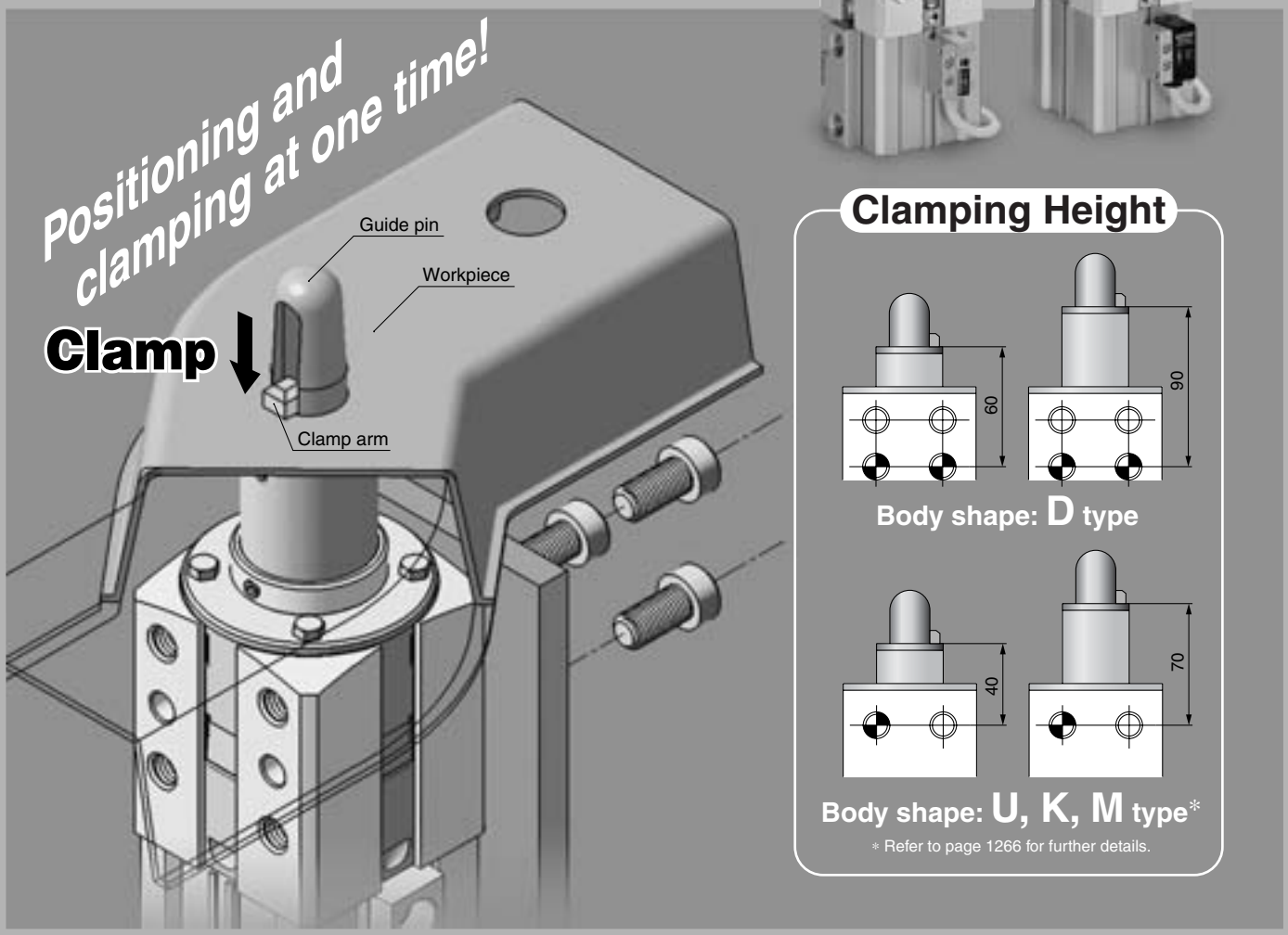
Pin Clamp Cylinder

Series C(L)KQG□/C(L)KQP□

Adjustable height for clamping a workpiece reduces interference with the body!



Clamping Height

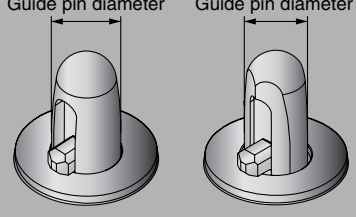
Body shape: D type

Body shape: U, K, M type*

* Refer to page 1266 for further details.

55 types of guide pins

Compatible with a broad range of workpiece configurations

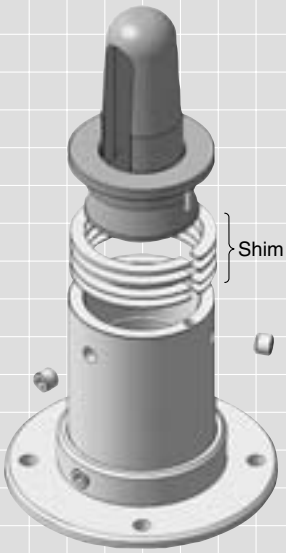


Applicable Guide Pin Diameter

Round type	Guide pin diameter (mm)														
	12.5	12.7	12.8	12.9	13.0	14.5	14.7	14.8	14.9	15.0	15.5	15.7	15.8	15.9	16.0
Applicable hole diameter of workpiece	For ø13					For ø15					For ø16				
Guide pin shape	Round type														

Round type Diamond type	Guide pin diameter (mm)																			
	17.5	17.7	17.8	17.9	18.0	19.5	19.7	19.8	19.9	20.0	24.5	24.7	24.8	24.9	25.0	29.5	29.7	29.8	29.9	30.0
Applicable hole diameter of workpiece	For ø18					For ø20					For ø25					For ø30				
Guide pin shape	Round type, Diamond type																			

