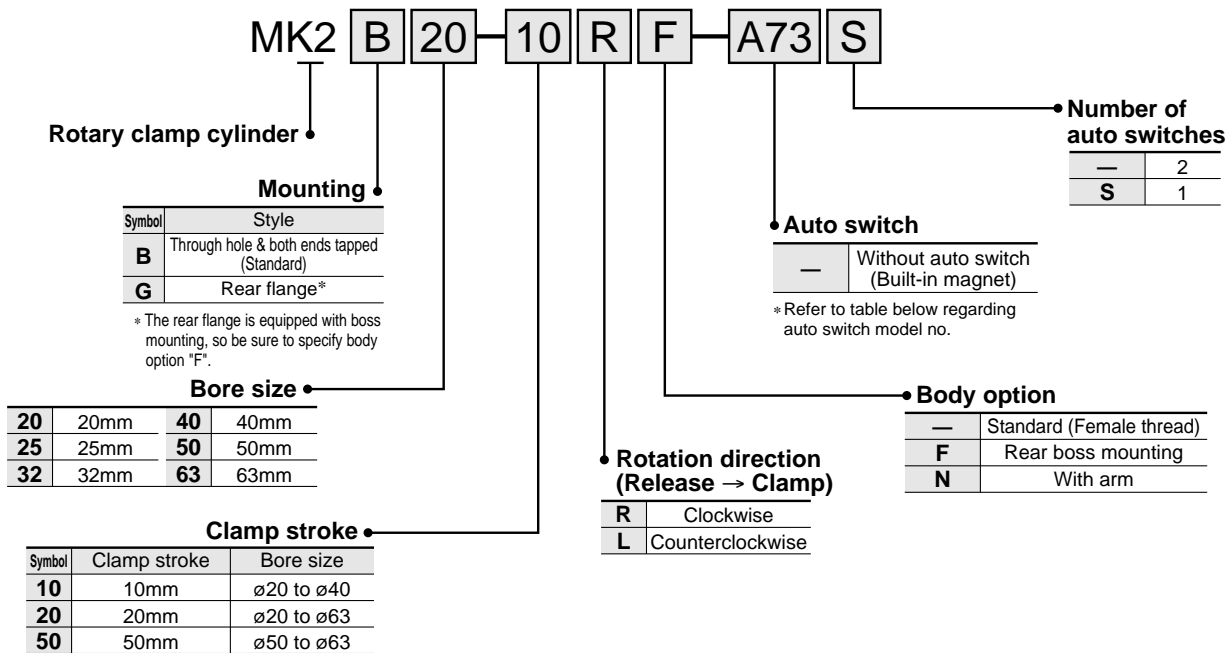


Rotary Clamp Cylinder/Heavy Duty Series MK2

ø20, ø25, ø32, ø40, ø50, ø63

How to Order



Applicable Auto Switches/Refer to the p.5.3-2 for further information on auto switch.

Style	Special function	Electrical entry	Indicator	Wiring (output)	Load voltage		Rail mounting		Direct mounting		Lead wire*(m)				Applicable load							
					DC	AC	ø20 to ø63		ø32 to ø63		0.5 (—)	3 (L)	5 (Z)	— (N)								
							Perpendicular	In-line	Perpendicular	In-line												
Reed switch	—	Grommet	Yes	3 wire (NPN Equiv.)	—	5V	—	—	A76H	A96V	A96	●	●	—	—	IC						
												—	200V	A72	A72H		—	—	●	●	—	—
					24V	12V	100V	A73	A73H	—	—					●			●	●	—	Relay PLC
												5V, 12V	≤100V	A80	A80H	A90V	A90	●	●	—	—	
					12V	—	A73C	—	—	—	●							●	●	●	IC	
											5V, 12V	≤24V	A80C	—	—	—	●	●	●	●		IC
					—	—	A79W	—	—	—							●	●	—	—	—	
											Solid state switch	—	Grommet	Yes	3 wire (NPN)	5V, 12V	12V	—	—	F7NV		F79
					5V, 12V	—	F7PV	F7P	—	—											●	
																24V	12V	—	—	F9NV	F9N	●
5V, 12V	—	F7PV	F7P	—	—	●	●	○	—	IC												
						—	—	F9PV	F9P							●	●	—	—	—		
12V	—	F7BV	J79	—	—					●						●	○	—	—			
						—	—	F9BV	F9B	●						●	—	—		—		
—	—	J79C	—	—	—					●						●	●	●	—			
						—	—	F9NWV	F9NW	●						●	○	—		—		
24V	5V, 12V	—	—	F7NWV	F79W					—						—	●	●	○		—	IC
						12V	—	F7PW	—		—	—	●	●	○		—	Relay PLC				
5V, 12V	—	—	—	F9PWV	F9PW					●			●	○	—	—						
						—	—	F7BVV	J79W	F9BWW	F9BW	●	●	○	—		—					
—	—	F7BA	—	—	F9BA							—	●	○	—	—						
						5V, 12V	—	—	—	F7NT	—	—	—	●	○		—	IC				
—	—	F79F	—	—	—									●	●	○	—		—			
						—	—	F7LF	—	—	—	●	●	○	—	—						
—	—	P5DW**	—	—	—							—	●	●	—		—					

* Lead wire 0.5m..... — (Example) A80C 5m..... Z (Example) A80CZ
3m..... L (Example) A80CL — N (Example) A80CN

** Solid state auto switches marked with a "○" are manufactured upon receipt of order.

** D-P5DW can be mounted for only ø40, ø50 and ø63.

Option Part No./Arm

Bore size (mm)	Part No.	Accessories
20	MK-A020	Clamp bolt Hexagonal socket head cap screw Hexagonal nut Spring seat
25		
32		
40	MK-A032	Clamp bolt Hexagonal socket head cap screw Hexagonal nut Spring seat
50		
60		

Mounting Bracket Part No./Flange

Bore size (mm)	Part No.	Accessories
20	MK2-F020	Boss mounting ring Set pin Bolt for cylinder body
25	MK2-F025	
32	MK2-F032	
40	MK2-F040	
50	MK2-F050	
63	MK2-F063	

