Clamp Cylinder with Lock

New

RoHS

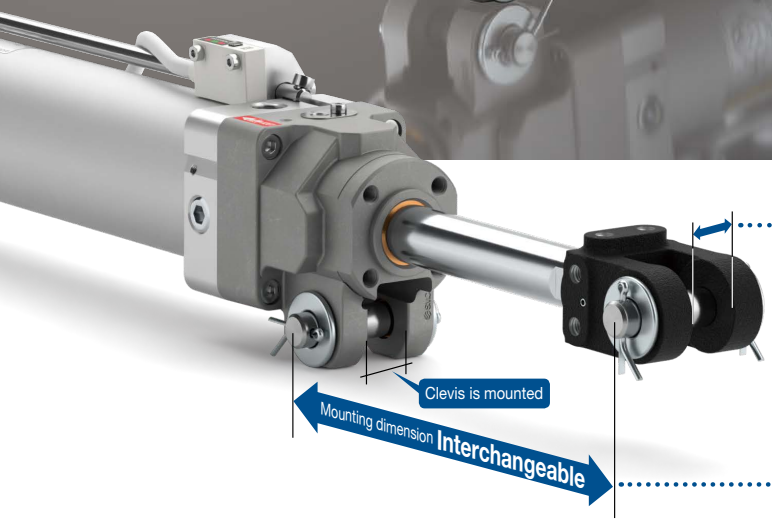
ø32, ø40, ø50, ø63

Maintains a clamped or unclamped state when air supply pressure drops or residual pressure is released

Overall length Max. 7 mm shorter

Body is shortened while maintaining the mounting interchangeability with the existing series (CLK2).

Weight Max. 7% lighter



4 types of clevis widths

12 mm | **12.5** mm | **16.5** mm | **19.5** mm

Possible to select depending on the application

* The 12 mm clevis width is only available for bore size ø32.

Mounting dimensions are interchangeable with the existing CLK2 series model.

CLK2 Series

SMC

CAT.ES20-324A

Can be locked at any position within the entire stroke

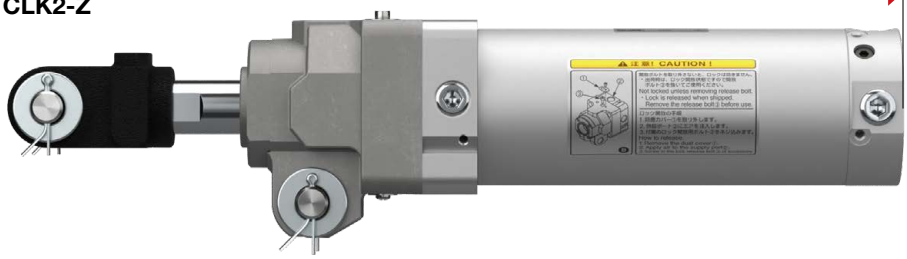
Locking is possible at any desired position.

Able to easily accommodate changes in workpiece thickness

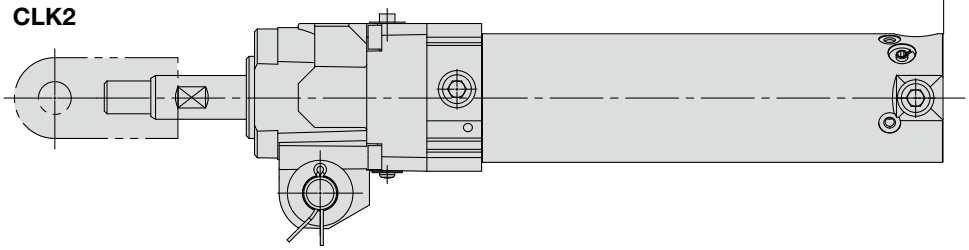
Reduced overall length

Max. 7 mm shorter

CLK2-Z



CLK2



Able to maintain an unlocked state

Assembly and maintenance simplified

Various types of auto switches can be mounted.

Magnetic field resistant auto switches

D-P3DWA, D-P4DW
D-P79WSE, D-P74□

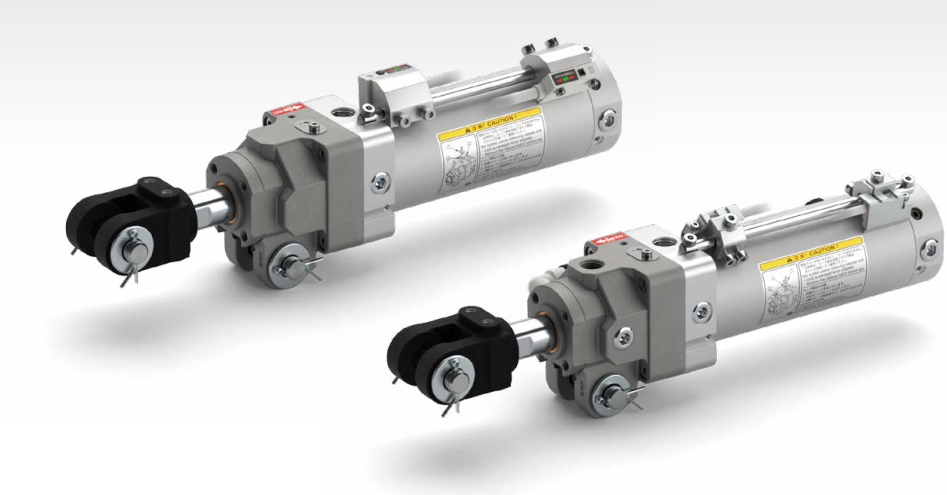
Standard auto switches

D-M9□W, D-A9□

Series		Bore size [mm]				Clevis width [mm]	Stroke [mm]	Page
		32	40	50	63			
New **Clamp cylinder with lock** 	Without magnet **CLK2□-Z**	●				12	50, 75, 100, 125, 150	3
			●			12.5, 16.5		
				●	●	12.5, 16.5, 19.5		
	Standard magnet type **CLK2G□-Z**	●				12		
			●			12.5, 16.5		
				●	●	12.5, 16.5, 19.5		
	Strong magnet type **CLK2P□-Z**		●			12.5, 16.5		5
				●	●	12.5, 16.5, 19.5		

CONTENTS

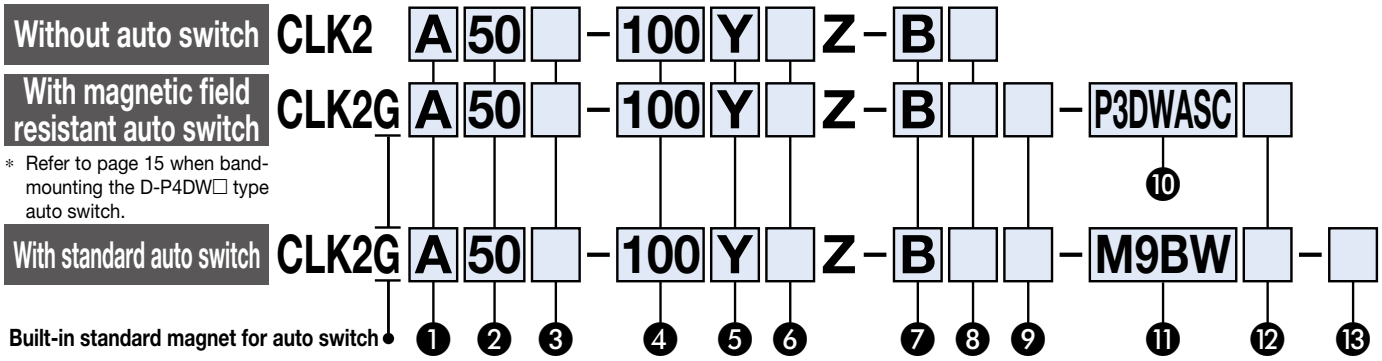
Clamp Cylinder with Lock *CLK2* Series



Clamp Cylinder with Lock
CLK2/CLK2G Series
ø32, ø40, ø50, ø63

RoHS

How to Order



∗ Refer to page 15 when band-mounting the D-P4DW□ type auto switch.

❶ Clevis width

A	12 mm (ø32), 16.5 mm (ø40/ø50/ø63)
B	19.5 mm (ø50/ø63)
C	12.5 mm (ø40/ø50/ø63)

❷ Bore size

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

❸ Thread type

Nil	Rc
TN	NPT
TF	G

∗ G thread is not available for ø32.

❹ Cylinder stroke [mm]

50, 75, 100, 125, 150

❺ End bracket

Nil	None	
I	Single knuckle joint	M6 without tap
IA		M6 with tap
Y	Double knuckle joint	M6 without tap
YA		M6 with tap

∗ A knuckle pin, cotter pins, and flat washers are provided as a standard for Y and YA.
∗ IA and YA are not available for ø32.

❻ Option

Nil	None
B	Limit switch mounting base∗1
D	Dog fitting∗1
L	Foot bracket
K∗2	Pedestal (for 75, 100, 150 mm strokes only)

∗1 Only IA or YA (M7 with tap) is selectable as the end bracket for the B, D, and BD types.
∗2 Only available for clevis width A (16.5 mm)
∗ Option is not available for ø32.

❼ Locking direction

F	Extension locking
B	Retraction locking

❽ Port/Bypass piping position

Refer to page 6.

❾ Switch mounting rod position

Nil	Top
L	Left
R	Right

∗ Viewed from the rod end
∗ When the auto switch D-P4 is mounted, bypass piping and a switch mounting rod cannot be placed at the same position.

❿ Magnetic field resistant auto switch

Nil	Without auto switch (Built-in magnet) Without switch mounting rod
P	Without auto switch (Built-in magnet) With switch mounting rod

∗ Select applicable auto switch models from Table 1.

⓫ Standard auto switch

Nil	Without auto switch (Built-in magnet)

∗ Select applicable auto switch models from Table 2.
∗ Auto switches are shipped together with the product but do not come assembled.

⓬ Number of auto switches

Nil	2
S	1
n	n

⓭ Auto switch mounting type

Nil	Band mounting
P	Rod mounting

∗ Only the band mounting type is available for bore size ø32. Option "P" (rod mounting) cannot be selected.

Built-in Standard Magnet Cylinder Part No.

1) Built-in standard magnet type without auto switch and switch mounting rod

Symbol for the auto switch type is "Nil" as shown below.
(Example) **CLK2GA50-50YZ-B**

2) Built-in standard magnet type without auto switch, with switch mounting rod

Symbol for the auto switch type is "P" as shown below.
(Example) **CLK2GA50-50YZ-B-P**

∗ The auto switch mounting bracket is not included.

Table 1. Magnetic Field Resistant Auto Switches / Refer to the **Web Catalog** for detailed auto switch specifications.

Type	Rod mounting	Band mounting	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no. in use)	Load voltage	Lead wire length	Applicable load
Solid state auto switch	●	—	**D-P3DWASC**	AC magnetic field (Single-phase AC welding magnetic field)	Pre-wired connector	2-color indicator	2-wire (3–4)	24 VDC	0.3 m	Relay, PLC
	●	—	**D-P3DWASE**				2-wire (1–4)			
	●	—	**D-P3DWA**		Grommet		2-wire		0.5 m	
	●	—	**D-P3DWAL**						3 m	
	●	—	**D-P3DWAZ**						5 m	
	●	●	**D-P4DWSC**		Pre-wired connector		2-wire (3–4)		0.3 m	
	●	●	**D-P4DWSE**				2-wire (1–4)			
	●	●	**D-P4DWL**		Grommet		2-wire		3 m	
	●	●	**D-P4DWZ**						5 m	

* Refer to page 14 when ordering the auto switch mounting bracket or switch mounting rod assembly.
* For the D-P3DWA□ type, the auto switch and auto switch mounting bracket are shipped together with the product but do not come assembled.
* Bore size ø32 cannot be selected for the D-P3DWA□ type. For bore size ø32, order the D-P4DW□ type (band mounting) separately.