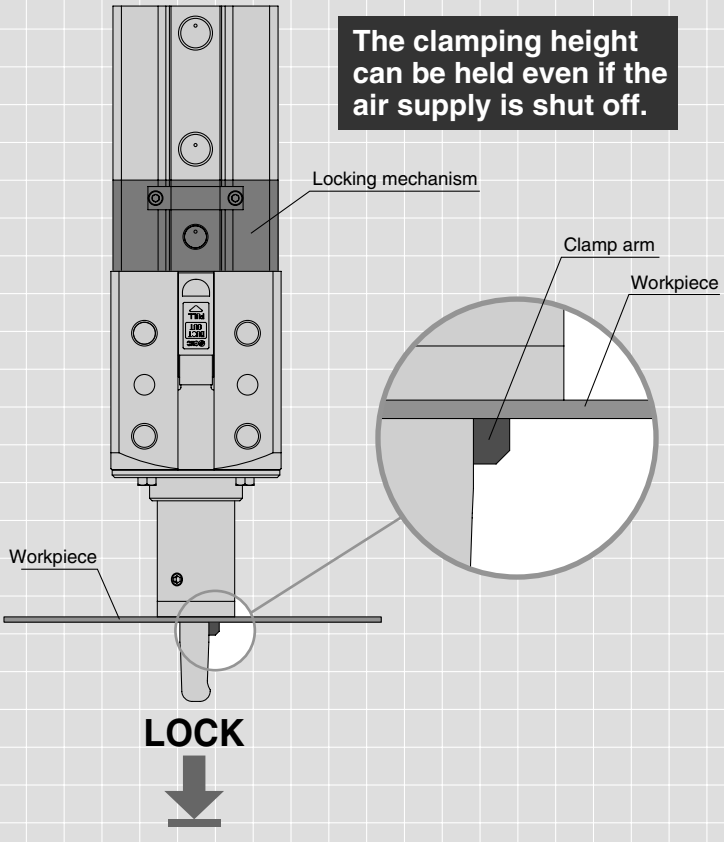
Precision adjustment of clamping height is possible by choosing the with-shim type. [Adjustment range: 0.5 to 3 mm]



A total shim height of 3 mm consists of 2 shims with a thickness of 1 mm each and 2 shims with a thickness of 0.5 mm each. (assembled before shipping)

Optional locking mechanism is available.

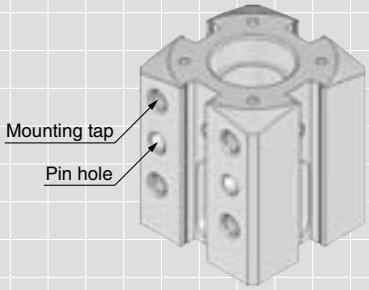
The clamping height can be held even if the air supply is shut off.



4 body types for a broad range of installation conditions

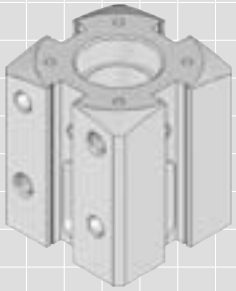
D series

Mounting tap : 4 x M10 x 1.5
Pin hole : 2 x ø8H7



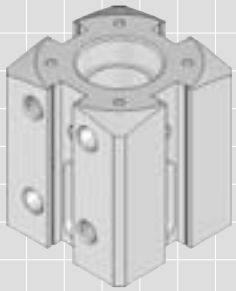
U series

Mounting tap : 2 x M10 x 1.5
Pin hole : 2 x ø8H7



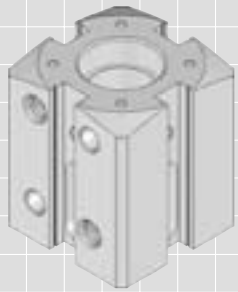
K series

Mounting tap : 2 x M10 x 1.5
Pin hole : 2 x ø10H7



M series

Mounting tap : 2 x M12 x 1.75
Pin hole : 2 x ø10H7



Pin Clamp Cylinder Mounting Variations

Series C(L)KQG□/C(L)KQP□

Series	Body shape symbol	Dimension	Mounting	Mounting hole (tap, pin hole) arrangement	Mounting surface (viewed from top) Symbol	Port location	
C(L)KQG (Built-in standard magnet) **C(L)KQP** (Built-in strong magnet)	**D**	□66	Mounting tap: 4 x M10 x 1.5 Pin hole: 2 x ø8H7	**Taps are parallel.** ○: Mounting tap ◔: Pin hole	**A**	Port, Mounting surface	P.1268
					B	Port, Mounting surface	
	U		Mounting tap: 2 x M10 x 1.5 Pin hole: 2 x ø8H7	**Taps diagonal (top right and bottom left)** ○: Mounting tap ◔: Pin hole	**A**	Port, Mounting surface	P.1278
					B	Port, Mounting surface	
	K		Mounting tap: 2 x M10 x 1.5 Pin hole: 2 x ø10H7	**Taps diagonal (top right and bottom left)** **Taps diagonal (top left and bottom right)** ○: Mounting tap ◔: Pin hole	**C**	Mounting surface with the taps diagonal (top right and bottom left), Port, Mounting surface with the taps diagonal (top left and bottom right)	P.1288
					D	Mounting surface with the taps diagonal (top right and bottom left), Port, Mounting surface with the taps diagonal (top left and bottom right)	
					E	Mounting surface with the taps diagonal (top left and bottom right), Port, Mounting surface with the taps diagonal (top right and bottom left)	
					F	Mounting surface with the taps diagonal (top left and bottom right), Port, Mounting surface with the taps diagonal (top right and bottom left)	
	M		Mounting tap: 2 x M12 x 1.75 Pin hole: 2 x ø10H7	**Taps diagonal (top right and bottom left)** **Taps diagonal (top left and bottom right)** ○: Mounting tap ◔: Pin hole	**C**	Mounting surface with the taps diagonal (top right and bottom left), Port, Mounting surface with the taps diagonal (top left and bottom right)	P.1298
					D	Mounting surface with the taps diagonal (top right and bottom left), Port, Mounting surface with the taps diagonal (top left and bottom right)	
					E	Mounting surface with the taps diagonal (top left and bottom right), Port, Mounting surface with the taps diagonal (top right and bottom left)	
					F	Mounting surface with the taps diagonal (top left and bottom right), Port, Mounting surface with the taps diagonal (top right and bottom left)	

