

Spatter Resistant Cylinder for Arc Welding Rotary Clamp Cylinder: Double Guide Type

MK2T-XC89 -XC91

∅32, ∅40, ∅50, ∅63



How to Order

Ordering Example: MK2T B 32 [] - 10 R [] - M9BW [] - XC89

Rotary clamp cylinder (Built-in auto switch magnet)

Mounting bracket

B	Through-hole/Both ends tapped common (Standard)
G	Head flange

Bore size

32	32 mm	50	50 mm
40	40 mm	63	63 mm

Cylinder port

Nil	Rc
TN	NPT
TF	G

Clamp stroke

	Clamp stroke	Rotary stroke	Applicable bore size
10	10 mm	29 mm	∅32, ∅40
20	20 mm		
20	20 mm	33 mm	∅50, ∅63
50	50 mm		

Body option

Nil	Standard (Female thread)
N	With arm

Auto switch

Nil	Without auto switch (Built-in magnet)
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Number of auto switches

Nil	2 pcs.
S	1 pc.

Rotary direction (Unclamp → Clamp)

R	Clockwise
L	Counterclockwise

L type
During unclamping (Extension end) 85° to 95° (90°±5°)

R type
During unclamping (Extension end) 85° to 95° (90°±5°)

Clamp part
Non-rotating accuracy ±0.5° to 1.0°
During clamping (Retraction end)

Diagram: A top-down view of the cylinder showing the clamp part and the direction of rotation for R (clockwise) and L (counterclockwise) types. Arrows indicate the rotation during unclamping and clamping.

Made to Order

Part no.	Piston rod material (Hard chrome plating)	Coil scraper	Lube-retainer	Grease for welding
	S45C			
-XC89	●	●	●	●
-XC91	●	●	—	●

Note) Use the -XC91 in a place where the distance from the welding portion is far and the spatter scattering is minimized.

Applicable Auto Switches/Refer to the WEB catalog or the Best Pneumatics No.3 for further information on auto switches.

Type	Special function	Electrical entry	Indicator light	Wiring (Output)	Load voltage		Auto switch model		Lead wire length (m)					Pre-wired connector	Applicable load			
					DC	AC	Perpendicular	In-line	0.5 (Nil)	1 (M)	3 (L)	5 (Z)	None (N)					
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	M9NV	M9N	●	—	●	○	—	○	IC circuit		
				3-wire (PNP)				M9PV	M9P	●	—	●	○	—	○			
				2-wire				M9BV	M9B	●	—	●	○	—	○			
	3-wire (NPN)			M9NVV				M9NV	●	●	●	○	—	○	IC circuit			
	3-wire (PNP)			M9PVV				M9PV	●	●	●	○	—	○				
	2-wire			M9BVV				M9BV	●	●	●	○	—	○				
Magnetic field resistant (2-color indication)	2-wire (Non-polar)	—	—	P3DWA	●	—	●	●	—	●	—	—	—	—				
—	—	—	—	P4DW**	—	—	●	●	—	—	—	—	—	—				
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	24 V	5 V	—	A96V	A96	●	—	●	—	—	—	IC circuit	—	
				2-wire				A93V	A93	●	—	●	●	—	—	—	—	Relay, PLC
				—				A90V	A90	●	—	●	—	—	—	—	—	IC circuit

* Lead wire length symbols: 0.5 m..... Nil (Example) M9NV
1 m..... M (Example) M9NVV
3 m..... L (Example) M9NVL
5 m..... Z (Example) M9NVZ

* Solid state auto switches marked with "○" are produced upon receipt of order.
** For D-P4DW, ∅40 to ∅63 are available.
** Only D-P4DW type is assembled at the time of shipment.

* Please contact SMC for auto switches, auto switch proper mounting positions and operating ranges other than the above.
* For details about auto switches with pre-wired connector, refer to the WEB catalog or Best Pneumatics No.3.
* When D-M9□(V)/M9□W(V)/M9□A(V)/A9□(V) types are mounted on a side other than the port side, order auto switch mounting brackets separately. Refer to the WEB catalog or Best Pneumatics No.3 for details.
* Auto switches are shipped together, (but not assembled).