Table 2. Standard Auto Switches ⚠ **Standard auto switches cannot be used under a strong magnetic field.**

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		0.5 (Nil)	1 (M)	3 (L)	5 (Z)			
Solid state auto switch	—	Grommet	Yes	3-wire (NPN)	24 V	5 V, 12 V	—	**M9N**	●	●	●	○	○	IC circuit	Relay, PLC
				3-wire (PNP)				**M9P**	●	●	●	○	○		
				2-wire		12 V		**M9B**	●	●	●	○	○	—	
	Diagnostic indication (2-color indicator)			3-wire (NPN)		5 V, 12 V		**M9NW**	●	●	●	○	○	IC circuit	
				3-wire (PNP)				**M9PW**	●	●	●	○	○		
				2-wire		12 V		**M9BW**	●	●	●	○	○	—	
	Water resistant (2-color indicator)			3-wire (NPN)		5 V, 12 V		**M9NA**	○	○	●	○	○	IC circuit	
				3-wire (PNP)				**M9PA**	○	○	●	○	○		
				2-wire		12 V		**M9BA**	○	○	●	○	○	—	
Reed auto switch	—	Grommet	Yes	3-wire (NPN equivalent)	—	5 V	—	**A96**	●	●	●	●	○	IC circuit	—
				2-wire	24 V	12 V	100 V	**A93**	●	●	●	●	○*1	—	Relay, PLC
			No			5 V, 12 V	100 V or less	**A90**	●	●	●	●	○*1	IC circuit	

*1 The load voltage used is 24 VDC.
* Auto switches marked with a "○" are produced upon receipt of order
* Auto switches and mounting brackets are shipped together with the product but do not come assembled.
* For the standard magnet type (CLK2G), auto switches other than those described above cannot be used.

* Lead wire length symbols: 0.5 m·····Nil (Example) M9NWV
1 m·····M (Example) M9NWVM
3 m·····L (Example) M9NWVL
5 m·····Z (Example) M9NWVZ

Clamp Cylinder with Lock
Strong Magnet Type
CLK2P Series
ø40, ø50, ø63

RoHS

How to Order

With magnetic field resistant auto switch

CLK2P **A** **50** [ ] – **100** **Y** [ ] **Z** – **B** [ ] [ ] – **P79WSE** [ ]

❶ ❷ ❸ ❹ ❺ ❻ ❼ ❽ ❾ ❿ ⓫

Built-in strong magnet for auto switch

❶ Clevis width

A	16.5 mm (ø40/ø50/ø63)
B	19.5 mm (ø50/ø63)
C	12.5 mm (ø40/ø50/ø63)

❷ Bore size

40	40 mm
50	50 mm
63	63 mm

❸ Thread type

Nil	Rc
TN	NPT
TF	G

❹ Cylinder stroke [mm]

50, 75, 100, 125, 150

❺ End bracket

Nil	None	
I	Single knuckle joint	M6 without tap
IA		M6 with tap
Y	Double knuckle joint	M6 without tap
YA		M6 with tap

∗ A knuckle pin, cotter pins, and flat washers are provided as a standard for Y and YA.

❻ Option

Nil	None
B	Limit switch mounting base∗1
D	Dog fitting∗1
L	Foot bracket
K∗2	Pedestal (for 75, 100, 150 mm strokes only)

∗1 Only IA or YA (M7 with tap) is selectable as the end bracket for the B, D, and BD types.
∗2 Only available for clevis width A (16.5 mm)

❼ Locking direction

F	Extension locking
B	Retraction locking

❽ Port/Bypass piping position

Refer to page 6.

❾ Switch mounting rod position

Nil	Top
L	Left
R	Right

∗ Viewed from the rod end
∗ When the auto switch is mounted, bypass piping and a switch mounting rod cannot be placed at the same position.

❿ Magnetic field resistant auto switch

Nil	Without auto switch (Built-in magnet) Without switch mounting rod
P	Without auto switch (Built-in magnet) With switch mounting rod

∗ Select applicable auto switch models from the table below.

⓫ Number of auto switches

Nil	2
S	1
n	n

Built-in Standard Magnet Cylinder Part No.

1) Built-in standard magnet type without auto switch and switch mounting rod

Symbol for the auto switch type is “Nil” as shown below.
(Example) **CLK2PA50-50YZ-B**

2) Built-in standard magnet type without auto switch, with switch mounting rod

Symbol for the auto switch type is “P” as shown below.
(Example) **CLK2PA50-50YZ-B-P**
∗ The auto switch mounting bracket is not included.

Magnetic Field Resistant Auto Switches / Refer to the **Web Catalog** for detailed auto switch specifications.

Type	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no. in use)	Load voltage	Lead wire length	Applicable load
Reed auto switch	**D-P79WSE**	DC/AC magnetic field	Pre-wired connector	2-color indicator	2-wire (1–4)	24 VDC	0.3 m	Relay, PLC
	D-P74L		Grommet	1-color indicator	2-wire	24 VDC 100 VAC	3 m	
	D-P74Z						5 m	

∗ Refer to page 14 when ordering the auto switch mounting bracket or switch mounting rod assembly.
∗ The auto switch and auto switch mounting bracket are shipped together with the product but do not come assembled.
∗ For the strong magnet type (CLK2P), auto switches other than those described above cannot be used.

Symbol

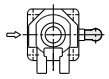
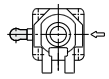
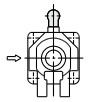
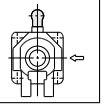
Retraction locking type **Extension locking type**

Clamp Cylinder with Lock Specifications

Bore size [mm]	32	40	50	63
Action	Double acting, Single rod			
Fluid	Air			
Proof pressure	1.5 MPa			
Maximum operating pressure	1.0 MPa			
Minimum operating pressure	0.2 MPa			
Locking action	Spring locking			
Locking pressure	0.05 MPa			
Locking direction	One direction (Retraction, Extension)			
Lock holding force N∗1 **(Max. static load)**	0.5 MPa or equivalent			
	402	629	982	1559
Lock application	Drop prevention, Position holding			
Ambient and fluid temperatures	Without auto switch: −10°C to 70°C			
	With auto switch : −10°C to 60°C			
Lubrication	Not required (Non-lube)			
Piston speed	50 to 500 mm/s			
Stroke length tolerance	0 to +1.4 mm			
Cushion	Retraction direction (Head end): With air cushion			
Mounting	Double clevis∗2			

∗1 The holding force (max. static load) shows the maximum capability and does not show the normal holding capability. So, select an appropriate cylinder while referring to page 18.
∗2 A pin (for clevis), cotter pins, and flat washers are provided as a standard.

Port/Bypass Piping Position

Symbol	Port position	Bypass piping position	Locking direction B: Retraction locking	Locking direction F: Extension locking
Nil	Port on top	Bypass piping on left		
2	Port on left	Bypass piping on right		
3	Port on right	Bypass piping on left		
4	Port on top	Bypass piping on right	—	
5	Port on left	Bypass piping on top	—	
6	Port on right	Bypass piping on top	—	

⇨ Port ⇦ Bypass piping

Refer to pages 13 to 17 for cylinders with auto switches.

- Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height
- Operating Range
- Auto Switch Mounting Brackets/Part Nos.

Weight (Basic weight is for a 0 mm stroke.)

Unit: kg

Bore size [mm]		32	40	50	63
Cylinder basic weight	**CLK2G**	B:0.51 F:0.54	B:1.06 F:1.12	B:1.38 F:1.44	B:1.83 F:1.89
	CLK2P	—	B:1.19 F:1.25	B:1.48 F:1.54	B:1.97 F:1.99
	Additional weight per 25 mm stroke	0.08	0.11	0.12	0.14
Single knuckle joint		0.25	0.25	0.20	
Double knuckle joint (A pin, cotter pins, and flat washers are included.)		0.17	0.36	0.34	
Limit switch mounting base		—	0.22		
Dog fitting		—	0.12		
Foot bracket		—	0.24		
Pedestal		—	2.04		

∗ The above values do not include the weight of the auto switch and auto switch mounting bracket.

Calculation
Example) **CLK2PB50-100YZ-B**
- Basic weight ··· 1.48 (ø50)
- Additional weight ··· 0.12/25 mm
- Cylinder stroke ··· 100 mm
- Double knuckle joint ··· 0.34 (Y)

1.48 + 0.12 x 100 / 25 + 0.34 = 2.3 kg

Theoretical Output

Unit: N

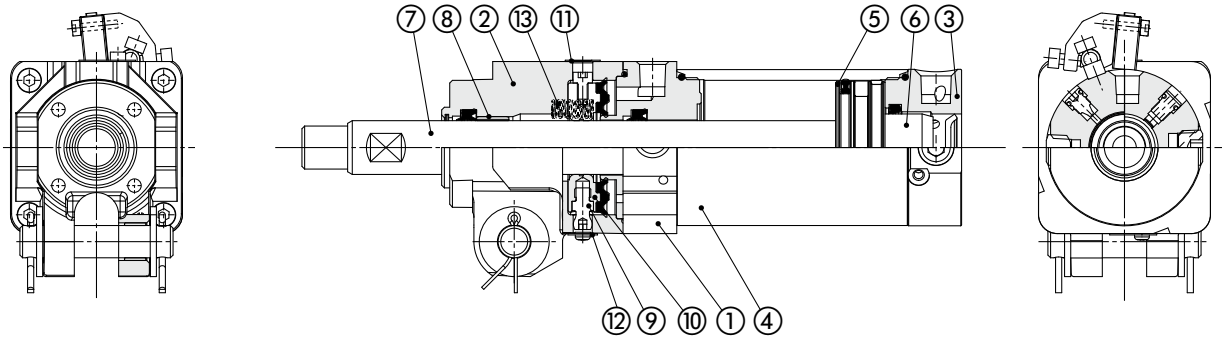
Bore size [mm]	Rod size [mm]	Operating direction	Piston area [mm²]	Operating pressure [MPa] 0.3	0.4	0.5	0.6
32	12	OUT	804	241	322	402	482
		IN	691	207	276	346	415
40	16	OUT	1260	378	504	630	756
		IN	1060	318	424	530	636
50	20	OUT	1960	588	784	980	1180
		IN	1650	495	660	825	990
63	20	OUT	3120	934	1250	1560	1870
		IN	2800	840	1120	1400	1680

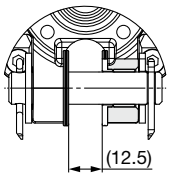
Accessories (Options)

Symbol	Description		Parts no. CLK2GA/CLK2PA 32	40	50, 63	CLK2GB/CLK2PB 50, 63	CLK2GC/CLK2PC 40	50, 63
I	Single knuckle joint	M6 without tap	CLK-I03	CLK-I04	CKB-I04		CLK-I04	CKB-I04
IA		M6 with tap	—	CLK-IA04	CKB-IA04		CLK-IA04	CKB-IA04
Y	Double knuckle joint (A knuckle pin, cotter pins, and flat washers are provided as a standard.)	M6 without tap	CLK-Y03	CLK-Y04	CKA-Y04	CKB-Y04	CLKC-Y04	CKC-Y04
YA		M6 with tap	—	CLK-YA04	CKA-YA04	CKB-YA04	CLKC-YA04	CKC-YA04
B	Limit switch mounting base		—	CK-B04				
D	Dog fitting		—	CK-D04				
L	Foot		—	CK-L04				
K	Pedestal	For 75 stroke	—	CKA-K075		—	—	
		For 100 stroke	—	CKA-K100		—	—	
		For 150 stroke	—	CKA-K150		—	—	

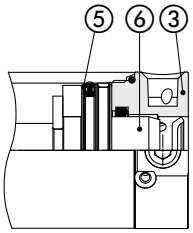
Construction: CLK2□□32/40/50/63

Retraction locking (B)