Pin Clamp Cylinder **D series**

Series CKQ$_{P}^{G}$D/CLKQ$_{P}^{G}$D

How to Order

Built-in standard magnet
With magnetic field resistant auto switch

C ☐ KQG D A 50 ☐ – 177 R A L ☐ – P4DWSC ☐

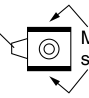
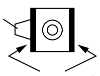
Built-in strong magnet
With magnetic field resistant auto switch

C ☐ KQP D A 50 ☐ – 198 R A L ☐ – P79WSE ☐

With lock on the clamp side

Nil	Without lock
L	With lock

Mounting surface (viewed from top)

Symbol	Port location
A	
B	

Bore size

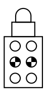
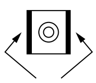
50	50 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Guide pin diameter
∗ For guide pin diameter, refer to Table 1 below.

Body shape

Symbol	Dimension	Mounting hole (tap, pin hole) arrangement		Mounting	Mounting surface (viewed from top)
D	□66		○: Mounting tap ◐: Pin hole	Mounting tap: 4 x M10 x 1.5 Pin hole: 2 x ø8H7	 Mounting surface (Two facing sides)

Guide pin shape

R	Round type
D	Diamond type∗

∗ Diamond type guide pin diameter is ø17.5 or more.

Number of auto switches

Nil	2 pcs.
S	1 pc. (Unclamp side)

∗ The D-P4/P7 type is different-surface mounting. (Refer to page 1308.)

Auto switch type

Nil	Without auto switch (Built-in magnet)

∗ For applicable auto switch models, refer to page 1269.
∗ Auto switches are included, (but not assembled).

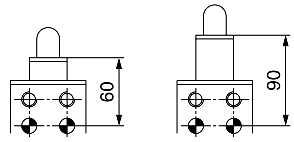
Shim

Nil	Without shims
S	With 3 mm shims∗

∗ When a model includes shims, two 1 mm shims and two 0.5 mm shims are attached.

Clamping height (Refer to the below figure.)

L	LOW type (60 mm)
H	HIGH type (90 mm)



Clamping height

Clamp arm position (clockwise viewed from top)

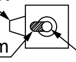
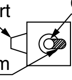
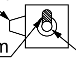
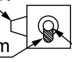
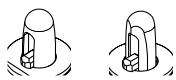
A	Same direction as port 	C	180° from port 
B	90° from port 	D	270° from port 

Table 1. Guide Pin Diameter

Symbol	125	127	128	129	130	145	147	148	149	150	155	157	158	159	160
Guide pin diameter	12.5	12.7	12.8	12.9	13.0	14.5	14.7	14.8	14.9	15.0	15.5	15.7	15.8	15.9	16.0
Applicable hole diameter of workpiece	For ø13					For ø15					For ø16				
Guide pin shape	Round type														



Symbol	175	177	178	179	180	195	197	198	199	200	245	247	248	249	250	295	297	298	299	300
Guide pin diameter	17.5	17.7	17.8	17.9	18.0	19.5	19.7	19.8	19.9	20.0	24.5	24.7	24.8	24.9	25.0	29.5	29.7	29.8	29.9	30.0
Applicable hole diameter of workpiece	For ø18					For ø20					For ø25					For ø30				
Guide pin shape	Round type, Diamond type																			

Table 2. Applicable Auto Switches / For detailed specifications about an auto switch for itself, refer to pages 1719 to 1827.

Applicable cylinder series	Type	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no in use)	Load voltage	Lead wire length	Applicable load
Series C(L)KQG	**Solid state auto switch**	**D-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 Note 1)
		D-P4DWSE				2-wire (1–4)			
		D-P4DWL		Grommet		2-wire		3 m	
		D-P4DWZ						5 m	
Series C(L)KQP	**Reed auto switch**	**D-P79WSE**	DC/AC magnetic field	Pre-wired connector	2-color display	2-wire (1–4)	24 VDC	0.3 m	
		D-P74L		Grommet	1-color display	2-wire	24 VDC 100 VAC	3 m	
		D-P74Z						5 m	

Note 1) PLC: Programmable Logic Controller
Note 2) There are other applicable auto switches other than the listed above. For details, refer to page 1307.

Basic Specifications

Action	Double acting	
Bore size (mm)	50	
Fluid	Air	
Minimum operating pressure	CKQ□: 0.1 MPa	CLKQ□ (With lock): 0.15 MPa*
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Cushion	None	
Lubrication	Non-lube	
Piston speed (Clamp speed)	50 to 150 mm/sec	
Port size (Cylinder port)	1/4 (Rc, NPT, G)	

* Minimum operating pressure is 0.2 MPa when cylinder part and locking part use the same piping.