Rotary Clamp Cylinder/Heavy Duty *Series MK2*



Specifications

Bore size (mm)	20	25	32	40	50	63
Operation	Double acting					
Rotary angle ⁽⁴⁾	90° ± 10°					
Rotary direction ⁽³⁾	R: Clockwise L: Counterclockwise					
Rotary stroke (mm)	9.5		15		19	
Clamp stroke (mm)	10-20				20-50	
Allowable moment Nm ⁽¹⁾	7	13	27	47	107	182
Theoretical clamp force N ⁽²⁾	100	185	300	525	825	1400
Fluid	Air					
Proof pressure	1.5MPa					
Operating pressure range	0.1 to 10MPa					
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					
Port size	M5 X 0.8		Rc(PT) 1/8		Rc(PT) 1/4	
Mounting	Through hole/Both ends tapped (Common), Rear flange					
Cushion	Rubber bumper					
Stroke tolerance (mm)	+0.6 -0.4					
Piston speed	50 to 200 mm/s					
Non-rotating accuracy	±1.2°		±0.9°		±0.7°	

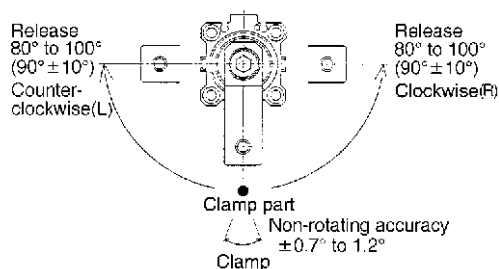
Note 1) Max. bending moment applied to the piston rod side.

Note 2) At 0.5 MPa.

Note 3) Direction of rotation viewed from the rod side when the piston rod is retracting.

Note 4) Refer to "Rotary angle" diagram.

Rotary Angle



Theoretical Force

Unit: N

Bore size (mm)	Rod dia. (mm)	Operating direction	Piston area (cm ²)	Operating pressure (MPa)			
				0.3	0.5	0.7	1.0
20	12	R	2	60.8	100	139	200
		H	3	90.2	149	208	298
25	12	R	3.7	112	185	258	370
		H	4.9	149	245	341	490
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	20	R	28	851	1400	1950	2801
		H	31.2	948	1560	2172	3121

Note) Theoretical force (N)=Pressure (MPa) X Piston area (cm²) X 100

Operation direction R: Rod side (Clamp)

H: Head side (Release)



Made to Order

Refer to the p.5.4-1 regarding made to order for series MK2.

Weight/Mounting

Unit: g

Clamp stroke (mm)	Bore size (mm)					
	20	25	32	40	50	63
10	260	295	353	635	—	—
20	300	335	555	680	1170	1620
50	—	—	—	—	1420	1890

Additional Weight

Unit: g

Bore size (mm)	20	25	32	40	50	63
Rear boss mounting	2	3	5	7	13	25
With arm	100	100	200	200	350	350
Rear flange	133	153	166	198	345	531

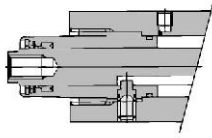
Calculation method (Example) MK2G20-10RFN

- Standard calculation: MK2B20-10R 260g
- Extra weight calculation: Rear flange 133g
- Rear boss mounting 2g
- With arm 100g
- 495g

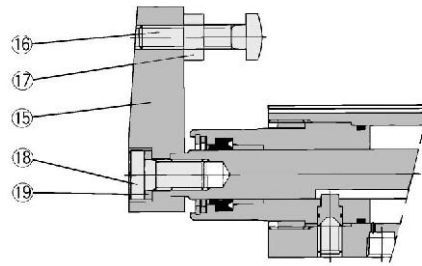
Series MK2

Construction

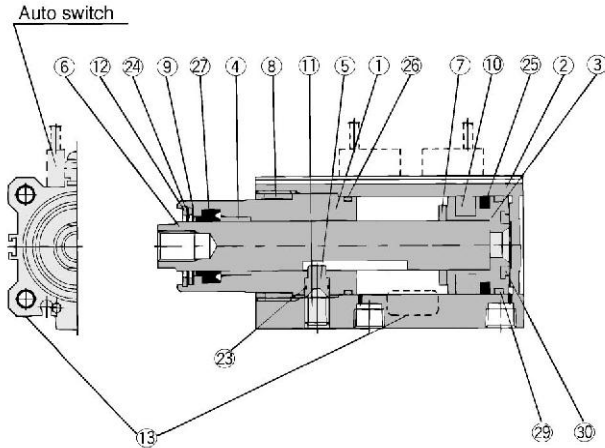
MK2□20, 25



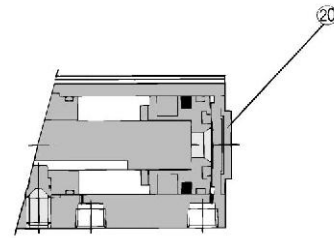
With arm (N)



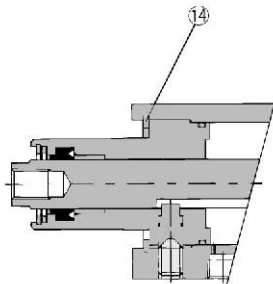
MK2□32



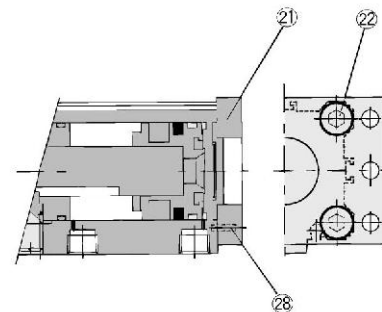
Rear boss mounting (F)



MK2□40 to 63



Rear flange (G)