Specifications



Bore size (mm)	32	40	50	63
Action	Double acting			
Rotation angle ^{Note 1)}	90° ±5°			
Rotary direction ^{Note 2)}	Clockwise, Counterclockwise			
Rotary stroke (mm)	29		33	
Clamp stroke (mm)	10, 20		20, 50	
Theoretical clamp force (N) ^{Note 3)}	300	525	825	1300
Fluid	Air			
Proof pressure	1.5 MPa			
Operating pressure range	0.1 to 1 MPa			
Ambient and fluid temperature	Without auto switch: -10 to 70°C (No freezing) With auto switch: -10 to 60°C (No freezing)			
Lubrication	Non-lube			
Piping port size	Rc1/8, NPT1/8, G1/8		Rc1/4, NPT1/4, G1/4	
Mounting	Through-hole/Both ends tapped common, Head end flange			
Cushion	Rubber bumper			
Stroke length tolerance	+1.0 0			
Piston speed	50 to 200 mm/s			
Non-rotating accuracy (Clamp part)	±0.5°			

Note 1) Refer to "Rotary Angle" figure in the WEB catalog or Best Pneumatics No.3.

Note 2) Direction of rotation viewed from the rod end when the piston rod is retracting.

Note 3) At 0.5 MPa.

Theoretical Output

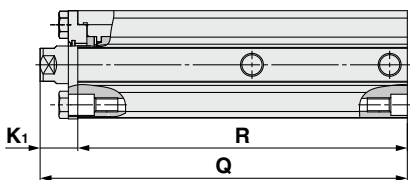
Unit: N

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (cm ²)	Operating pressure (MPa)			
				0.3	0.5	0.7	1.0
32	16	R	6	182	300	418	600
		H	8	243	400	557	800
40	16	R	10.5	319	525	731	1050
		H	12.5	380	625	870	1250
50	20	R	16.5	502	825	1149	1648
		H	19.6	596	980	1365	1961
63	25	R	26	780	1300	1820	2600
		H	31.2	948	1560	2172	3121

Note) Theoretical output (N) = Pressure (MPa) x Piston area (cm²) x 100

Operating direction
 R: Rod end (Clamp)
 H: Head end (Unclamp)

Comparison of the Dimensions of Each Series



Bore size (mm)	XC89			XC91			Standard		
	K ₁	Q	R	K ₁	Q	R	K ₁	Q	R
32	16	176	160	8	168	160	8	168	160
40	16.5	180.5	164	7.5	171.5	164	7.5	171.5	164
50	23.5	202.5	179	12	191	179	12	191	179
63	23	205	182	10	192	182	10	192	182