Proof Pressure/Maximum Operating Pressure

Guide pin diameter	Proof pressure	Max. operating pressure
ø12.5 to ø13.0	1.0 MPa	0.7 MPa
ø14.5 to ø30.0	1.5 MPa	1.0 MPa

Clamp Specifications

Clamp stroke	Without shims	With shims
	10 mm	10 to 13 mm
Clamp arm	1 pc.	
Guide pin shape	Round type, Diamond type	

* Refer to the below "Clamp Specifications" and Selection regarding detailed specifications of the clamping force, etc.
* Diamond type guide pin diameter is ø17.5 or more.

Mass

Unit: kg

Model	C(L)KQ$^{G}_{P}$D			
Guide pin diameter (mm)	Without lock		With lock	
	L	H	L	H
ø12.5 to 13.0	1.66	1.83	2.18	2.34
ø14.5 to 15.0	1.66	1.83	2.18	2.34
ø15.5 to 16.0	1.67	1.83	2.18	2.35
ø17.5 to 18.0	1.71	1.88	2.22	2.4
ø19.5 to 20.0	1.72	1.89	2.23	2.41
ø24.5 to 25.0	1.78	1.98	2.29	2.5
ø29.5 to 30.0	1.82	2.02	2.33	2.54

Lock Specifications

Locking action	Spring locking (Exhaust locking)
Unlocking pressure	0.2 MPa or more
Lock starting pressure	0.05 MPa or less
Locking direction	Lock at extended direction (Clamp holding)
Port size (Lock release port)	1/8 (Rc, NPT, G)
Holding force (N) (Maximum static load)	982

Clamp Specifications

(N)

Model	Guide pin diameter	Operating pressure (MPa)								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CKQ$^{G}_{P}$	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	—	—	—
	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2	1484.1
CLKQ$^{G}_{P}$	ø12.5 to ø13.0	82.4	247.3	412.2	577.1	742.0	906.9	—	—	—
	ø14.5 to ø30.0	82.4	247.3	412.2	577.1	742.0	906.9	Note 1) 1071.8	Note 1) 1236.7	Note 1) 1401.6

Note 1) Lock holding force of the CLKQ□ is 982 N. Design the circuit such that the lock holding force is taken into consideration when the operating pressure exceeds 0.75 MPa. The operating pressure should be not greater than the lock holding force as it may cause wearing out and/or damage of the locking part and shorten lock life and may lead to possible failure if applied with a load larger than the lock holding force.

Note 2) It takes approximately 0.3 seconds for the cylinder to operate to generate clamping force from an unclamping state (when no speed controller is installed). Design circuit taking into consideration the time before the clamping force is generated.

Note 3) Determine the clamping force according to the strength of the workpiece. It can be damaged if the clamping force is too large.

Maintenance Parts

Replacement Parts: Seal Kit

Kit No.	Content
CQ2B50-PS	Piston seal Rod seal Tube gasket

* Consult SMC for maintenance service. Seal kit for maintenance of the CLKQ$^{G}_{P}$ series with lock is not available.