Component Parts

No.	Description	Material	Note
①	Rod cover	Aluminum alloy	
②	Cylinder tube	Aluminum alloy	
③	Piston	Aluminum alloy	
④	Bushing	Copper bearing material	Only ø20 to ø63
⑤	Guide pin	Stainless steel	
⑥	Piston rod	Stainless steel	
⑦	Bumper	Urethane	
⑧	Ring nut	Copper alloy	Only ø20 to ø32
⑨	Scraper pressure	Stainless steel	
⑩	Magnet		
⑪	Hex. socket head cap screw	Chrome molybdenum steel	Sharp end section: 90°
⑫	R-shape snap ring	Spring steel	
⑬	Plate	Aluminum	
⑭	C type retaining ring	Carbon tool steel	Only ø40 to ø53
⑮	Arm	Rolled steel	
⑯	Clamp bolt	Chrome molybdenum steel	

Component Parts

No.	Description	Material	Note				
⑰	Hexagonal nut	Rolled steel					
⑱	Hex. socket head cap bolt	Chrome molybdenum steel					
⑲	Spring washer	Hard steel					
⑳	Boss mount ring	Aluminum alloy					
㉑	Flange	Rolled steel					
㉒	Hex. socket head cap bolt	Chrome molybdenum steel	Quantity <table border="1" style="display: inline-table; vertical-align: middle;"><tr><td>ø20, 25:</td><td>2</td></tr><tr><td>ø32 to 63:</td><td>4</td></tr></table>	ø20, 25:	2	ø32 to 63:	4
ø20, 25:	2						
ø32 to 63:	4						
㉓	O ring	NBR					
㉔	Coil scraper	Phosphor bronze					
㉕	Piston seal	NBR					
㉖	Gasket	NBR					
㉗	Rod seal	NBR					
㉘	Parallel pin	Stainless steel					
㉙	Wear ring	Resin					
㉚	Bumper B	Urethane					

Replacement Parts: Seal Kits

Bore size (mm)	ø20	ø25	ø32	ø40	ø50	ø63
Part No.	Not disassembled			MK2-40-PS	MK2-50-PS	MK2-63-PS
Contents	Set of above ㉓ ㉔ ㉕ ㉖ ㉗					

*Seal kit includes O ring ㉓, coil scraper ㉔, piston seal ㉕, gasket ㉖ and rod seal ㉗.
Order a seal kit according to applicable bore size.

⚠ Precautions

Be sure to read before handling.
 Refer to p.0-39 to 0-46 for Safety Instructions and common precautions on the products mentioned in this catalog.

⚠ Caution

Handling

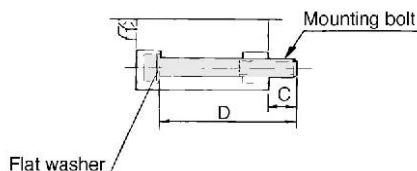
- Mount the cylinder so that the clamping piston will be approximately in the center of the clamp stroke.
- The auto switch is temporarily mounted for shipment, so adjust its position when mounting the cylinder. (See the auto switch mounting position on p.4.1-20.)
- Do not apply clamping and other loads when the piston rod is turning.

Mounting bolt for MK2B

Mounting method: A through hole mounting bolt is available.

How to order: Suffix "(MK2B)" to the size of bolts to be used.

Example) M5 X 75 ℓ (MK2B)



Note) Be sure to use a flat washer to mount cylinders via through holes.

Part No.	C	D	Mounting bolt
MK2B20-10	8.5	75	M5 X 75ℓ
MK2B20-20		85	M5 X 85ℓ
MK2B25-10	10.5	80	M5 X 80ℓ
MK2B25-20		90	M5 X 90ℓ
MK2B32-10	10	90	M5 X 90ℓ
MK2B32-20		100	M5 X 100ℓ
MK2B40-10	6	80	M5 X 80ℓ
MK2B40-20		90	M5 X 90ℓ
MK2B50-20	10.5	105	M6 X 105ℓ
MK2B50-50	10.5	135	M6 X 135ℓ
MK2B63-20	9	105	M8 X 105ℓ
MK2B63-50		135	M8 X 135ℓ

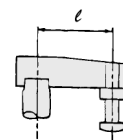
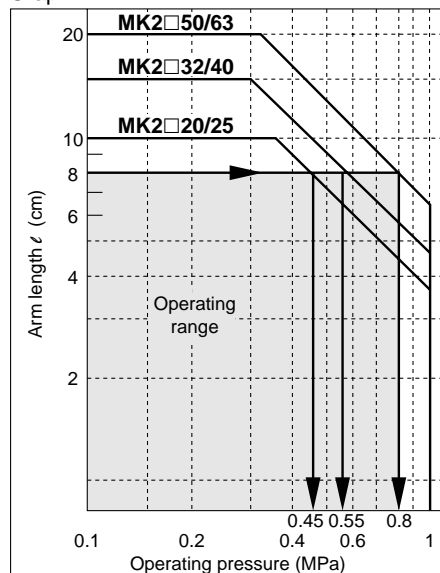
Precautions for Designing and Mounting Arms

When arms are to be made separately, their length and weight should be within the following range.

1. Allowable bending moment

Use the arm length and operating pressure within graph 1 for allowable bending moment loaded piston rod.

Graph 1

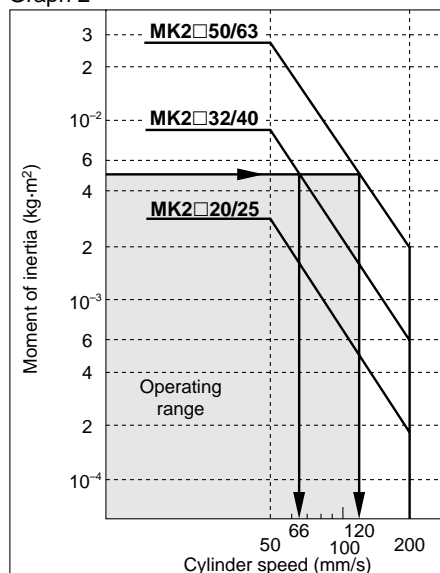


When arm length is 8cm, pressure should be less than
 MK2□20/25: 0.45MPa
 MK2□32/40: 0.55MPa
 MK2□50/63: 0.8MPa

2. Moment of inertia

When the arm is long and heavy, damage of internal parts may be caused due to inertia. Use the inertia moment and cylinder speed within graph 2 based on arm requirements.