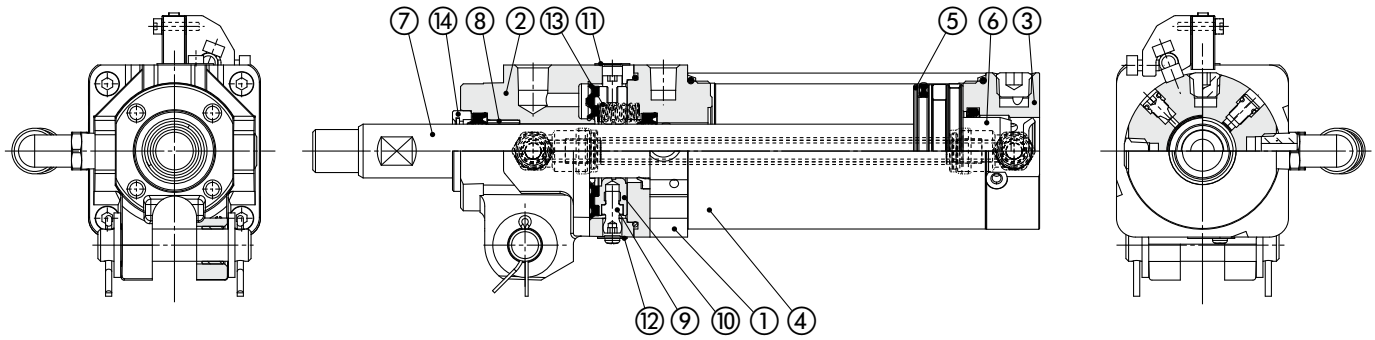


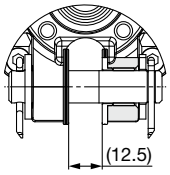
CLK2□C40/63-Z



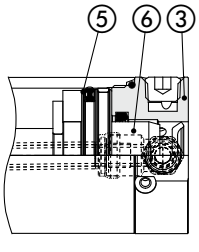
CLK2P

Extension locking (F)





CLK2□C40/63-Z



CLK2P

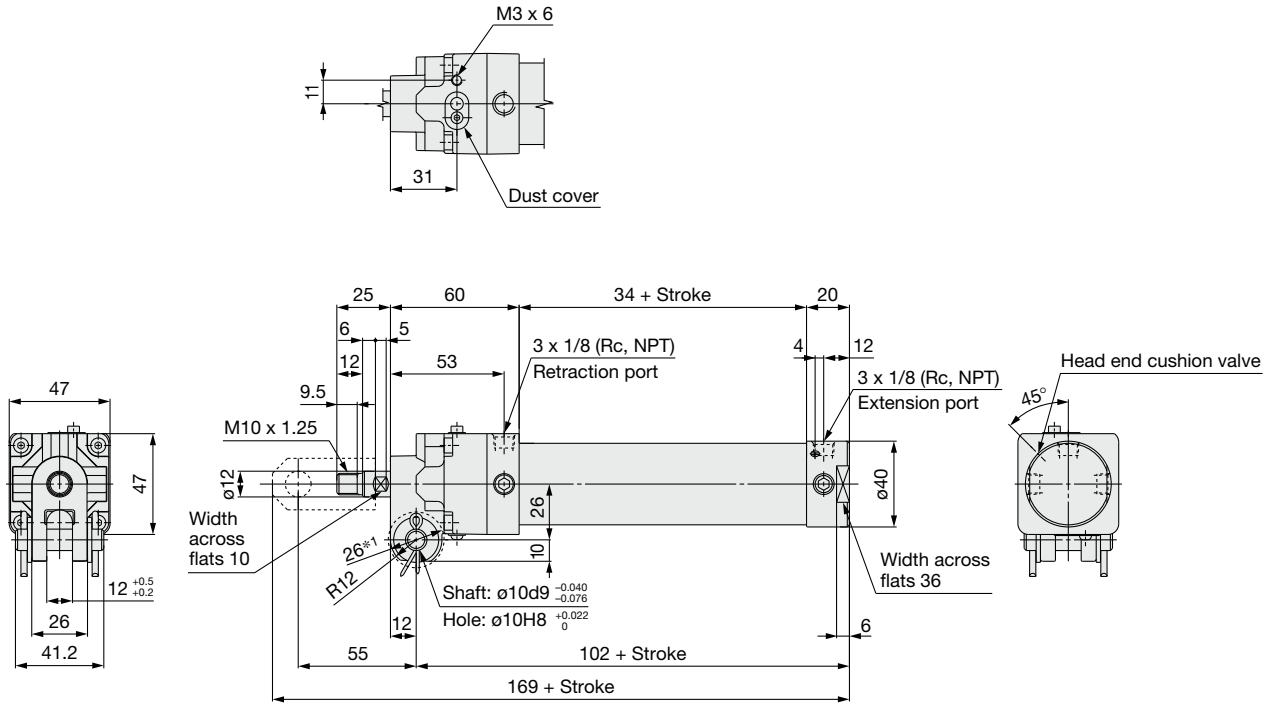
Component Parts

No.	Description
1	Rod cover
2	Cover
3	Head cover
4	Cylinder tube
5	Piston
6	Cushion ring
7	Piston rod

No.	Description
8	Bushing
9	Pivot
10	Lock ring
11	Dust cover
12	Dust cover
13	Brake spring
14	Retainer plate (For bore sizes ø50, ø63)

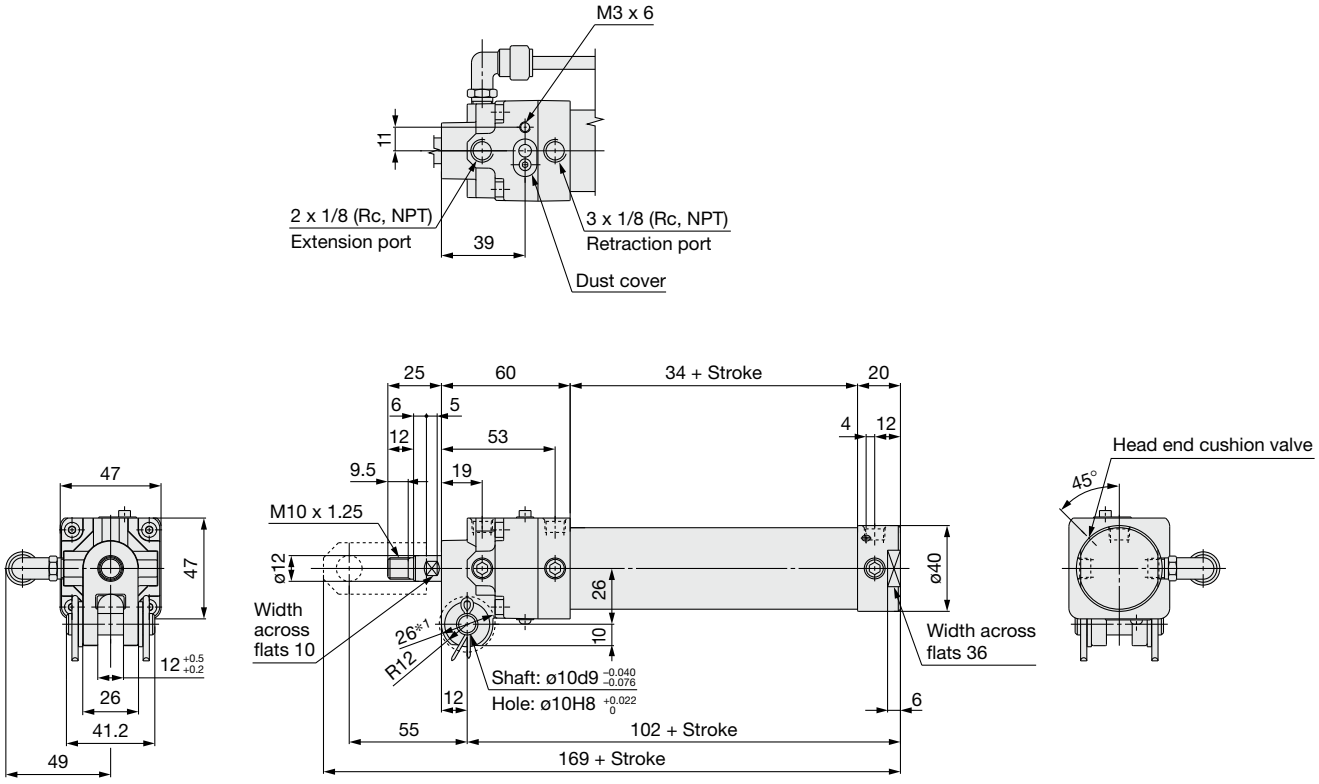
Dimensions: CLK2A32 Without Auto Switch
CLK2GA32 Built-in Standard Magnet Type / With Magnetic Field Resistant Solid State Auto Switch (D-P4DWS□)

Retraction locking (B)



*1 Indicates the range applicable to the clevis width
* Refer to pages 11 and 12 for accessories.

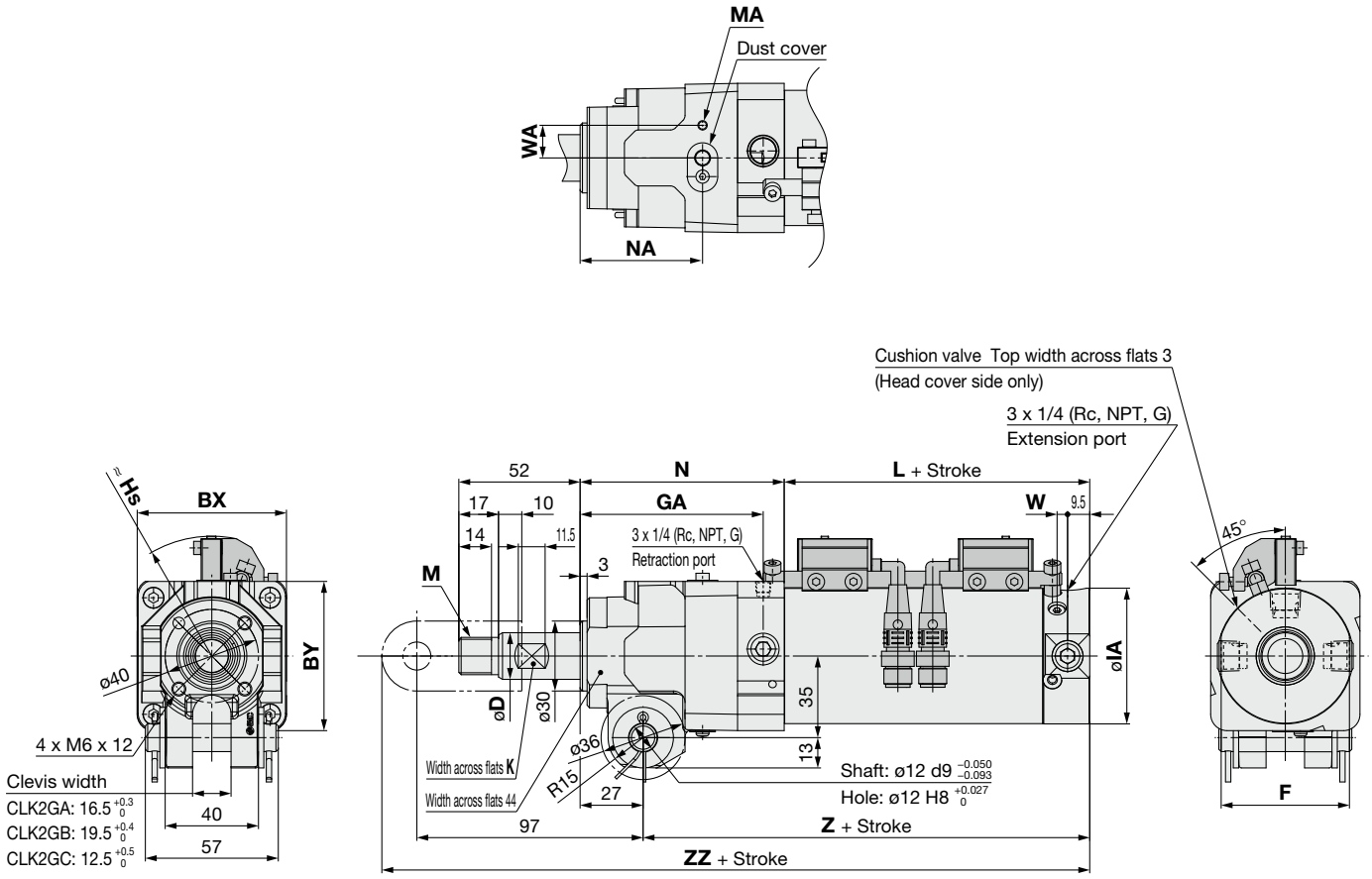
Extension locking (F)



*1 Indicates the range applicable to the clevis width
* Refer to pages 11 and 12 for accessories.