Replacement Parts: Grease Pack

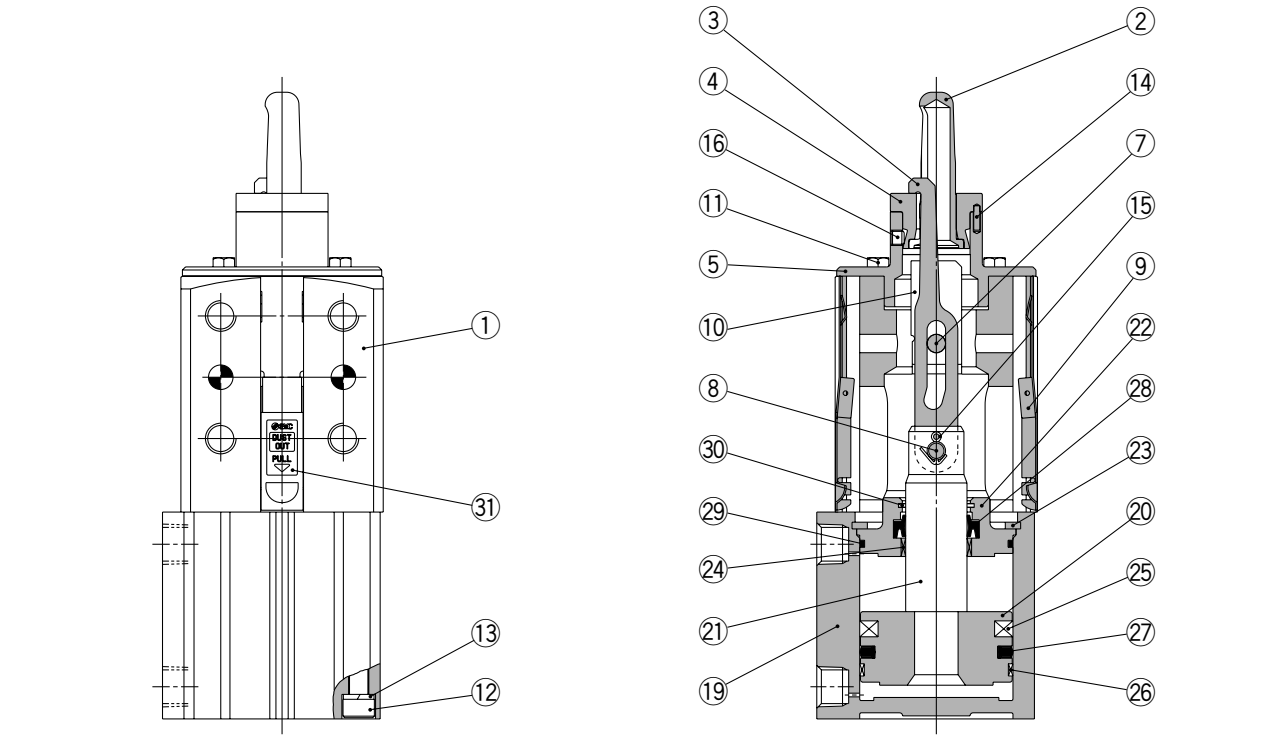
Kit No.	Content
GR-S-010	Grease 10 g

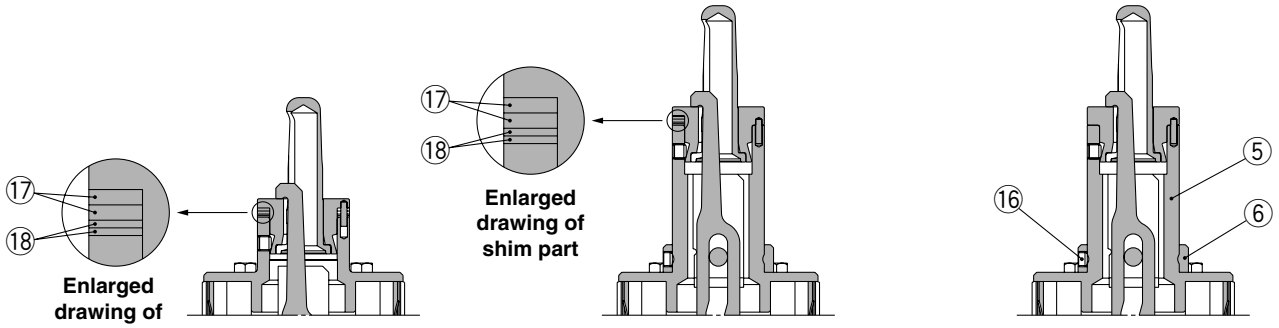
* Consult SMC when replacing the actuating cylinders.

Construction

CKQGDA50

∗ The below figures indicate the CKQGDA50-□RAL.





CKQGD□50□-□R□LS
Clamping height: LOW type
With shims

CKQGD□50□-□R□HS
Clamping height: HIGH type
With shims

CKQGD□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

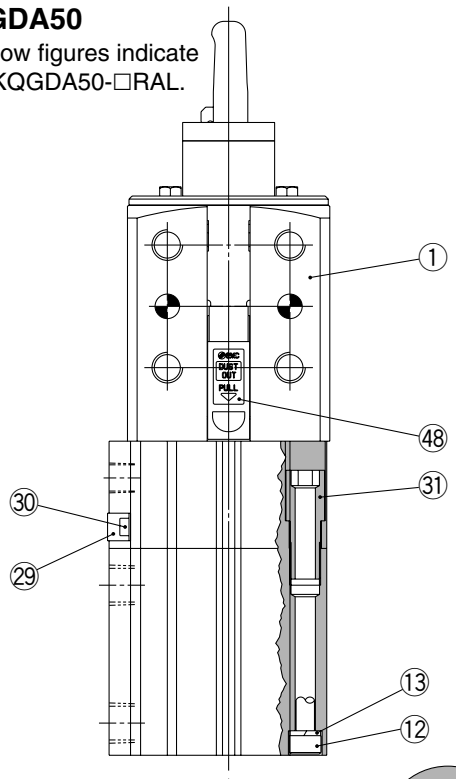
Component Parts

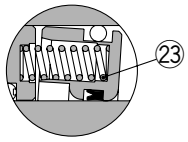
No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Piston**	Aluminum alloy	
21	**Piston rod**	Structural steel	
22	**Collar**	Aluminum alloy	
23	**Retaining ring**	Tool steel	
24	**Bushing**	Lead-bronze casted	
25	**Magnet**	—	
26	**Wear ring**	Resin	
27	**Piston seal**	NBR	
28	**Rod seal**	NBR	
29	**Tube gasket**	NBR	
30	**Coil scraper**	Bronze	
31	**Seal**	PET	

Construction

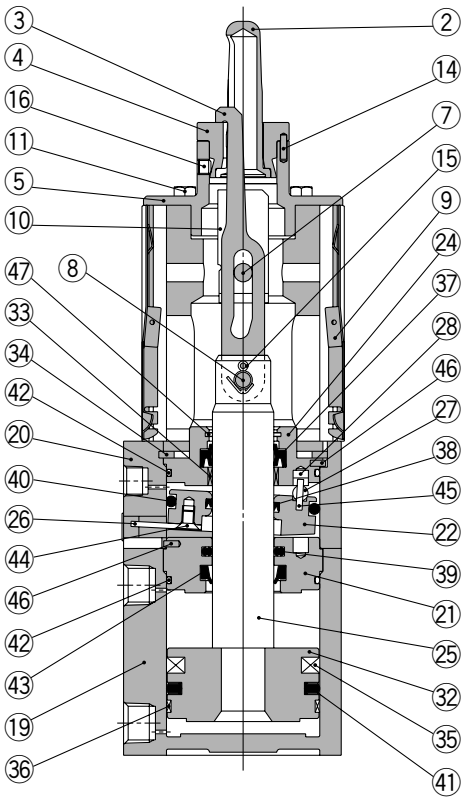
CLKQGDA50

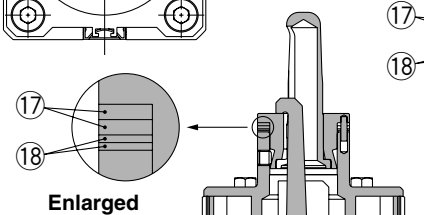
∗ The below figures indicate the CLKQGDA50-□RAL.