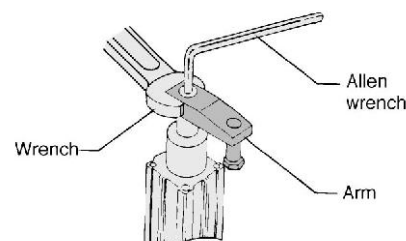
Graph 2



When arm's moment of inertia is $5 \times 10^{-3} \text{kg/m}^2$, cylinder speed should be less than
 MK2□32/40: 66mm/s
 MK2□50/63: 120mm/s
 Refer to p.4.1-21 for calculating moment of inertia.

- To attach and detach the arm to and from the piston rod, fix the arm with a wrench or vise and then tighten the bolt. (Excessive force in the direction of rotation applied to the piston rod may damage the internal mechanism.) Refer to the following table for the tightening torque for mounting.

Bore size (mm)	Standard tightening torque Nm
20, 25	4 to 6
32, 40	8 to 10
50, 63	14 to 16



MK/MK2

RSQ/RSG

RSH

CE1

CE2

ML2B

ML1C

REA

REC

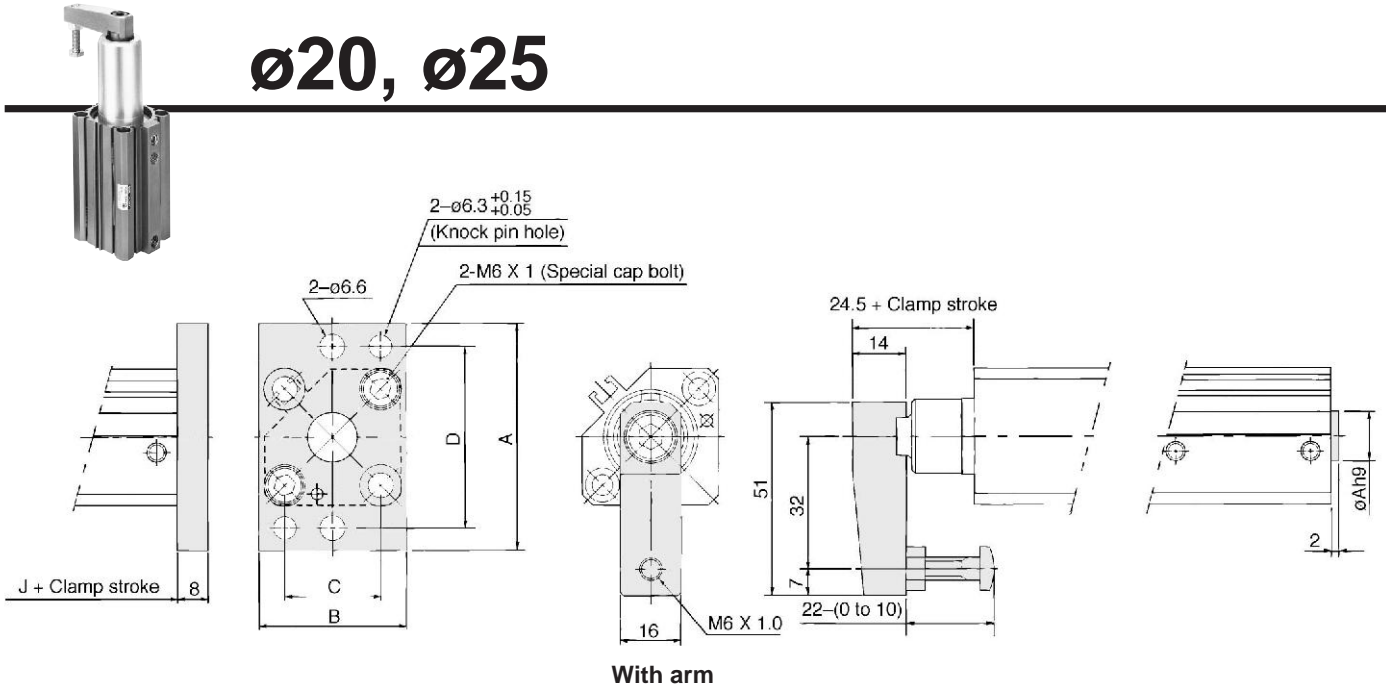
RHC

MTS

CC

Series MK2

ø20, ø25

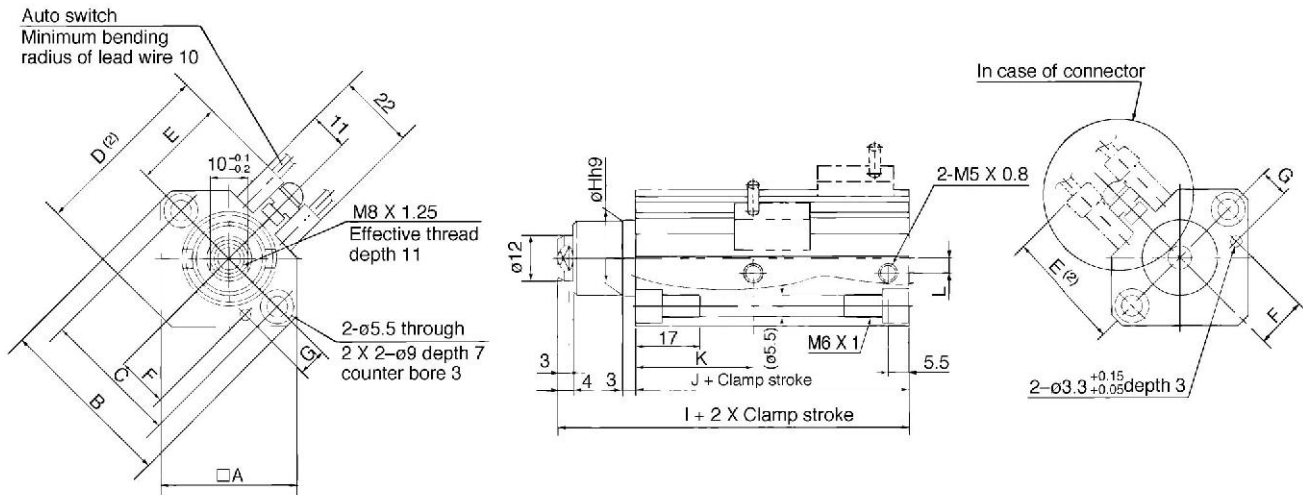


Rear flange

Model	A	B	C	D
MK2G20	60	39	25.5±0.1	48±0.15
MK2G25	64	42	28±0.1	52±0.15

Rear boss mounting

Model	øAh9
MK2□20-□□F	13 ⁰ _{-0.043}
MK2□25-□□F	15 ⁰ _{-0.043}

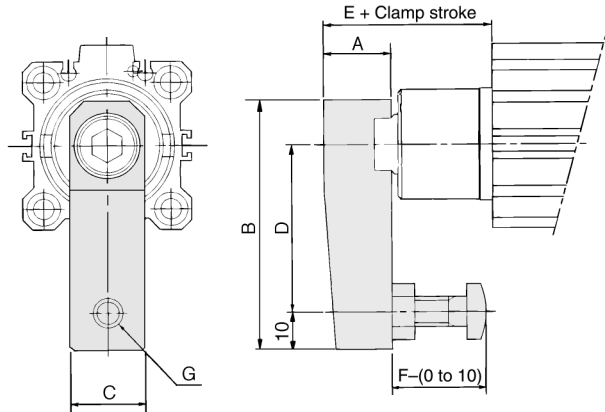
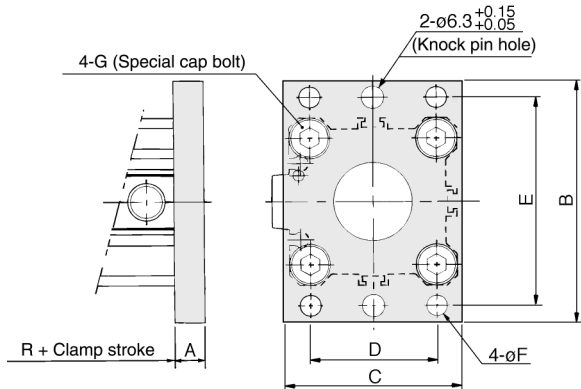


Through hole & both ends tapped (standard)