Dimensions: CLK2□40/50/63 Without Auto Switch
CLK2G□40/50/63 Built-in Standard Magnet Type / With Magnetic Field Resistant Solid State Auto Switch (D-P4DWS□)

Retraction locking (B)

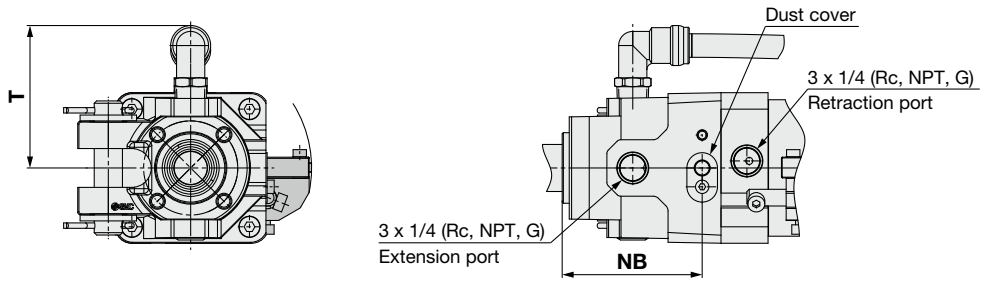


[mm]

Bore size \ Symbol	BX	BY	D	F	GA	IA	K	L	M	MA	N	NA	W	WA	Z	ZZ	Hs
40	56	54	16	44	77	47	14	53	M12 x 1.5	M4 x 7	86	51.5	5	12.5	112	224	45.5
50	64	64	20	55	78.5	58	17	56	M16 x 1.5	M4 x 7	87.5	52.5	4.5	14	116.5	228.5	51
63	74	74	20	69	82	72	17	56	M16 x 1.5	M5 x 7	91	53.5	4.5	19	120	232	58.5

∗ Refer to pages 11 and 12 for accessories.

Extension locking (F)



[mm]

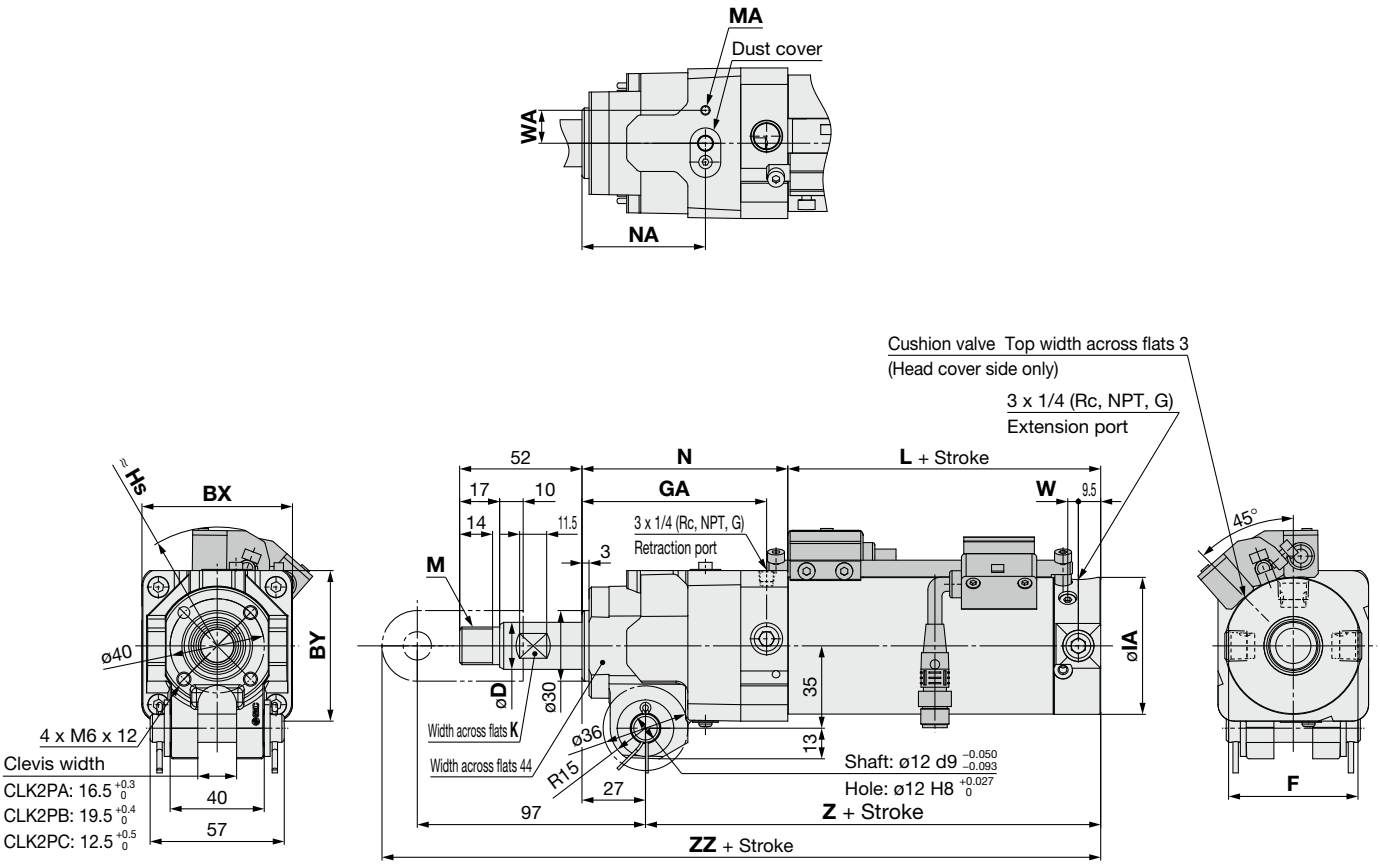
Bore size \ Symbol	NB	T
40	59	57
50	59.5	60
63	61	67

∗ Only the dimensions listed on the left are different from those of the retraction locking (B) type.

∗ Refer to pages 11 and 12 for accessories.

Dimensions: CLK2P□40/50/63 Built-in Strong Magnet Type / With Magnetic Field Resistant Reed Auto Switch (D-P79WSE)

Retraction locking (B)

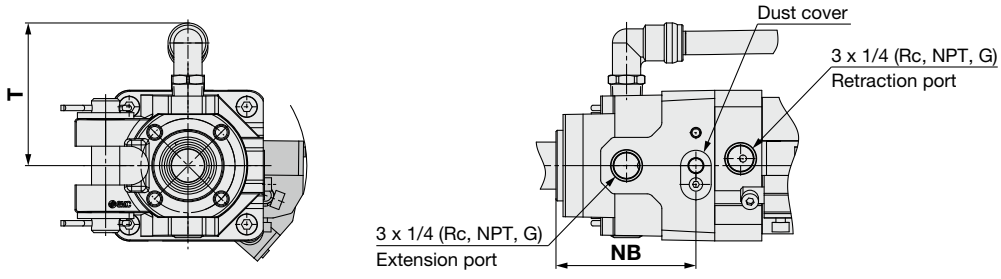


[mm]

Bore size \ Symbol	BX	BY	D	F	GA	IA	K	L	M	MA	N	NA	W	WA	Z	ZZ	Hs
40	56	54	16	44	77	47	14	58	M12 x 1.5	M4 x 7	86	51.5	5	12.5	117	229	47.5
50	64	64	20	55	78.5	58	17	58	M16 x 1.5	M4 x 7	87.5	52.5	4.5	14	118.5	230.5	51
63	74	74	20	69	82	72	17	58	M16 x 1.5	M5 x 7	91	53.5	4.5	19	122	234	57.5

∗ Refer to pages 11 and 12 for accessories.

Extension locking (F)



[mm]

Bore size \ Symbol	NB	T
40	59	57
50	59.5	60
63	61	67

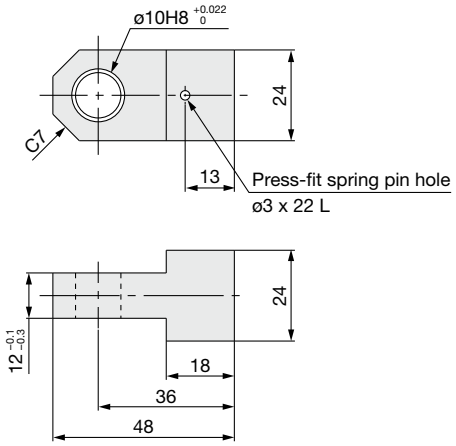
∗ Only the dimensions listed on the left are different from those of the retraction locking (B) type.

∗ Refer to pages 11 and 12 for accessories.

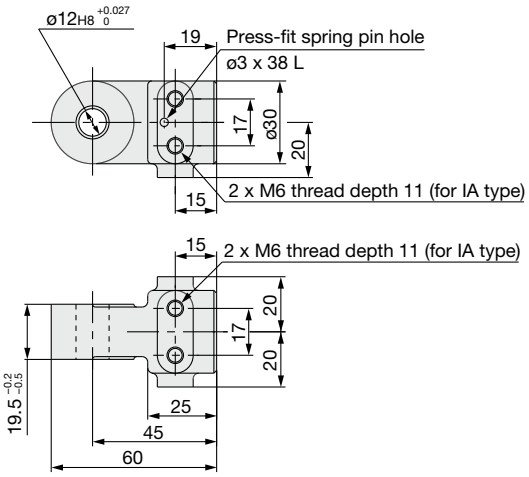
CLK2 Series
Accessories 1

Single Knuckle Joint

For ø32



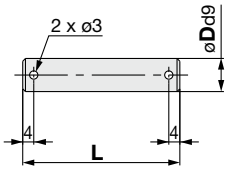
For ø40, ø50, ø63



Part no.	Rod end bracket symbol	Applicable cylinder
CLK-I03	I (M6 without tap)	CLK2□A32-Z
CLK-I04	I (M6 without tap)	CLK2□A40-Z CLK2□B40-Z
CLK-IA04	IA (M6 with tap)	
CKB-I04	I (M6 without tap)	CLK2□A50 to 63-Z CLK2□B50 to 63-Z
CKB-IA04	IA (M6 with tap)	

∗ A spring pin is attached to the single knuckle joint as a standard.

Pin (for Clevis/Double Knuckle Joint)

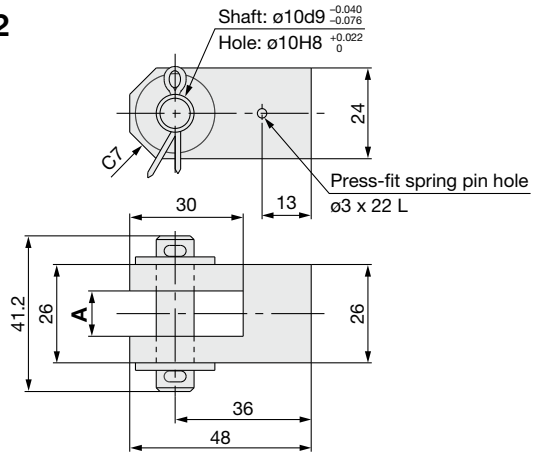


Part no.	D	L	Applicable cylinder
CLK-P03	10 -0.040 -0.076	41.2	CLK2□A32-Z
CK-P04	12 -0.050 -0.093	57	CLK2□□40 to 63-Z

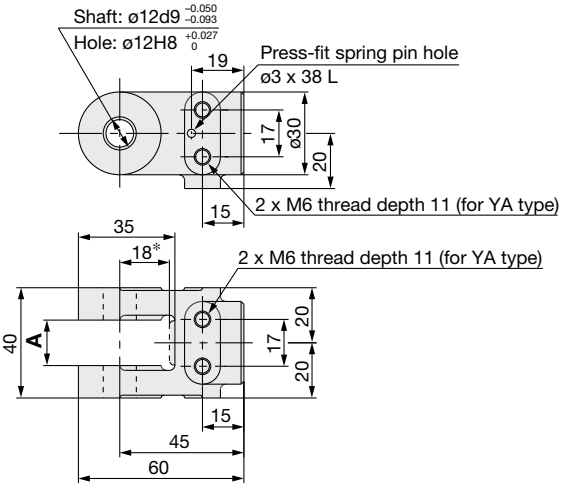
∗ Cotter pins and flat washers are attached to the pin as a standard.