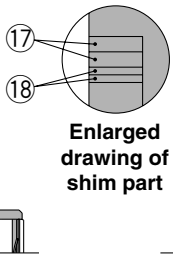
Section A-A



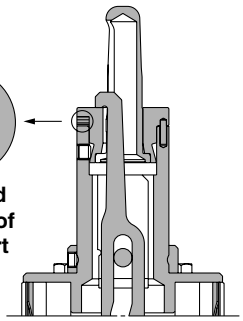


Enlarged drawing of shim part

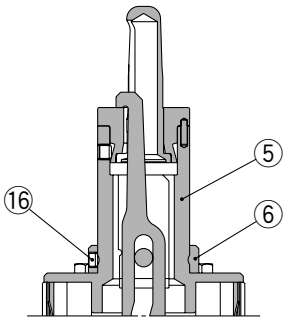
CLKQGD□50□-□R□LS
Clamping height: LOW type
With shims



Enlarged drawing of shim part



CLKQGD□50□-□R□HS
Clamping height: HIGH type
With shims



CLKQGD□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

Component Parts

No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Lock body**	Aluminum alloy	
21	**Intermediate collar**	Aluminum alloy	
22	**Lock ring**	Tool steel	
23	**Brake spring**	Steel wire	
24	**Collar**	Aluminum alloy	
25	**Piston rod**	Structural steel	
26	**Lever**	Stainless steel	
27	**Pivot pin**	Structural steel	
28	**Pivot key**	Structural steel	
29	**Dust cover**	Steel strip	
30	**Dust cover holding bolt**	Structural steel	
31	**Unit holding bolt**	Structural steel	
32	**Piston**	Aluminum alloy	

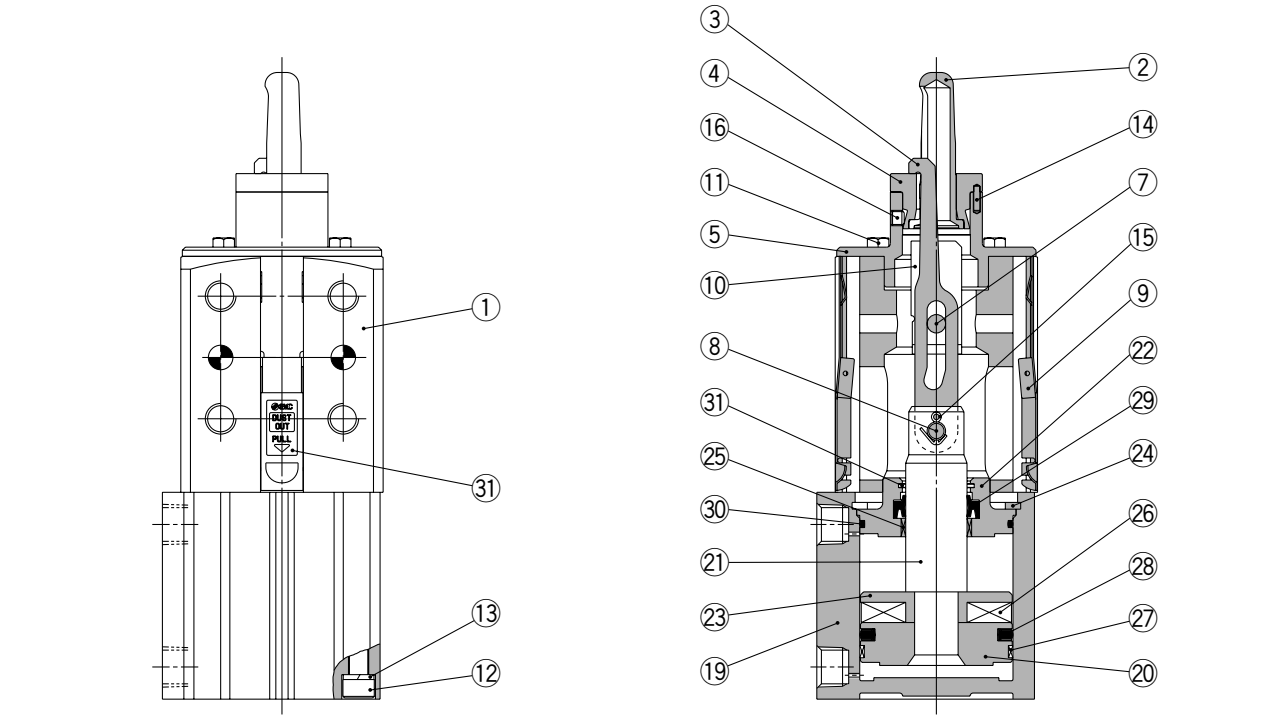
Component Parts

No.	Description	Material	Note
33	**Bushing**	Lead-bronze casted	
34	**Retaining ring**	Tool steel	
35	**Magnet**	—	
36	**Wear ring**	Resin	
37	**Rod seal A**	NBR	
38	**Rod seal B**	NBR	
39	**Rod seal C**	NBR	
40	**Piston seal A**	NBR	
41	**Piston seal B**	NBR	
42	**Tube gasket**	NBR	
43	**Scraper**	NBR	
44	**Hex. socket counter-sunk head screw**	Structural steel	
45	**Spring pin**	Tool steel	
46	**Parallel pin**	Stainless steel	
47	**Coil scraper**	Bronze	
48	**Seal**	PET	

Construction

CKQPDA50

∗ The below figures indicate the CKQPDA50-□RAL.