Model	□A	B	C	D	E	F	G	øHh9	I	J	K	L
MK2B20	36	46.8	36	48	24.5	13.5±0.15	7.5±0.15	20 ⁰ _{-0.052}	75.5	62.5	31	4
MK2B25	40	52	40	53.8	27.5	16 ±0.15	8±0.15	23 ⁰ _{-0.052}	78.5	65.5	32	5

- Note 1) Above figure is for D-A73, A80
 Note 2) Dimensions E and F are 7mm longer for the auto switches with connector (D-A7□C, A80C, J79C).
 Note 3) When the rod is extended, the clamp stroke and rotary stroke are added to the appropriate dimensions.

ø32, ø40, ø50, ø63

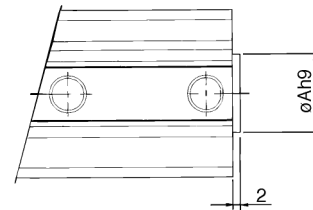


Rear flange

Model	A	B	C	D	E	øF	G
MK2G32	8	65	48	34±0.1	56±0.15	5.5	M6 X 1.0
MK2G40	8	72	54	40±0.1	62±0.15	5.5	M6 X 1.0
MK2G50	9	89	67	50±0.1	76±0.15	6.6	M8 X 1.25
MK2G63	9	108	80	60±0.1	92±0.15	9	M10 X 1.5

With arm

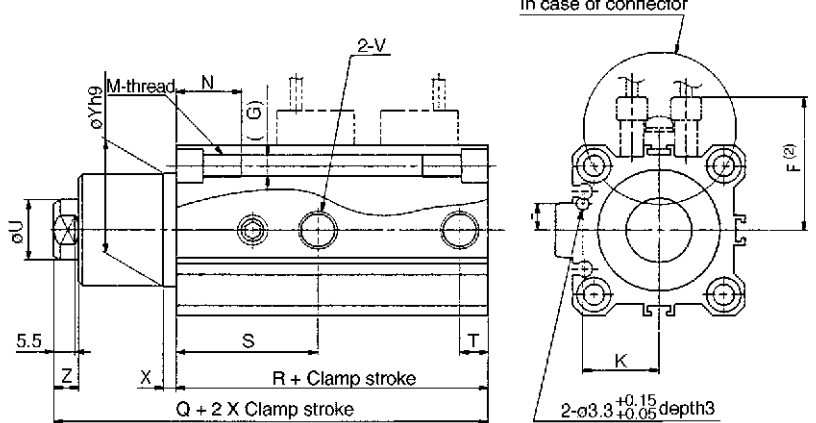
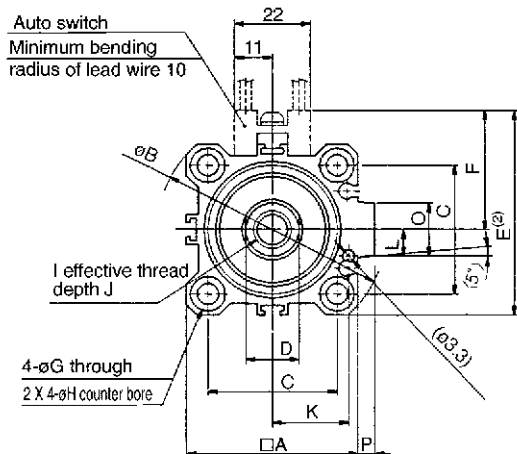
Model	A	B	C	D	E	F	G
MK2□32-□□□	18	67	20	45	39	25	M8 X 1.25
MK2□40-□□□	18	67	20	45	46	25	M8 X 1.25
MK2□50-□□□	22	88	22	65	58	40	M10 X 1.5
MK2□63-□□□	22	88	22	65	57.5	40	M10 X 1.5



Note 1) Below figure is for D-A73, A80.
 Note 2) Dimensions E and F are 7mm longer for the auto switches with connector (D-A7□□, A80C, J79C).