* When the clamp stroke is 20 mm

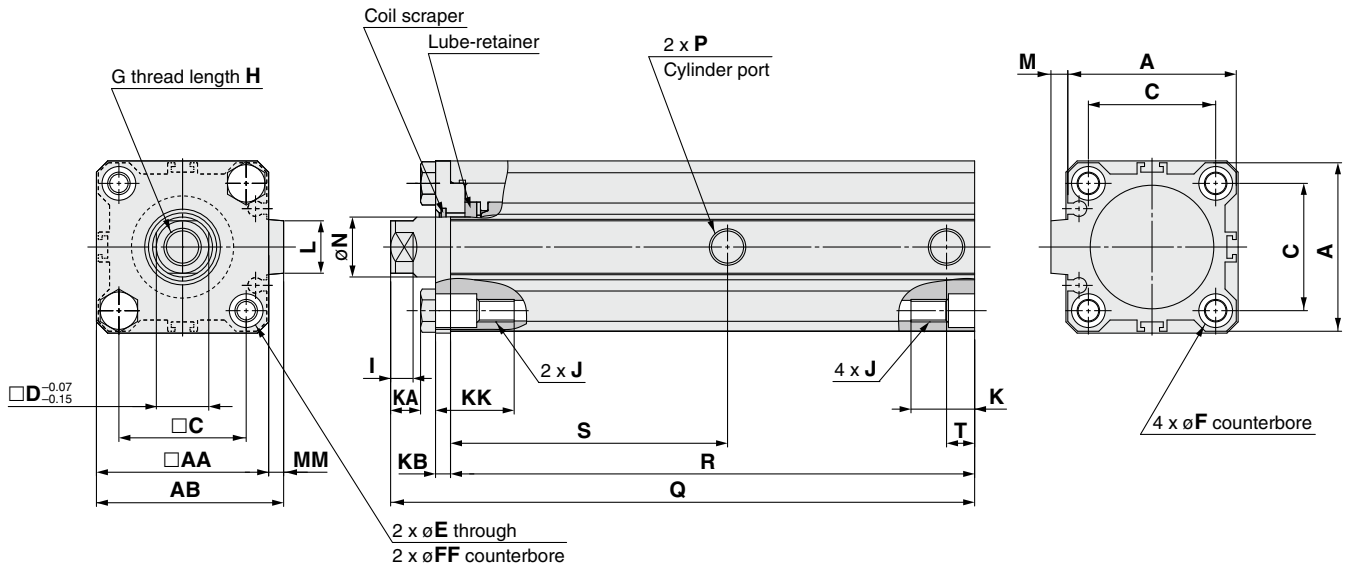
MK2T-XC89

Bore Size

Ø32 to Ø63

MK2T□-XC89

Through-hole/Both ends tapped (Standard): MK2TB



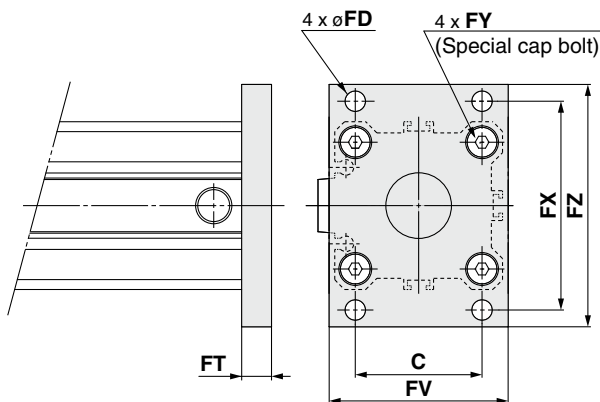
Bore size (mm)	AA	AB	A	C	D	E	FF	F	G	H	I	J	KK	K	KA	KB	L	MM	M	øN
32	46	50	45	34	14 ^{-0.07/-0.15}	5.5	9 depth 11	9 depth 7	M10 x 1.5	12	6	M6 x 1.0	21	17	8	4	14	4	4.5	16
40	52	57	52	40	14 ^{-0.07/-0.15}	5.5	9 depth 12	9 depth 7	M10 x 1.5	12	6	M6 x 1.0	22	17	7.5	5	14	5	5	16
50	64	71	64	50	17 ^{-0.07/-0.15}	6.6	11 depth 14	11 depth 8	M12 x 1.75	15	7	M8 x 1.25	28	22	12	6	19	7	7	20
63	77	84	77	60	22 ^{-0.07/-0.15}	9	14 depth 16.5	14 depth 10.5	M16 x 2	21	8	M10 x 1.5	34.5	28.5	10	6	19	7	7	25

Bore size (mm)	P			Clamp stroke: 10 mm				Clamp stroke: 20 mm				Clamp stroke: 50 mm			
	Nil	TN	TF	Q	R	S	T	Q	R	S	T	Q	R	S	T
32	Rc1/8	NPT1/8	G1/8	156	140	74	7.5	176	160	84	7.5	—	—	—	—
40	Rc1/8	NPT1/8	G1/8	160.5	144	75	8	180.5	164	85	8	—	—	—	—
50	Rc1/4	NPT1/4	G1/4	—	—	—	—	202.5	179	91.5	12.5	266	242.5	121.5	14
63	Rc1/4	NPT1/4	G1/4	—	—	—	—	205	182	93	10.5	269	246	123	15

Note 1) The cylinder rod is retracted.

Note 2) The overall length when the rod is extended is the value that the clamp stroke and rotary stroke are added to the dimension Q.

Head flange: MK2TG

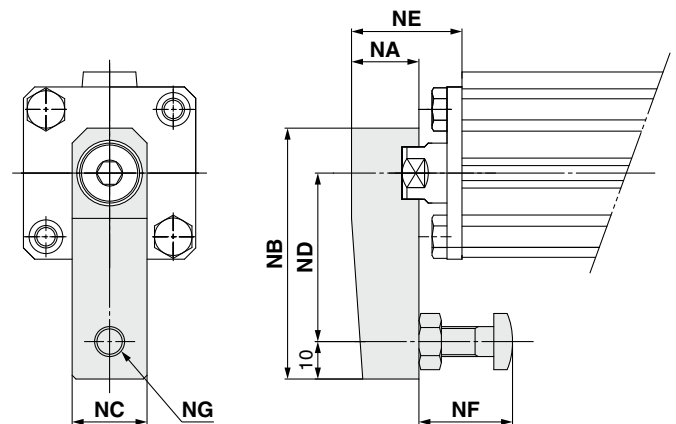


Bore size (mm)	Flange part no.	C	FD	FT	FV	FX	FY	FZ
32	MK2T-F032	34	5.5	8	48	56	M6 x 1.0	65
40	MK2T-F040	40	5.5	8	54	62	M6 x 1.0	72
50	MK2T-F050	50	6.6	9	67	76	M8 x 1.25	89
63	MK2T-F063	60	9	9	80	92	M10 x 1.5	108

* Dimensions other than the above are the same as standard.