CKQPD□50□-□R□LS
Clamping height: LOW type
With shims

CKQPD□50□-□R□HS
Clamping height: HIGH type
With shims

CKQPD□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

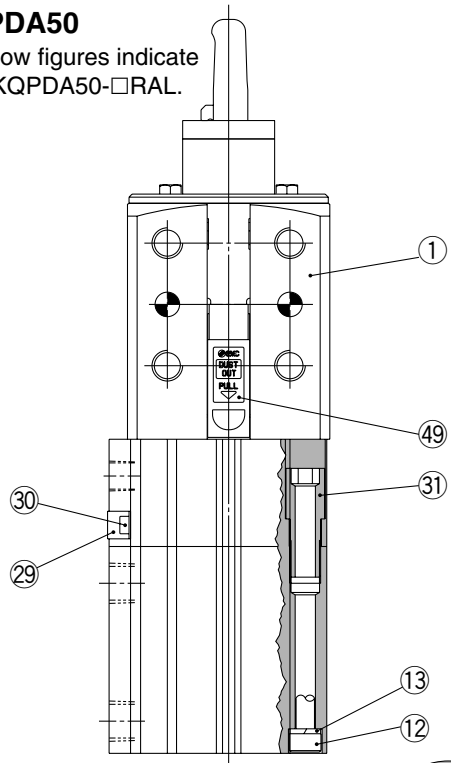
Component Parts

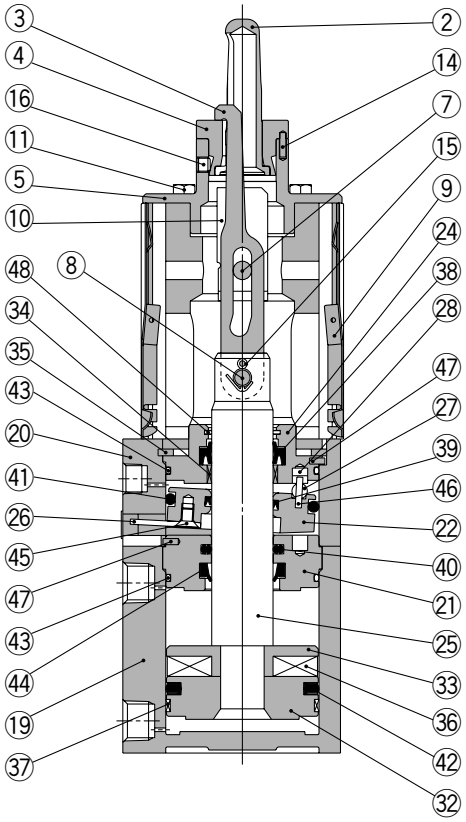
No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Piston**	Aluminum alloy	
21	**Piston rod**	Stainless steel	
22	**Collar**	Aluminum alloy	
23	**Magnet holder**	Aluminum alloy	
24	**Retaining ring**	Tool steel	
25	**Bushing**	Lead-bronze casted	
26	**Magnet**	—	
27	**Wear ring**	Resin	
28	**Piston seal**	NBR	
29	**Rod seal**	NBR	
30	**Tube gasket**	NBR	
31	**Coil scraper**	Bronze	
32	**Seal**	PET	

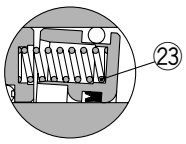
Construction

CLKQPDA50

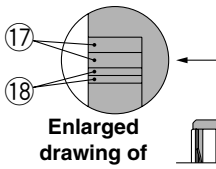
∗ The below figures indicate the CLKQPDA50-□RAL.



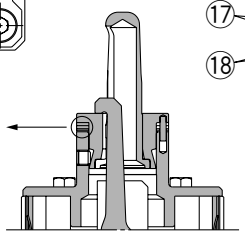




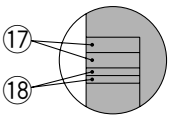
Section A-A



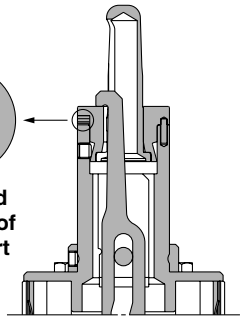
Enlarged drawing of shim part



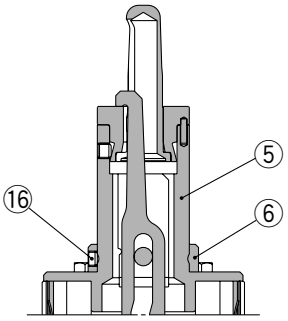
CLKQPD□50□-□R□LS
Clamping height: LOW type
With shims



Enlarged drawing of shim part



CLKQPD□50□-□R□HS
Clamping height: HIGH type
With shims



CLKQPD□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	
2	Guide pin	Stainless steel	
3	Clamp arm	Structural steel	
4	Seat	Stainless steel	
5	Guide tube	Structural steel	
6	Ring	Aluminum alloy	
7	Pin A	Structural steel	
8	Pin B	Structural steel	
9	Cover assembly	Stainless steel	
10	Spatter cover	Tough pitch copper	
11	Hexagon bolt	Structural steel	
12	Hexagon socket head cap screw	Stainless steel	
13	Spring washer	Stainless steel	
14	Parallel pin	Tool steel	
15	Cotter pin	Stainless steel	
16	Hexagon socket head set screw	Structural steel	
17	Shim A	Stainless steel	t = 1 mm

Component Parts

No.	Description	Material	Note
18	Shim B	Stainless steel	t = 0.5 mm
19	Cylinder tube	Aluminum alloy	
20	Lock body	Aluminum alloy	
21	Intermediate collar	Aluminum alloy	
22	Lock ring	Tool steel	
23	Brake spring	Steel wire	
24	Collar	Aluminum alloy	
25	Piston rod	Stainless steel	
26	Lever	Stainless steel	
27	Pivot pin	Structural steel	
28	Pivot key	Structural steel	
29	Dust cover	Steel strip	
30	Dust cover holding bolt	Structural steel	
31	Unit holding bolt	Structural steel	
32	Piston	Aluminum alloy	
33	Magnet holder	Aluminum alloy	
34	Bushing	Lead-bronze casted	