Double Knuckle Joint

For ø32



For ø40, ø50, ø63

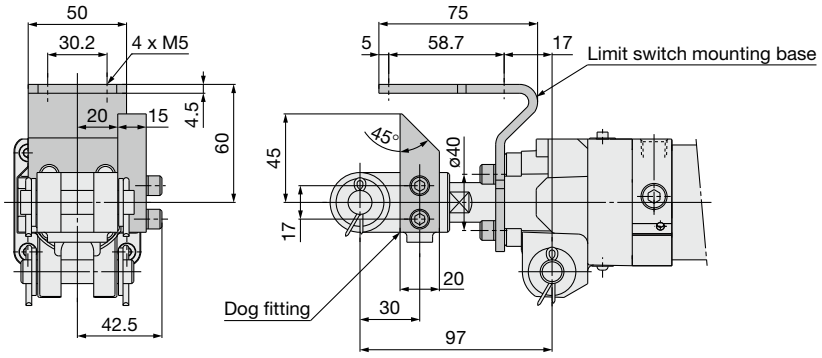


Part no.	Rod end bracket symbol	A	Applicable cylinder
CLK-Y03	Y (M6 without tap)	12 +0.5 +0.2	CLK2□A32-Z
CLK-Y04	Y (M6 without tap)	16.5 +0.3 0	CLK2□A40-Z
CLK-YA04	YA (M6 with tap)		
CKA-Y04	Y (M6 without tap)		CLK2□A50 to 63-Z
CKA-YA04	YA (M6 with tap)		
CKB-Y04	Y (M6 without tap)	19.5 +0.4 0	CLK2□B50 to 63-Z
CKB-YA04	YA (M6 with tap)		
CLKC-Y04	Y (M6 without tap)	12.5 +0.5 0	CLK2□C40-Z
CLKC-YA04	YA (M6 with tap)		
CKC-Y04	Y (M6 without tap)		CLK2□C50 to 63-Z
CKC-YA04	YA (M6 with tap)		

∗ A pin (for knuckle), cotter pins, flat washers, and a spring pin are attached to the double knuckle joint as a standard.
∗ The dimension with ∗ shows the value when mounted on the piston rod.

Accessories 2

Limit Switch Mounting Base/Dog Fitting

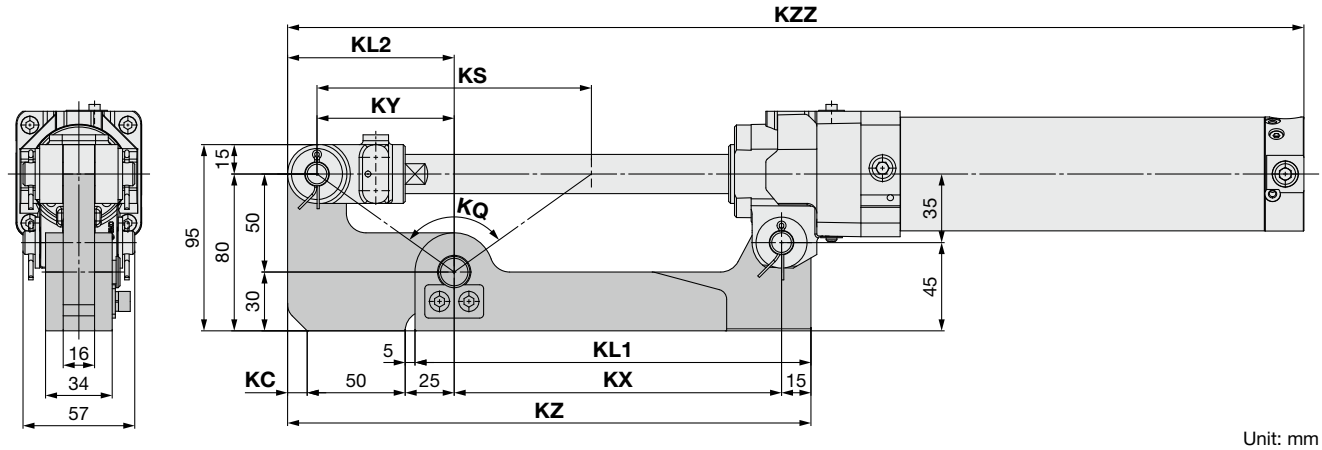


When you attach a dog fitting, be sure to use a knuckle joint, M6 with tap (rod end bracket symbol IA or YA).
The dog fitting cannot be attached to the knuckle joint, M6 without tap (rod end bracket symbol I or Y).

Part no.	Option symbol	Name	Applicable cylinder
CK-B04	**B**	Limit switch mounting base	CLK2□40 to 63-Z
CK-D04	**D**	Dog fitting	

* Limit switch mounting base and dog fitting can be repositioned by removing the hexagon socket head cap screw.
* When ordering the limit switch mounting base or the dog fitting individually, mounting bolts (hexagon socket head cap screws) and spring washers will be provided as a standard.

Pedestal

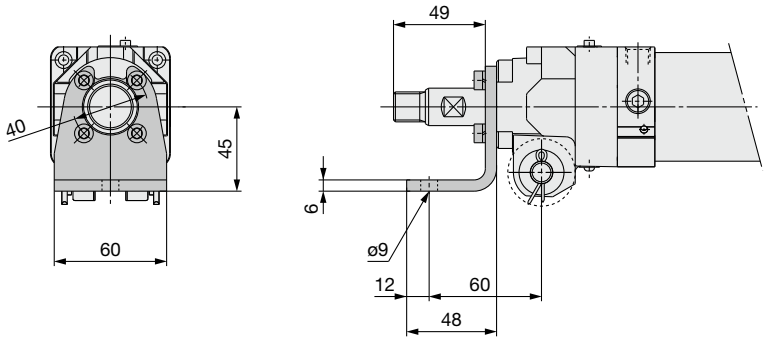


Unit: mm

Part no.	Option symbol	KL1	KL2	KX	KZ	KY	KS	KQ	KC	KZZ Bore size [mm] 40	KZZ Bore size [mm] 50	KZZ Bore size [mm] 63	Applicable cylinder
CKA-K075	**K**	167	75	132	222	35	70	69°59'	0	394 (399)	398.5 (400.5)	402 (404)	CLK2□A40 to 63-75YZ
CKA-K100		177	75	142	232	45	90	83°58'	0	429 (434)	432.5 (435.5)	437 (439)	CLK2□A40 to 63-100YZ
CKA-K150		202	85	167	267	70	140	108°55'	10	514 (519)	518.5 (520.5)	522 (524)	CLK2□A40 to 63-150YZ

* ( ) denotes the dimensions for CLK2PA

Foot Bracket



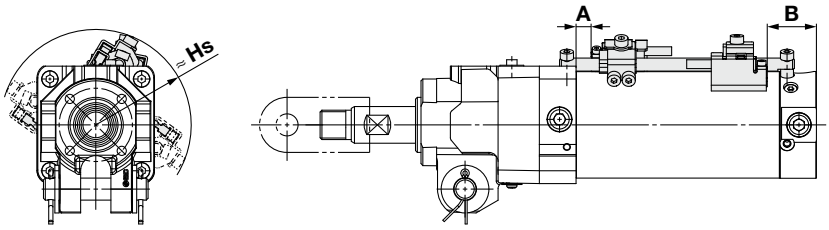
Part no.	Option symbol	Applicable cylinder
CK-L04	**L**	CLK2□40 to 63-Z

* Mounting bolts (hexagon socket head cap screws) and spring washers will be provided as a standard for the foot bracket.
* When mounting the cylinder, use both the foot bracket and clevis pin. Please avoid using the foot bracket by itself as this may result in damage.

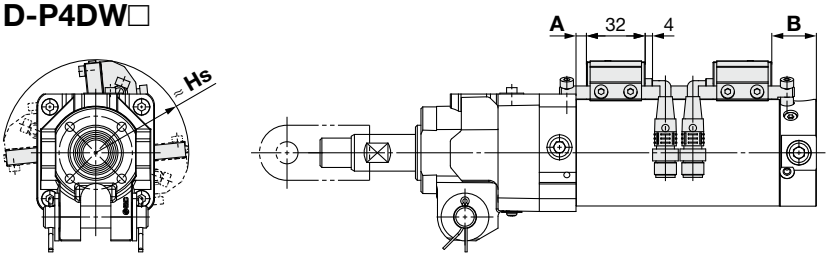
Auto Switch Mounting (Rod Mounting Type)

Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height

D-P3DWA□

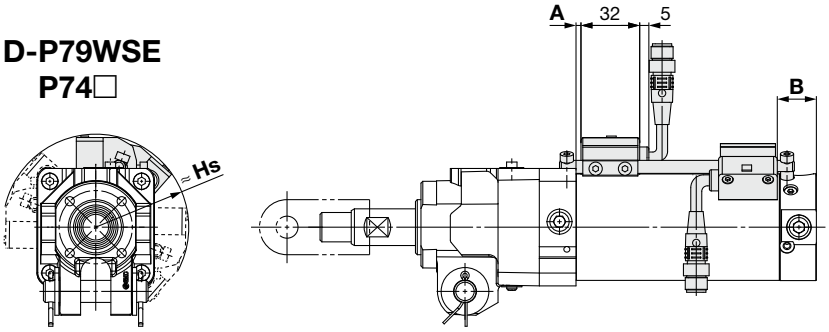


D-P4DW□



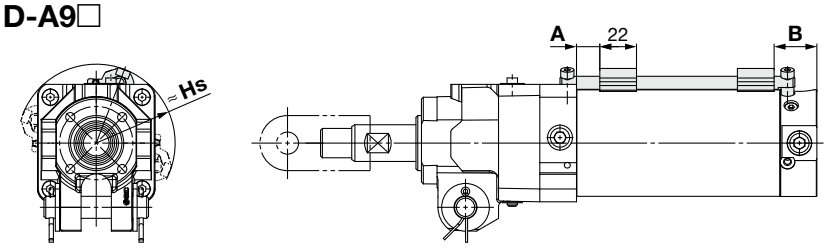
∗ The drawing shows the auto switch rod mounting example for the D-P4DWS□ type.

D-P79WSE
P74□



∗ The drawing shows the auto switch rod mounting example for the D-P79WSE type.

D-M9□
D-A9□



Unit: mm

Auto switch model	Symbol	Bore size [mm]		
		40	50	63
D-P3DWA□	A	6.5	8	8
	B	25.5	27	27
	Hs	46.5	52	59
D-P4DW□	A	4	5.5	5.5
	B	23	24.5	24.5
	Hs	45.5	51	58.5
D-P79WSE D-P74□	A	0	0	0
	B	21.5	26	26
	Hs	47.5	51	57.5
D-M9□	A	11	12.5	12.5
	B	30	31.5	31.5
	Hs	39	44.5	51.5
D-A9□	A	7	8.5	8.5
	B	26	27.5	27.5
	Hs	39	44.5	51.5

∗ The mounting position should be referred for reference only for the auto switch mounting position at the stroke end detection. Adjust the auto switch after confirming the operation to set actually.
∗ The applicable bore sizes of the CLK2GB (Clevis width 19.5 mm) are ø50 and ø63.
∗ A/B dimensions are the distance from the standard position (above drawing) to the end surface of the auto switch.
∗ The auto switch mounting position is temporarily set at the time of shipping from our factory. Change it to the desired position in accordance to your facility.