Rear boss mounting

Model	øAh9
MK2□32-□□□F	21 ⁰ _{-0.052}
MK2□40-□□□F	28 ⁰ _{-0.052}
MK2□50/63-□□□F	35 ⁰ _{-0.062}



Through hole & both ends tapped (standard)

Model	□A	B	C	D	E	F	øG	øH	I	J	K	L	M	N	O	P	Q	R	S	T	øU	V	X	øYh9	Z	
MK2B32	45	60	34	14 ^{-0.1} _{-0.2}	54	31.5	5.5	9	Depth 7	M10 X 1.5	12	20±0.15	7±0.15	M6 X 1.0	17	14	4.5	101.5	76	37	7.5	16	Rc(PT)1/8	3	30 ⁰ _{-0.62}	6.5
MK2B40	52	69	40	14 ^{-0.1} _{-0.2}	61	35	5.5	9	Depth 7	M10 X 1.5	12	24±0.15	7±0.15	M6 X 1.0	17	14	5	102.5	70	29.5	8	16	Rc(PT)1/8	3	30 ⁰ _{-0.62}	6.5
MK2B50	64	86	50	17 ^{-0.1} _{-0.2}	73	41	6.6	11	Depth 8	M12 X 1.75	15	30±0.15	8±0.15	M8 X 1.25	22	19	7	122	81.5	34	10.5	20	Rc(PT)1/4	3.5	37 ⁰ _{-0.62}	7.5
MK2B63	77	103	60	17 ^{-0.1} _{-0.2}	86	47.5	9	14	Depth 10.5	M12 X 1.75	15	35±0.15	9±0.15	M10 X 1.5	28.5	19	7	125	85	35	10.5	20	Rc(PT)1/4	3.5	48 ⁰ _{-0.62}	7.5

Note 1) This cylinder rod is retracted.
 Note 2) Rotation direction is in the retracted direction from the rod side.
 Note 3) When the rod is extended, the clamp stroke and rotary stroke are added to the appropriate dimensions.

Series MK2

Auto Switch Specifications (ø20 to ø63)



Refer to the p.5.3-2 for details of auto switch.

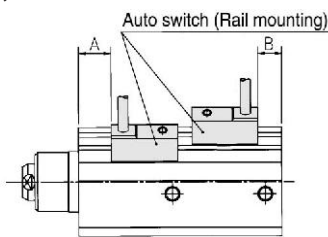


Applicable Auto Switch

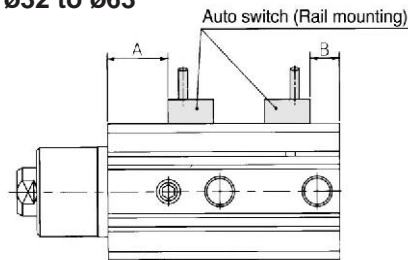
Style	Auto switch model	Electrical entry (Function)	Bore size	Page
Reed switch	D-A7, A8	Grommet (Perpendicular)	ø20 to ø63	5.3-14
	D-A7□H, A80H	Grommet (In-line)		5.3-15
	D-A73C, A80C	Grommet (Connector)		5.3-16
	D-A79W	Grommet (2 color indication, Perpendicular)	ø32, ø63	5.3-26
	D-A9□	Grommet (In-line)		5.3-19
	D-A9□V	Grommet (Perpendicular)		5.3-20
Solid state switch	D-F7□, J79	Grommet (In-line)	ø20 to ø63	5.3-34
	D-F7□V	Grommet (Perpendicular)		5.3-35
	D-J79C	Grommet (Connector)		5.3-36
	D-F7□W, J79W	Grommet (2 color indication, in-line)		5.3-44
	D-F7□WV	Grommet (2 color indication, Perpendicular)		5.3-45
	D-F7BAL	Grommet (2 color, water resistant, in-line)		5.3-57
	D-F7□F	Grommet (2 color, diagnostic output, in-line)	ø32, ø63	5.3-53
	D-F7NTL	Grommet (With timer, in-line)		5.3-60
	D-F9□	Grommet (In-line)		5.3-39
	D-F9□V	Grommet (Perpendicular)	5.3-39	
	D-F9□W	Grommet (2 color indication, in-line)	5.3-66	
	D-F9□WV	Grommet (2 color indication, Perpendicular)	5.3-66	
	D-F9BAL	Grommet (2 color, water resistant, in-line)	5.3-67	
	D-P5DWL	Grommet (2 color, strong magnetic field resistant, in-line)	ø40 to ø63	5.3-64

Auto Switch Mounting Position (Stroke end)

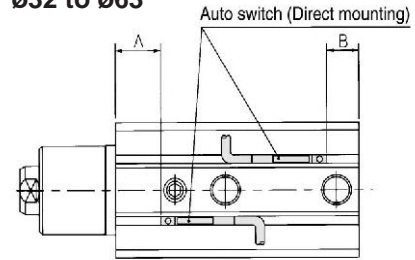
ø20, ø25



ø32 to ø63



ø32 to ø63



Mounting	Rail mounting								Direct mounting							
	D-A7, A8		D-A7□H, A80H D-A73C, A80C D-F7□, J79 D-F7□V, J79C		D-A79W		D-F7BA D-F7□W D-F7□F D-J79W D-F7□WV		D-P5DW		D-A9□ D-A9□V		D-F9□ D-F9□V		D-F9□W D-F9□WV D-F9BAL	
Model	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B
MK2□20	28.5	6	29	6.5	26	3.5	33	10.5	-	-	-	-	-	-	-	-
MK2□25	29	6.5	29.5	7	26.5	4	33.5	11	-	-	-	-	-	-	-	-
MK2□32	32.5	10.5	33	11	30	8	37	15	-	-	31.5	9.5	35.5	13.5	34.5	12.5
MK2□40	23.5	13.5	24	14	21	11	28	18	19.5	9.5	22.5	12.5	26.5	16.5	25.5	15.5
MK2□50	28	16.5	28.5	17	25.5	14	32.5	21	24	12.5	27	15.5	31	19.5	30	18.5
MK2□63	28.5	19.5	29	20	26	17	33	24	24.5	15.5	27.5	18.5	31.5	22.5	30.5	21.5

Auto Switch Mounting Bracket Part No.