* Accessories: hexagon socket head cap screw

With arm



Bore size (mm)	Arm part no.	NA	NB	NC	ND	NE	NF	NG
32	MK-A032Z	18	67	20	45	29.5	15 to 25	M8 x 1.25
40		18	67	20	45	30	15 to 25	M8 x 1.25
50	MK-A050Z	22	88	22	65	41	20 to 40	M10 x 1.5
63	MK2T-A063	32	91	32	65	47.5	20 to 40	M10 x 1.5

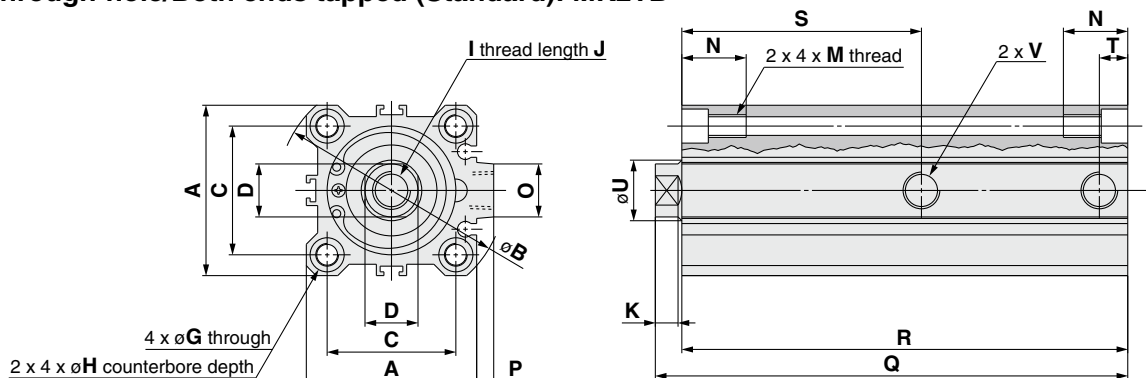
* Accessories: clamp bolt, hexagon socket head cap screw, hexagon nut, spring washer

Bore Size

∅32 to ∅63

MK2T□-XC91 * Dimensions are the same as the standard product (Series MK2T).

Through-hole/Both ends tapped (Standard): MK2TB



Through-hole/Both Ends Tapped Common (Standard)

Bore size	A	∅B	C	D	G	H	I	J	K	M	N	O	P	∅U	V		
															Nil	TN	TF
32	45	60	34	14 ^{-0.07/-0.15}	5.5	9 depth 7	M10 x 1.5	12	6	M6 x 1.0	17	14	4.5	16	Rc1/8	NPT1/8	G1/8
40	52	69	40	14 ^{-0.07/-0.15}	5.5	9 depth 7	M10 x 1.5	12	6	M6 x 1.0	17	14	5	16	Rc1/8	NPT1/8	G1/8
50	64	86	50	17 ^{-0.07/-0.15}	6.6	11 depth 8	M12 x 1.75	15	7	M8 x 1.25	22	19	7	20	Rc1/4	NPT1/4	G1/4
63	77	103	60	22 ^{-0.07/-0.15}	9	14 depth 10.5	M16 x 2	21	8	M10 x 1.5	28.5	19	7	25	Rc1/4	NPT1/4	G1/4

Bore size	Clamp stroke 10 mm				Clamp stroke 20 mm				Clamp stroke 50 mm			
	Q	R	S	T	Q	R	S	T	Q	R	S	T
32	148	140	74	7.5	168	160	84	7.5	—	—	—	—
40	151.5	144	75	8	171.5	164	85	8	—	—	—	—
50	—	—	—	—	191	179	91.5	12.5	254.5	242.5	121.5	14
63	—	—	—	—	192	182	93	10.5	256	246	123	15

Spatter Resistant Cylinders
for Arc Welding

Clamp Cylinders

Gas/Air Switching Valve

Detection Switches

Tubing

Fittings

Flow Control Equipment