Operating Range

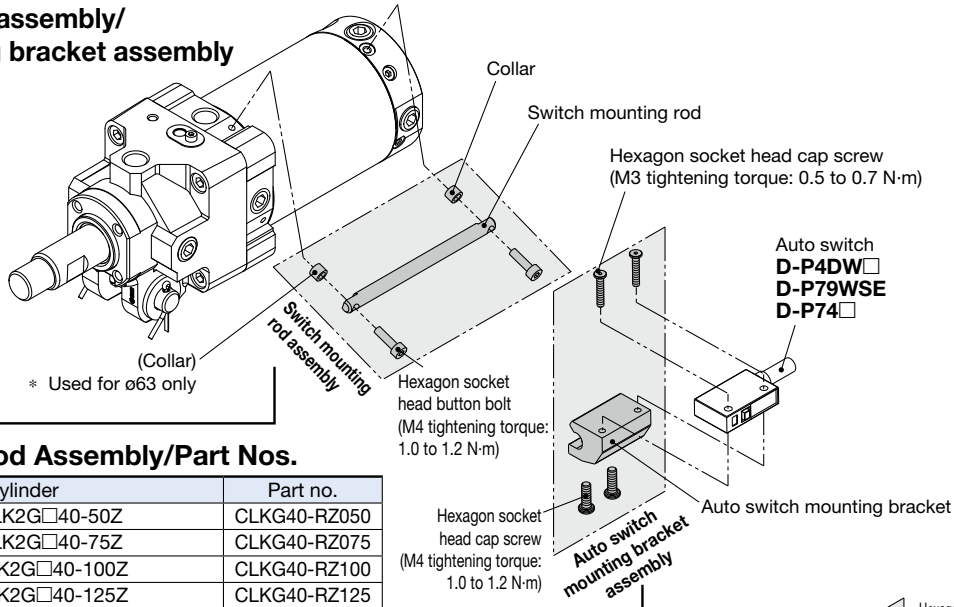
Unit: mm

Auto switch model	Bore size [mm]		
	40	50	63
D-P3DWA□	6	5.5	6
D-P4DW□	4	4	4.5
D-P79WSE D-P74□	8	9	9.5
D-M9□	4	4.5	5
D-A9□	8	8	9

∗ Values which include hysteresis are for reference purposes only. They are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

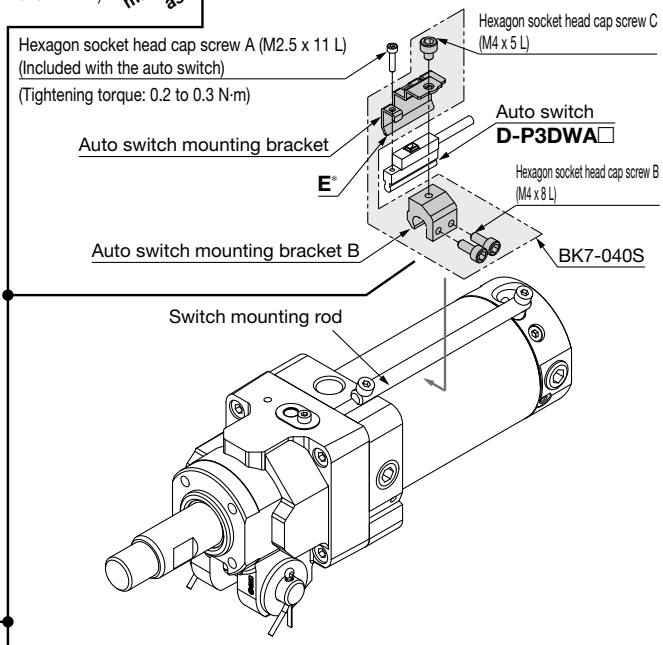
Auto Switch Mounting Brackets/Part Nos.

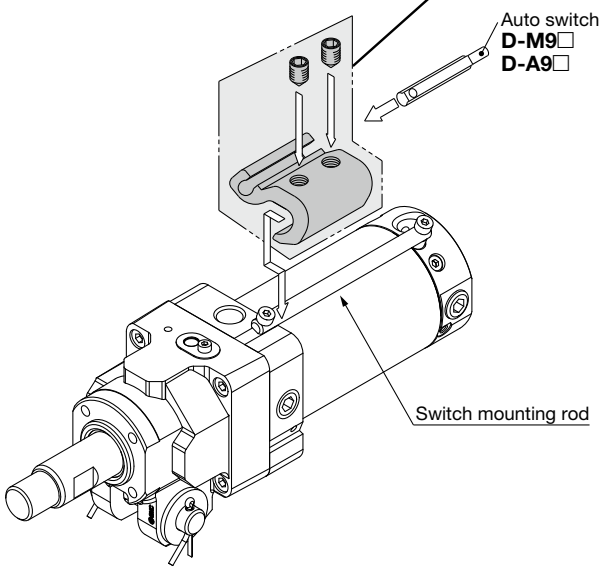
Switch mounting rod assembly/
Auto switch mounting bracket assembly



Switch Mounting Rod Assembly/Part Nos.

Applicable cylinder		Part no.
CLK2G□40-Z	CLK2G□40-50Z	CLKG40-RZ050
	CLK2G□40-75Z	CLKG40-RZ075
	CLK2G□40-100Z	CLKG40-RZ100
	CLK2G□40-125Z	CLKG40-RZ125
	CLK2G□40-150Z	CLKG40-RZ150
CLK2P□40-Z **CLK2G□50-Z**	CLK2P□40-50Z/CLK2G□50-50Z	CLKG50-RZ050
	CLK2P□40-75Z/CLK2G□50-75Z	CLKG50-RZ075
	CLK2P□40-100Z/CLK2G□50-100Z	CLKG50-RZ100
	CLK2P□40-125Z/CLK2G□50-125Z	CLKG50-RZ125
	CLK2P□40-150Z/CLK2G□50-150Z	CLKG50-RZ150
CLK2P□50-Z	CLK2P□50-50Z	CLKP50-RZ050
	CLK2P□50-75Z	CLKP50-RZ075
	CLK2P□50-100Z	CLKP50-RZ100
	CLK2P□50-125Z	CLKP50-RZ125
	CLK2P□50-150Z	CLKP50-RZ150
CLK2G□63-Z	CLK2G□63-50Z	CKG50-RZ050A
	CLK2G□63-75Z	CKG50-RZ075A
	CLK2G□63-100Z	CKG50-RZ100A
	CLK2G□63-125Z	CKG50-RZ125A
	CLK2G□63-150Z	CKG50-RZ150A
CLK2P□63-Z	CLK2P□63-50Z	CKP50-RZ050A
	CLK2P□63-75Z	CKP50-RZ075A
	CLK2P□63-100Z	CKP50-RZ100A
	CLK2P□63-125Z	CKP50-RZ125A
	CLK2P□63-150Z	CKP50-RZ150A





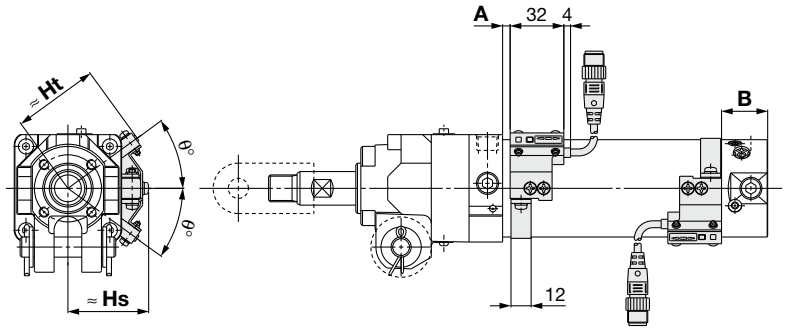
Auto Switch Mounting Bracket Assembly/Part Nos.

Applicable cylinder	Applicable auto switch	Bore size [mm]		
		40	**50**	**63**
CLK2G-Z	**D-P3DWA□**	BK7-040S		
	D-P4DW□	BK1T-040		
	D-M9□ **D-A9□**	BA7-040		
CLK2P-Z	**D-P79WSE** **D-P74L/Z**	BAP1T-040		

Auto Switch Mounting (Band Mounting Type)

Auto Switch Proper Mounting Position (Detection at stroke end) and Mounting Height

D-P4DW□



∗ The drawing shows the auto switch band mounting example for the D-P4DWS□ type.

Unit: mm

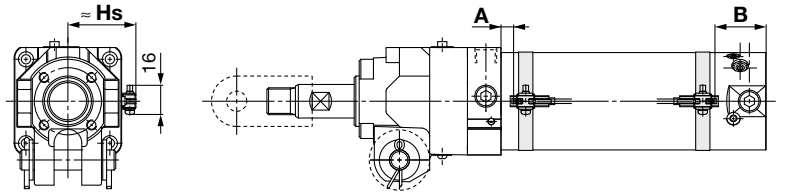
Auto switch model	Symbol	Bore size [mm]			
		32	**40**	**50**	**63**
D-P4DW□	**A**	0	4	5.5	5.5
	B	27.5	23	24.5	24.5
	Hs	38	43	48	55
	Ht	41.5	46	51.5	58.5
	θ	45°	40°	36°	33°
D-M9□ **D-M9□W** **D-M9□A**	**A**	7	11	12.5	12.5
	B	34.5	30	31.5	31.5
	Hs	30	35	40.5	47.5
D-A9□	**A**	3	7	8.5	8.5
	B	30.5	26	27.5	27.5
	Hs	30	35	40.5	47.5

∗ The mounting position should be referred for reference only for the auto switch mounting position at the stroke end detection. Adjust the auto switch after confirming the operation to set actually.

∗ A/B dimensions are the distance from the standard position (above drawing) to the end surface of the auto switch.

∗ As for the D-P4DW type, band mounting type, the auto switch mounting bracket and the auto switch have to be ordered separately. For details, refer to page 17.

D-A9□/M9□(W)



Operating Range

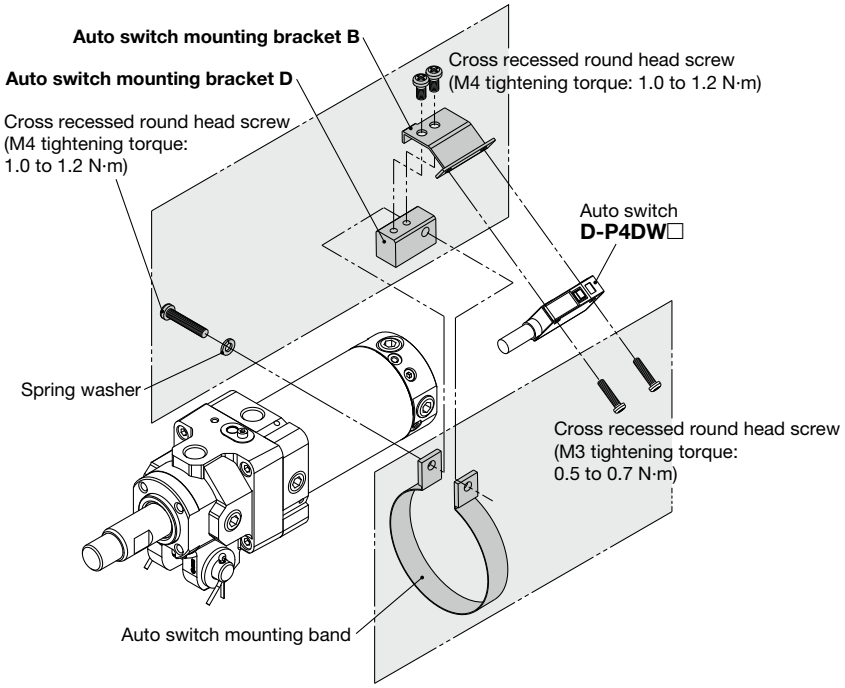
Unit: mm

Auto switch model	Bore size [mm]			
	32	**40**	**50**	**63**
D-P4DW□	4.5	5	5	5.5
D-M9□	4	3.5	4	4
D-M9□W **D-M9□A**	5	5.5	6.5	7
D-A9□	8	8	8	9

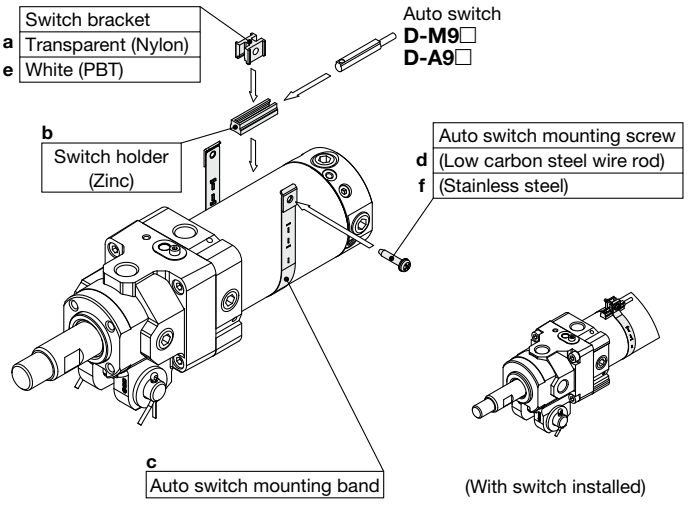
∗ Values which include hysteresis are for reference purposes only. They are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Auto Switch Mounting Brackets/Part Nos.