Bore size (mm)	Mounting bracket No.	Note	Applicable auto switch	
			Reed switch	Solid state switch
20/25	BQ-1	<ul style="list-style-type: none"> Auto switch mounting screw (M3 X 0.5 X 8) Square nut 	D-A7, A8	D-F7□, J79, D-F7□V
32/40 50/63	BQ-2	<ul style="list-style-type: none"> Auto switch mounting screw (M3 X 0.5 X 10) Auto switch spacer Auto switch mounting nut 	D-A73C, A80C D-A7□H, A80H D-A79W	D-J79C D-F7□W, J79W, D-F7□WV D-F7BAL, D-F7□F, D-F7NTL
40/50 63	BQP1-050	<ul style="list-style-type: none"> Switch mounting bracket Auto switch mounting nut Cross-recessed panhead small screw (M3 X 0.5 X 16) Hexagon socket head cap bolt (M3 X 0.5 X 14) 	—	D-P5DW

The set of stainless steel mounting screws (with nuts) described below is available and can be used depending on the operating environment. (The spacers for auto switches must be ordered separately, as they are not included.)

BBA2: For D-A7/A8/F7/J7 types

The stainless steel screws described above are used when the D-F7BAL switch is shipped mounted on to the cylinder. When the switches are shipped as individual parts, the BBA2 set is included.

Solid-state Auto Switches for Direct Mounting Series D-M9N(V)/D-M9P(V)/D-M9B(V)



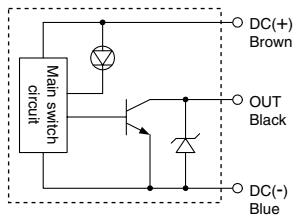
Grommet

- Reduced load currents for two-wire model (2.5 to 40 mA)
- Compliance with lead-free requirements
- Use of UL-approved lead wires (style 2844)

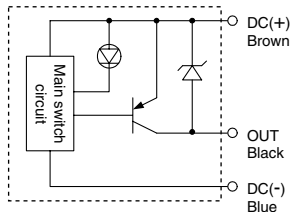


Internal circuits

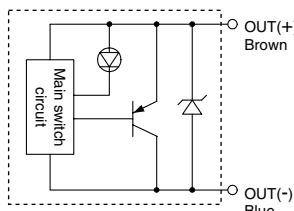
D-M9N/M9NV



D-M9P/M9PV



D-M9B/M9BV



Auto Switch Specifications

PLC: Programmable Logic Controller

D-M9□/D-M9□V (with Indicator light)						
Model number	D-M9N	D-M9NV	D-M9P	D-M9PV	D-M9B	D-M9BV
Electrical entry	In-line	Perpendicular	In-line	Perpendicular	In-line	Perpendicular
Wiring	Three-wire			Two-wire		
Output	NPN		PNP		—	
Applicable load	Integrated circuit, relay and PLC				24 V DC relay and PLC	
Power voltage	5, 12, or 24 V DC (4.5 to 28 V DC)				—	
Current consumption	10 mA or less				—	
Load voltage	28 V DC or less		—		24 V DC (10 to 28 V DC)	
Load current	40 mA or less				2.5 to 40 mA	
Internal voltage drop	0.8 V or less				4 V or less	
Leakage current	100 μA max. at 24 V DC				0.8 mA or less	
Indicator light	Red LED lights when ON.					

- Lead wire: oil-proof heavy-duty vinyl cable
2.7 x 3.2 with elliptic cross-section, 0.15 mm², two cores (D-M9B),
or three cores (D-M9N and D-M9P)

Solid state switch specifications

Leakage current	3-wire: 100 μA or less; 2-wire: 0.8 mA max.
Operating time	1 ms or less
Impact resistance	1000 m/s ²
Insulation resistance	50 MΩ or more at 500 V DC (between lead wire and case)
Withstand voltage	1000 V AC for 1 min. (between lead wire and case)
Ambient temperature	-10°C to 60°C
Enclosure	IEC529 standard IP67, JIS C 0920 watertight construction

