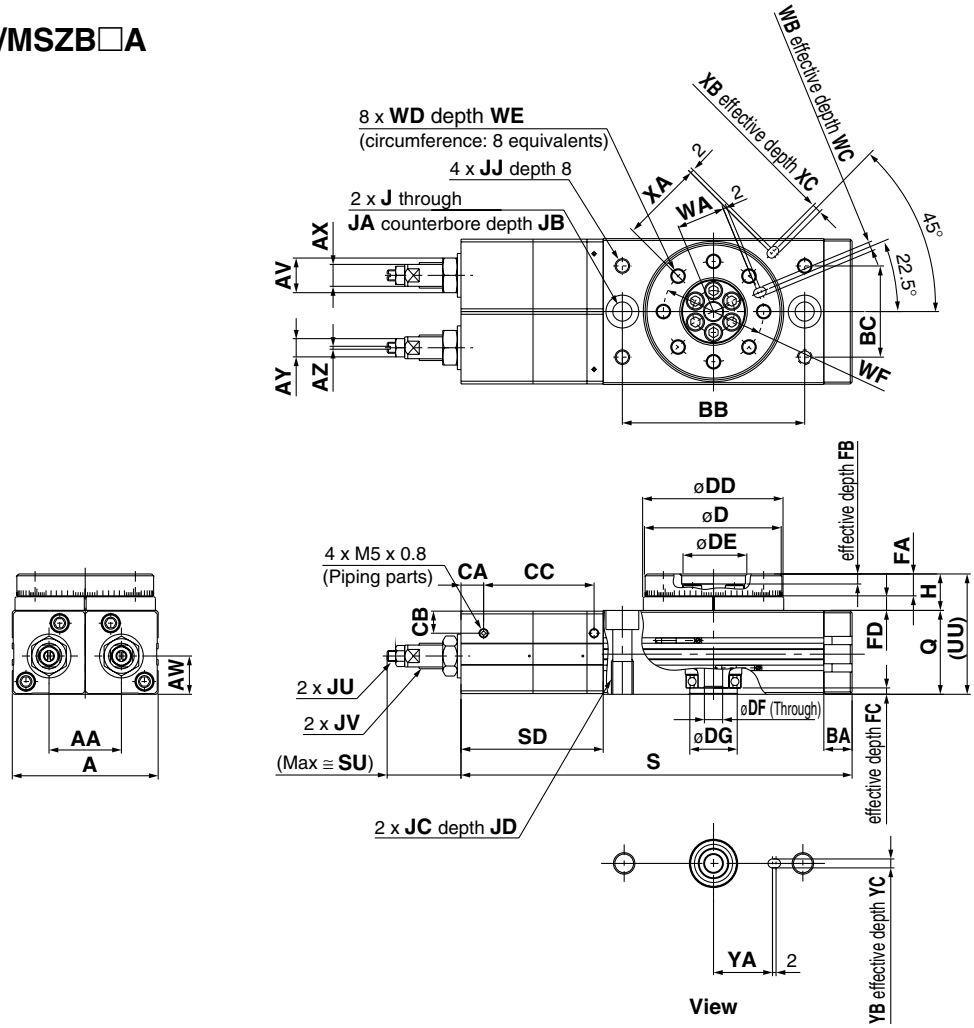
mm

Measuring plate	MSZA	MSZB
Rotating amount of table top	0.03	0.1
Rotating amount of table side	0.03	0.1

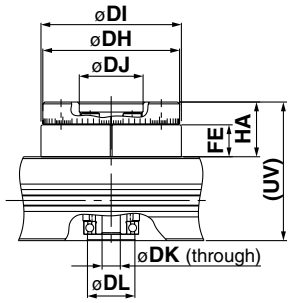
Values in the table are actual values and not guaranteed values.

Dimensions

Basic type/MSZB□A



High precision type/MSZA□A



(mm)

Size	DH	DI	DJ	DK	DL	FE	HA	UV
10	45h8	46h8	20H8	5	15H8	10	18.5	52.5
20	60h8	61h8	28H8	9	17H8	15.5	26	63
30	65h8	67h8	32H8	9	22H8	16.5	27	67
50	75h8	77h8	35H8	10	26H8	17.5	30	76

The position table shows the counterlockwise end when adjusted the rotation angle to 180°.

(mm)

Size	AA	A	AV	AW	AX	AY	AZ	BA	BB	BC	CA	CB	CC	D	DD	DE	DF	DG	FA	FB	FC	FD	H	J	JA	JB
10	24.7	50	14	17	8	7	1	9.5	60	27	7	7	38	45h9	46h9	20H9	5	15H9	8	4	3	4.5	13	6.8	11	6.5
20	32.4	65	17	18.5	10	8	1.2	12	76	34	8.1	10	50.4	60h9	61h9	28H9	9	17H9	10	6	2.5	6.5	17	8.6	14	8.5
30	34.7	70	17	18.5	10	8	1.2	12	84	37	10.5	10.5	53.5	65h9	67h9	32H9	9	22H9	10	4.5	3	6.5	17	8.6	14	8.5
50	39.7	80	19	21	12	10	1.6	15.5	100	50	12.4	12.5	60.6	75h9	77h9	35H9	10	26H9	12	5	3	7.5	20	10.5	18	10.5

(mm)

Size	JC	JD	JJ	JU	JV	Q	S	SD	SU	UU	WA	WB	WC	WD	WE	WF	XA	XB	XC	YA	YB	YC
10	M8 x 1.25	12	M5 x 0.8	M4 x 0.5	M10 x 1	34	132.5	50	27.3	47	15	3H9	3.5	M5 x 0.8	8	32	27	3H9	3.5	19	3H9	3.5
20	M10 x 1.5	15	M6 x 1	M5 x 0.5	M12 x 1.25	37	168.5	63.5	39	54	20.5	4H9	4.5	M6 x 1	10	43	36	4H9	4.5	24	4H9	4.5
30	M10 x 1.5	15	M6 x 1	M5 x 0.5	M12 x 1.25	40	184	69	36.4	57	23	4H9	4.5	M6 x 1	10	48	39	4H9	4.5	28	4H9	4.5
50	M12 x 1.75	18	M8 x 1.25	M6 x 0.75	M14 x 1.5	46	214.5	78	42.4	66	26.5	5H9	5.5	M8 x 1.25	12	55	45	5H9	5.5	33	5H9	5.5