Auto switch model	Bore size [mm]			
	32	**40**	**50**	**63**
D-P4DW□	BA8-032	BA8-040	BA8-050	BA8-063



Auto switch model	Bore size [mm]			
	32	**40**	**50**	**63**
D-M9□ **D-M9□W** **D-A9□**	BMA3-032*1 (A set of a, b, c, d)	BMA3-040*1 (A set of a, b, c, d)	BMA3-050*1 (A set of a, b, c, d)	BMA3-063*1 (A set of a, b, c, d)
D-M9□A*2	BMA3-032S (A set of b, c, e, f)	BMA3-040S (A set of b, c, e, f)	BMA3-050S (A set of b, c, e, f)	BMA3-063S (A set of b, c, e, f)



* Band (c) is mounted so that the projected part is on the internal side (contact side with the tube).

*1 As the switch bracket is made of polyamide, its performance may be affected by chemicals such as alcohol, chloroform, methylamines, hydrochloric acid, and sulfuric acid, so it cannot be used in environments where these chemicals come into contact with the product.

*2 When mounting a D-M9□A type auto switch, if the switch bracket is mounted on the indicator light, it may damage the auto switch. Therefore, be sure to avoid mounting the switch bracket on the indicator light.

CLK2 Series
Auto Switch Mounting

Magnetic Field Resistant Auto Switch D-P4DW□□ / Band Mounting Compliant

Band mounting of the magnetic field resistant auto switch (D-P4DW□□) to the built-in standard magnet clamp cylinder (the CLK2G32 to 63 series) is possible by ordering the auto switch mounting bracket and the auto switch individually.

How to Order

Please order the switch mounting bracket, auto switch, and clamp cylinder individually.
Refer to the table below for auto switch mounting bracket part numbers.

Auto switch component part no.	Applicable auto switch	Applicable cylinder
BA8-032	D-P4DW□	**CLK2G□32-Z**
BA8-040		**CLK2G□40-Z**
BA8-050		**CLK2G□50-Z**
BA8-063		**CLK2G□63-Z**

∗ Refer to page 16 for mounting brackets.

Ordering Example

Example case ① Built-in standard magnet cylinder:
CLK2GA50-50YZ-B ····· 1
Example case ② Magnetic field resistant auto switch:
D-P4DWSC ····· 2
Example case ③ Auto switch mounting bracket:
BA8-050 ····· 2

∗ Please order the same quantity for the auto switch mounting bracket and the magnetic field resistant auto switch respectively.
∗ Band mounting for the magnetic field resistant auto switch D-P79WSE type, D-P74□ type is not applicable.

Applicable Magnetic Field Resistant Auto Switches (Refer to the **Web Catalog** for detailed auto switch specifications.)

Applicable cylinder	Type	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no. in use)	Load voltage	Lead wire length	Applicable load
CLK2G-Z	**Solid state auto switch**	**P4DWSC**	AC magnetic field (Single-phase AC welding magnetic field)	Pre-wired connector	2-color display	2-wire (3–4)	24 VDC	0.3 m	Relay, PLC
		P4DWSE				2-wire (1–4)			
		P4DWL		Grommet		2-wire		3 m	
		P4DWZ						5 m	

CLK2 Series
Specific Product Precautions 1

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Cushion Adjustment

⚠ Danger

1. The cushion valve and plug are crimped. Do not rotate 2 rotations or more from the fully closed state. Exceeding this limit is dangerous because it may cause the valves (plugs) to be detached and ejected.

Selection

⚠ Warning

1. Since the holding force (max. static load) indicates a cylinder's ability to hold a static load without being affected by vibration or impact, max. load (workpiece mass) should be 50% or less of the holding force (max. static force).

2. Do not perform intermediate stops while the cylinder is operating.

This cylinder is designed to lock inadvertent movement in the static condition. If the locking mechanism is used to stop the cylinder at an intermediate position during operation, the cylinder or unlocking mechanism may fail or the product's service life may be significantly shorten.

3. Select the correct locking position, as this cylinder does not generate holding force opposite to the locking direction.

The extension locking type does not generate holding force in the cylinder's retracting direction, and the retraction locking type does not generate holding force in the cylinder's extending direction.

4. Even when locked, there may be stroke movement of maximum 1 mm in the locking direction due to external forces such as the weight of the work piece.

Even when locked, if air pressure drops, stroke movement of maximum 1 mm may be generated in the locking direction of the lock mechanism due to external forces such as the work piece weight.

5. When locked, do not apply impact loads, strong vibration or rotational force, etc.

This will lead to lock mechanism damage, reduced service life, malfunction of unlocked condition, etc.

Preparing for Operation

⚠ Warning

1. When shipped from the factory, an unlocked condition is maintained by the unlocking bolt. Be sure to remove this bolt before operating. (The unlocking bolt can be stored in tap A after it is removed.)

Since the unlocking bolt is required to maintain the unlocked condition during maintenance, pay attention not to lose it.

Step 1) With no air pressure in the cylinder, retraction locking operates when the piston rod is retracted, and extension locking operates when it is extended.

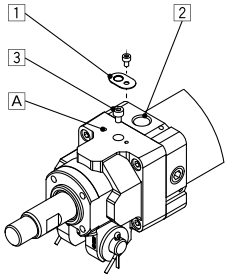
Step 2) Remove Dust cover 1.

Step 3) Supply air pressure of 0.2 MPa or more to port 2 in the figure on the upper right.

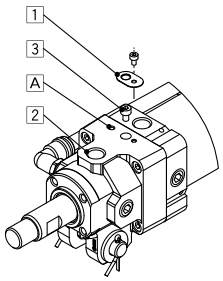
Preparing for Operation

⚠ Warning

Step 4) Remove the unlocking bolt 3 using a hexagon wrench.



Retraction locking type



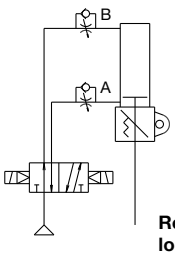
Extension locking type

2. Adjust the speed controller and the retraction side air cushion.

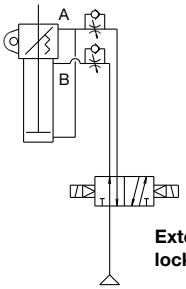
If there is excessive impact or collision noise at the stroke end, the connection may become loose and cause damage to machinery.

3. Before restarting operation from the locked position, be sure to restore air pressure to the B port in the figure below.

It is very dangerous to apply pressure to the A port with the B port in an unpressurized state, because the cylinder will move suddenly when unlocked.
This may damage the locking mechanism, shorten the service life or cause unlocking malfunction.



Retraction locking type



Extension locking type

∗ The symbol for the cylinder with lock in the pneumatic circuit uses SMC original symbol.

Pneumatic Circuits

⚠ Warning

1. Do not use 3-position valves.

The lock may be released due to the inflow of the unlocking pressure.

2. Install speed controllers for meter-out control.

Malfunction may occur if meter-in control is used or speed controllers are not used.

3. Be careful of reverse exhaust pressure flow from a common exhaust type manifold.

Since the lock may be released due to reverse exhaust pressure flow, use an individual exhaust type manifold or single type valve.

CLK2 Series
Specific Product Precautions 2

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Mounting

⚠ Caution

1. Be sure to connect the load to the rod end with the cylinder in an unlocked condition.

If this is done when in a locked condition, it may cause damage to the lock mechanism.

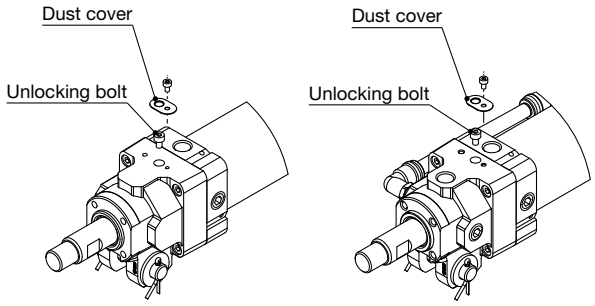
Unlocking

⚠ Warning

Maintaining an Unlocked Condition

1. To maintain an unlocked condition, be sure to follow the steps shown below.

1) After carefully confirming safety, operate a switching valve (solenoid valve, etc.) so that retraction locking operates when the piston rod is retracted, and extension locking operates when it is extended. Furthermore, air pressure of 0.2 MPa or more is required when this is done.
2) Remove the dust proof cover.
3) Screw in the accessory unlocking bolt (hexagon socket head cap screw ø32: M3 x 5 L, ø40: M4 x 6 L, ø50: M4 x 6 L, ø63: M5 x 6 L).



Retraction locking type **Extension locking type**

2. When the locking mechanism is to be used again, be sure to remove the unlocking bolt.

The locking mechanism will not work when the unlocking bolt is screwed in. Remove the unlocking bolt following the steps shown in the section on preparing for operation.

Unlocking

⚠ Warning

Manually Unlocking

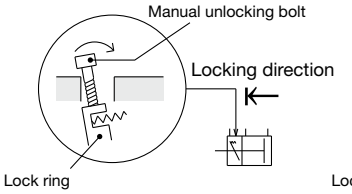
1. Do not perform unlocking while an external force such as a load or spring force is being applied.

This is very dangerous because the cylinder will move suddenly.
Release the lock after preventing cylinder movement with a lifting device such as a jack.

2. After confirming safety, operate the manual release following the steps shown below.

Confirm that there are no personnel inside the load movement range, etc., and that there is no danger even if the load moves suddenly.

Manually unlocking



Extension locking

1) Remove the dust cover.
2) Screw a manual unlocking bolt into the lock ring threads as shown above, and lightly push the bolt in the direction of the arrow (head side) to unlock.
For the bolts, use commercially-available bolts of the sizes below
ø32: M3 x 20 L
ø40, ø50: M4 x 30 L
ø63: M5 x 30 L

Retraction locking

1) Remove the dust cover.
2) Screw a manual unlocking bolt into the lock ring threads as shown above, and lightly push the bolt in the direction of the arrow (rod side) to unlock.
For the bolts, use commercially-available bolts of the sizes below
ø32: M3 x 20 L
ø40, ø50: M4 x 30 L
ø63: M5 x 30 L

Maintenance

⚠ Caution

1. In order to maintain good performance, use with clean unlubricated air.

If lubricated air, compressor oil or drainage, etc., enters the cylinder, there is a danger of sharply reducing the locking performance.

2. Do not apply grease to the piston rod.

There is a danger of sharply reducing the locking performance.

3. Never disassemble the lock unit.

It contains a heavy duty spring which is dangerous. There is also a danger of reducing the locking performance.

CLK2 Series
Specific Product Precautions 3

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Piping Port / Switch Mounting Rod (bypass piping) Position Change

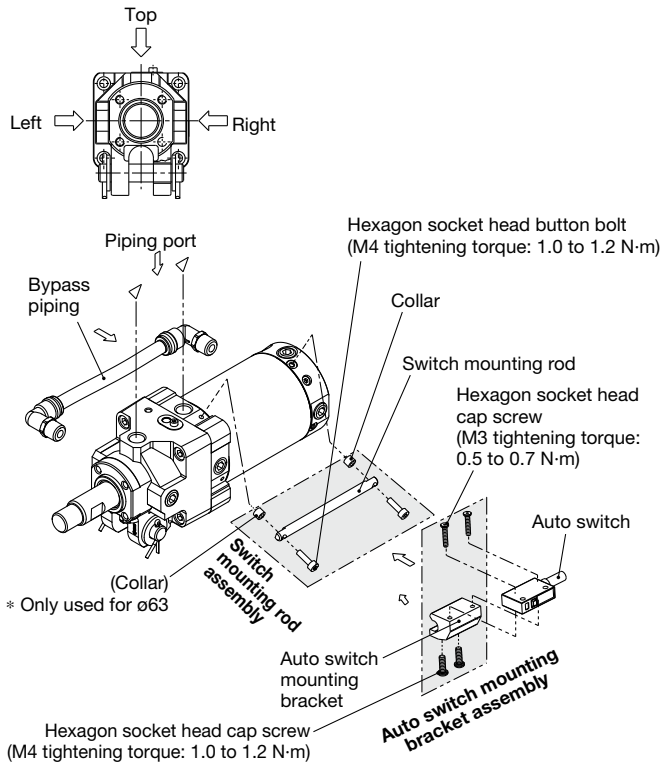
⚠ Warning

1. Piping port position, switch mounting rod position, and bypass piping position can be selected by the part number. However, if there is an error in ordering and changes to the positions are required, please note the following.

a. Move all the parts that are aligned in a straight line in the stroke direction by 90° or 180° around the circumference of the cylinder. Never move parts in the stroke direction, as this will cause malfunction.

b. Do not operate with any parts removed. When the cylinder is operated with any part removed, malfunction will occur and it is very dangerous.

c. Although fittings with sealant are used for pipe fittings and plugs, wind them with pipe tape to prevent air leakage when reassembling after position changes.