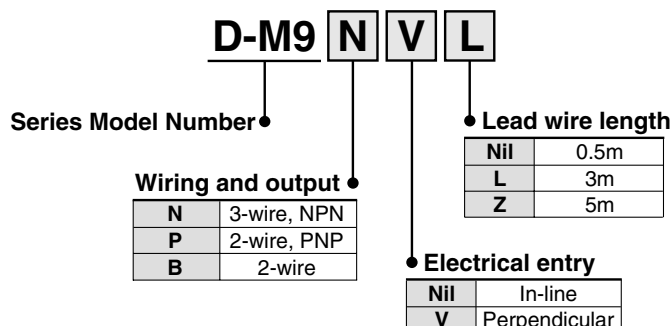
Weight

Unit: g

Model	D-M9N(V)	D-M9P(V)	D-M9B(V)
Lead wire length (m)	0.5	8	7
	3	41	38
	5	68	63

How to Order

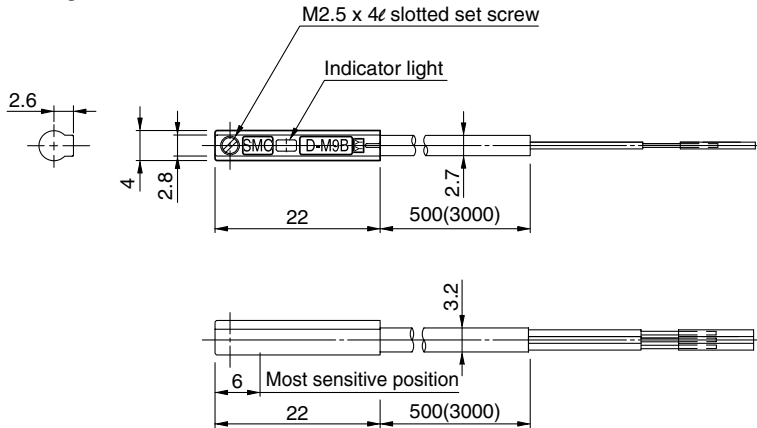
Standard Model Number



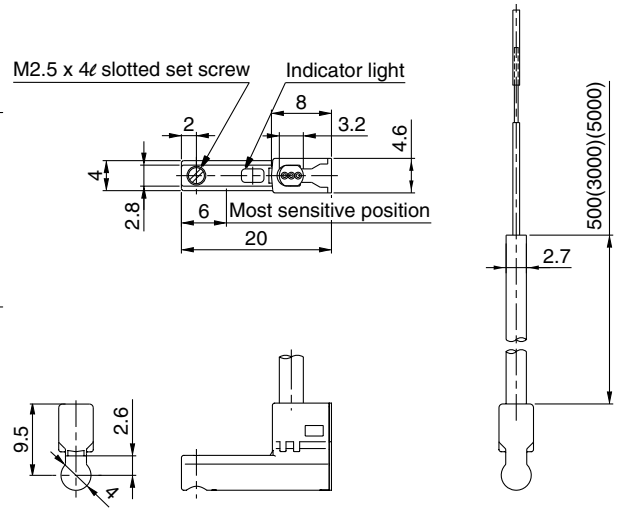
Series D-M9

Auto Switch Dimensions

D-M9□



D-M9□V



⚠ Specific Product Precautions

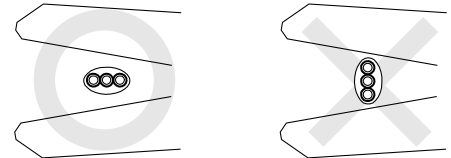
Be sure to read before handling. Contact SMC when the required specification is out of range.

Handling

⚠ Caution

Observe the following precautions when handling the product.

- The D-M9 series of auto switches is not overcurrent-protected. Faulty wiring or short circuit may result in breakage or burning-out of the switch.
- When stripping the cable clad, be careful about the orientation of the cable being stripped. The insulator may be accidentally torn or damaged depending on the orientation, as shown on the right.



- We recommend the following tools

Manufacturer	Product name	Product number
VESSEL	Wire stripper	No 3000G
Tokyo Ideal	Strip master	45-089

* The stripper for the round shape cords (ø2.0) is for a 2-wire style.

- Please do not attach the switch with any other screws than those already attached to the auto switch body.

The operation range is shorter than that of the conventional models.

If the auto switch replaces the conventional model, it may not function depending on its application because the operation range is shorter. Refer to the examples below.

- In an application where at the end, the stopping position shifting range is larger than the operation range.**
For example, pushing a work against something, or pressing a work into a hole, or clamping a work.
- In an application where the auto switch is used to detect an intermediate stopping position. (Detecting time is shortened.)**

Note) Please contact SMC for the operation range details for each actuator.

The switch is damaged instantly when a load is shortened since short circuit protection is not built-in. Pay special attention to avoid reversing the connection of the brown lead of the power supply line and the black output line connection.



Caution/Precautions for Handling

Be sure to read before handling.

Refer to p.0.44 to 0-46 for common auto switch precautions.

When equipped with strong magnetic resistant auto switch D-P5DWL

If welding cables or welding gun electrodes are in the vicinity of the cylinder, the magnets in the cylinder could be affected by the external magnetic fields. (Contact SMC if the welding amperage exceeds 20,000A.) If the source of strong magnetism comes in contact with the cylinder or an auto switch, make sure to install the cylinder away from the source of the magnetism.

If the cylinder is to be used in an environment in which spatter will come in direct contact with the lead wires, cover the lead wires with a protective tube. For the protective tube, use a tube with a bore of $\phi 7$ or more, which excels in heat resistance and flexibility.

Contact SMC if an inverter welder or a DC welder will be used.

MK/MK2

RSQ/RSG

RSH

CE1

CE2

ML2B

ML1C

REA

REC

RHC

MTS

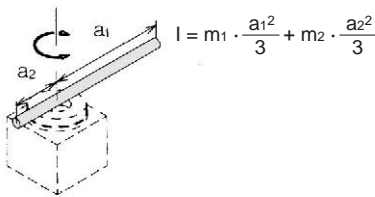
CC

Calculation for Moment of Inertia

I: Moment of Inertia ($\text{kg}\cdot\text{m}^2$) m: Load weight (kg)

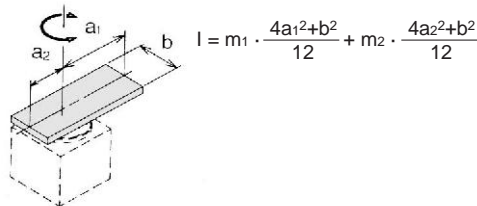
① Thin bar

Position of rotary axis: Vertical to the bar and through the end



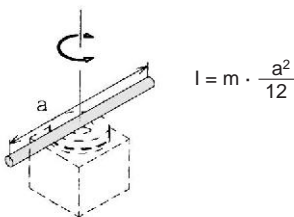
④ Thin rectangular plate

Position of rotary axis: Vertical to the plate and through the end



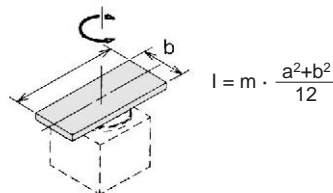
② Thin bar

Position of rotary axis: Vertical to the bar and through the center of gravity



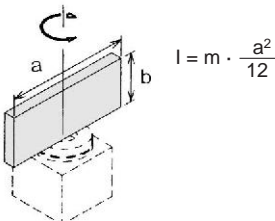
⑤ Thin rectangular plate

Position of rotary axis: Through the center of gravity and vertical to the plate (Same as also thick rectangular plate)



③ Thin rectangular plate

Position of rotary axis: Parallel to side b and through the center of gravity



⑥ Load at the end of lever arm