Handling

Magnetic field resistant auto switches D-P79WSE/D-P74□ type are specifically for use with magnetic field resistant cylinders and are not compatible with general auto switches or cylinders. Magnetic field resistant cylinders are labeled as follows.

Magnetic field resistant cylinder with built-in magnet
(For use with auto switch D-P7 type)

Mounting

1. The minimum stroke for mounting magnetic field resistant auto switches is 50 mm.

2. In order to fully use the capacity of magnetic field resistant auto switches, strictly observe the following precautions.

1) Do not allow the magnetic field to occur when the cylinder piston is moving.

2) When a welding cable or welding gun electrodes are near the cylinder, change the auto switch position to fall within the operational ranges shown in the graphs on page 22, or move the welding cable away from the cylinder.

3) Cannot be used in an environment where welding cables surround the cylinder.

4) If multiple objects that generate a magnetic field (such as a welding cable and a welding gun electrode) move close to an auto switch, the closest they are allowed to be to the auto switch can be calculated by multiplying the safety distance by the number of elements.

3. In an environment where spatter directly hits the lead wire, cover the lead wire with protective tubing. Use protective tubing with a bore size of ø8 or more that has excellent heat resistance and flexibility.

4. Be careful not to drop objects, make dents, or apply excessive impact force when handling.

5. When built-in strong magnet type cylinders are closely positioned to each other, please pay attention to the following items.

1) When more than 2 pcs. cylinders with general purpose auto switches are juxtaposed, leave the distance of 40 mm or more between the cylinder tubes.

2) Separate a reed magnetic field resistant auto switch from the tube surface of a closely mounted built-in strong magnet type cylinder by 30 mm or more.

3) When a built-in strong magnet type cylinder and a cylinder with a general-purpose auto switch are closely positioned, separate the cylinder tubes 50 mm or more.

4) Separate a general-purpose auto switch from the tube surface of a closely mounted built-in strong magnet cylinder by 50 mm or more away.

CLK2 Series
Specific Product Precautions 4

Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

Handling

Mounting

6. Avoid wiring in a manner in which repeated bending stress or tension is applied to lead wires.

7. Do not use in an environment with constant water and coolant splashing.

8. Please be careful of the mounting direction of the magnetic field resistant auto switch D-P79WSE type. Be sure to face the molded surface with soft-resin to the auto switch mounting bracket side for mounting.

(Refer to page 13 for mounting example, and refer to the **Web Catalog** for soft-resin mold surface.)

Wiring/Current and Voltage

1. Always connect the auto switch to the power supply after the load has been connected.

2. Series connection

When auto switches are connected in series as shown below:

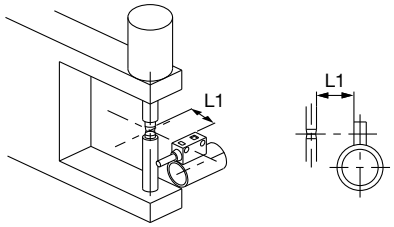
Note that the voltage drop due to the internal resistance of the LED increases.

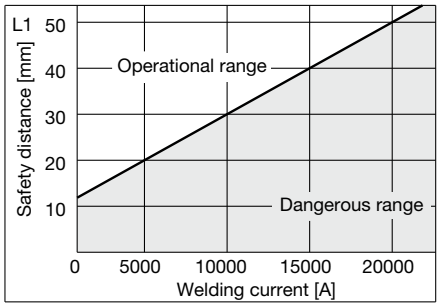
Specific Product Precautions 5

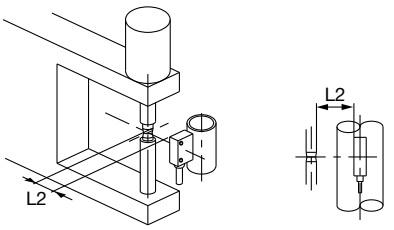
Be sure to read this before handling the products. Refer to the back cover for safety instructions. For actuator and auto switch precautions, refer to the "Handling Precautions for SMC Products" and the "Operation Manual" on the SMC website: https://www.smcworld.com

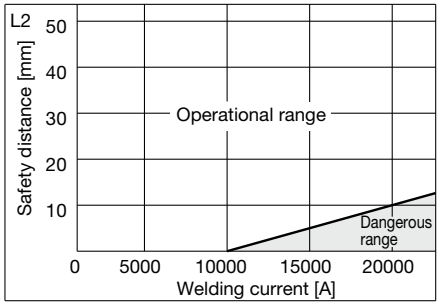
Data: Magnetic Field Resistant Reed Switch (D-P79WSE, D-P74□) Safety Distance

Safety Distance from Side of Auto Switch

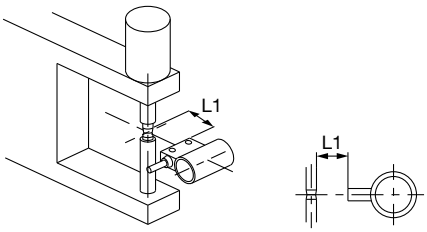


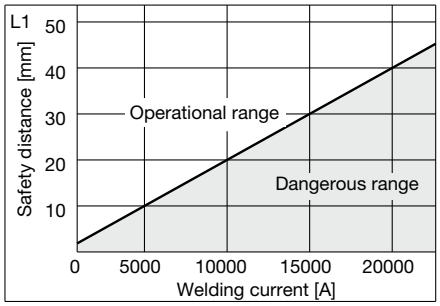


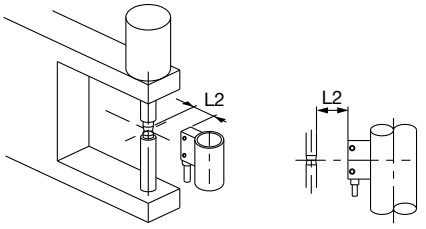


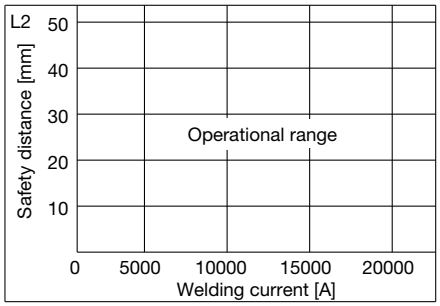


Safety Distance from Top of Auto Switch









⚠ Safety Instructions

These safety instructions are intended to prevent hazardous situations and/or equipment damage. These instructions indicate the level of potential hazard with the labels of **"Caution," "Warning"** or **"Danger."** They are all important notes for safety and must be followed in addition to International Standards (ISO/IEC)*1), and other safety regulations.

⚠ Danger : **Danger** indicates a hazard with a high level of risk which, if not avoided, will result in death or serious injury.

⚠ Warning: **Warning** indicates a hazard with a medium level of risk which, if not avoided, could result in death or serious injury.

⚠ Caution: **Caution** indicates a hazard with a low level of risk which, if not avoided, could result in minor or moderate injury.

*1) ISO 4414: Pneumatic fluid power - General rules and safety requirements for systems and their components
ISO 4413: Hydraulic fluid power - General rules and safety requirements for systems and their components
IEC 60204-1: Safety of machinery - Electrical equipment of machines - Part 1: General requirements
ISO 10218-1: Robots and robotic devices - Safety requirements for industrial robots - Part 1:Robots
etc.

⚠ Warning

1. The compatibility of the product is the responsibility of the person who designs the equipment or decides its specifications.

Since the product specified here is used under various operating conditions, its compatibility with specific equipment must be decided by the person who designs the equipment or decides its specifications based on necessary analysis and test results. The expected performance and safety assurance of the equipment will be the responsibility of the person who has determined its compatibility with the product. This person should also continuously review all specifications of the product referring to its latest catalog information, with a view to giving due consideration to any possibility of equipment failure when configuring the equipment.

2. Only personnel with appropriate training should operate machinery and equipment.

The product specified here may become unsafe if handled incorrectly. The assembly, operation and maintenance of machines or equipment including our products must be performed by an operator who is appropriately trained and experienced.

3. Do not service or attempt to remove product and machinery/ equipment until safety is confirmed.

1. The inspection and maintenance of machinery/equipment should only be performed after measures to prevent falling or runaway of the driven objects have been confirmed.
2. When the product is to be removed, confirm that the safety measures as mentioned above are implemented and the power from any appropriate source is cut, and read and understand the specific product precautions of all relevant products carefully.
3. Before machinery/equipment is restarted, take measures to prevent unexpected operation and malfunction.

4. SMC products cannot be used beyond their specifications. They are not developed, designed, and manufactured to be used under the following conditions or environments. Use under such conditions or environments is not allowed.

1. Conditions and environments outside of the given specifications, or use outdoors or in a place exposed to direct sunlight.
2. Use for nuclear power, railways, aviation, space equipment, ships, vehicles, military application, equipment affecting human life, body, and property, combustion equipment, entertainment equipment, emergency shut-off circuits, press clutches, brake circuits, safety equipment, etc., and use for applications that do not conform to standard specifications such as catalogs and operation manuals.
3. Use for interlock circuits, except for use with double interlock such as installing a mechanical protection function in case of failure. Please periodically inspect the product to confirm that the product is operating properly.

⚠ Caution

SMC develops, designs, and manufactures products to be used for automatic control equipment, and provides them for peaceful use in manufacturing industries.
Use in non-manufacturing industries is not allowed.
Products SMC manufactures and sells cannot be used for the purpose of transactions or certification specified in the Measurement Act of each country. The new Measurement Act prohibits use of any unit other than SI units in Japan.

Limited warranty and Disclaimer/ Compliance Requirements

The product used is subject to the following "Limited warranty and Disclaimer" and "Compliance Requirements".
Read and accept them before using the product.

Limited warranty and Disclaimer

1. The warranty period of the product is 1 year in service or 1.5 years after the product is delivered, whichever is first.*2)
   Also, the product may have specified durability, running distance or replacement parts. Please consult your nearest sales branch.
2. For any failure or damage reported within the warranty period which is clearly our responsibility, a replacement product or necessary parts will be provided.
   This limited warranty applies only to our product independently, and not to any other damage incurred due to the failure of the product.
3. Prior to using SMC products, please read and understand the warranty terms and disclaimers noted in the specified catalog for the particular products.

*2) **Suction cups (Vacuum pads) are excluded from this 1 year warranty.**
A suction cup (vacuum pad) is a consumable part, so it is warranted for a year after it is delivered.
Also, even within the warranty period, the wear of a product due to the use of the suction cup (vacuum pad) or failure due to the deterioration of rubber material are not allowed by the limited warranty.

Compliance Requirements

1. The use of SMC products with production equipment for the manufacture of weapons of mass destruction (WMD) or any other weapon is strictly prohibited.
2. The exports of SMC products or technology from one country to another are governed by the relevant security laws and regulations of the countries involved in the transaction. Prior to the shipment of a SMC product to another country, assure that all local rules governing that export are known and followed.

⚠ Safety Instructions	Be sure to read the "Handling Precautions for SMC Products" (M-E03-3) and "Operation Manual" before use.