Component Parts

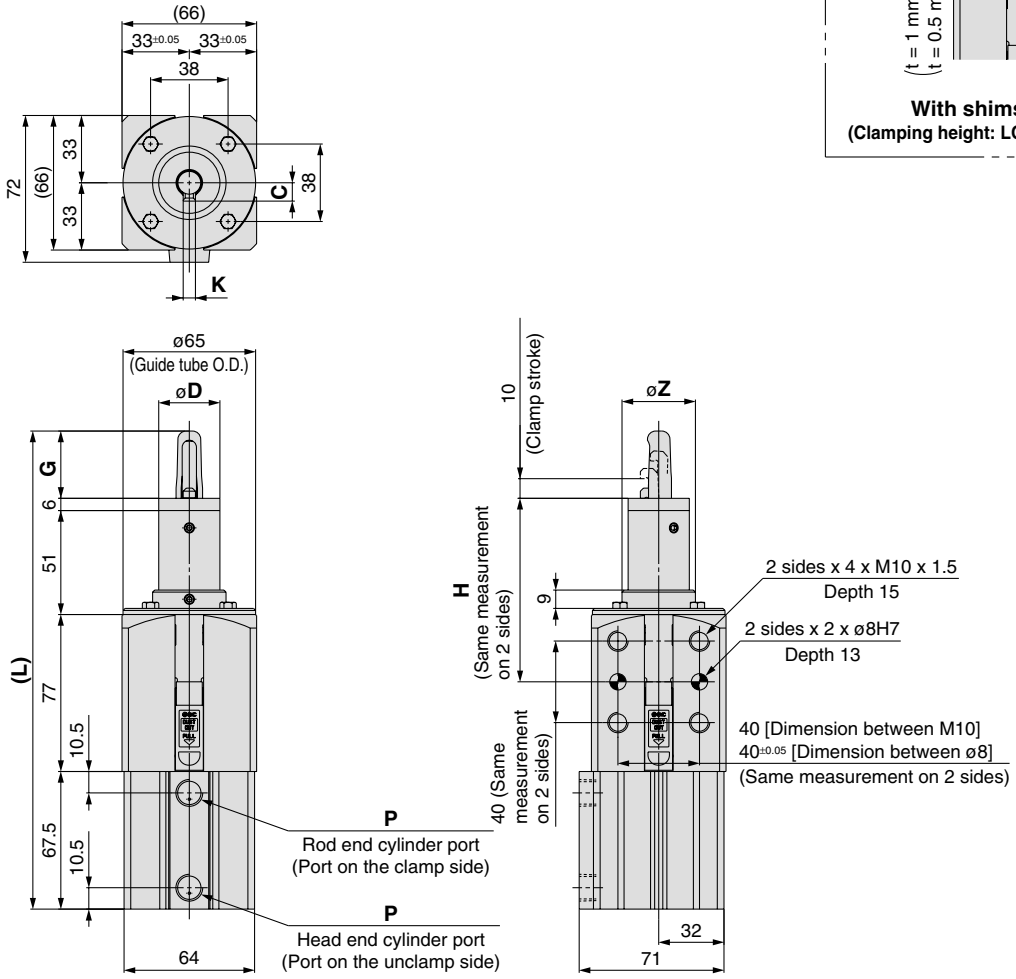
No.	Description	Material	Note
35	Retaining ring	Tool steel	
36	Magnet	—	
37	Wear ring	Resin	
38	Rod seal A	NBR	
39	Rod seal B	NBR	
40	Rod seal C	NBR	
41	Piston seal A	NBR	
42	Piston seal B	NBR	
43	Tube gasket	NBR	
44	Scraper	NBR	
45	Hex. socket counter-sunk head screw	Structural steel	
46	Spring pin	Tool steel	
47	Parallel pin	Stainless steel	
48	Coil scraper	Bronze	
49	Seal	PET	

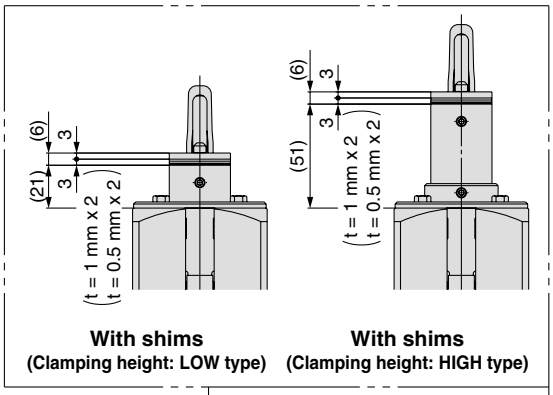
Dimensions

$CKQ^{G}_{P}DA50$

(**$CKQ^{G}_{P}DB50$** The angle of the cylinder port location against the mounting surface is 90°.)

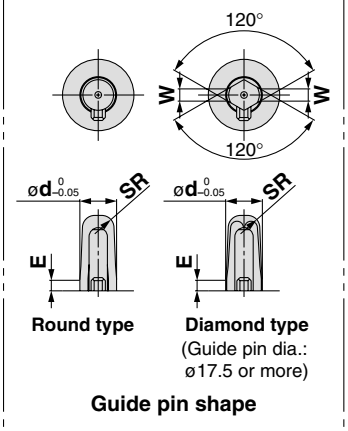
* Refer to "How to Order" on page 1268 for relationship between the mounting surface and a port location.
* The below figures indicate the $CKQ^{G}_{P}DA50$-□RAH.





With shims
(Clamping height: LOW type)

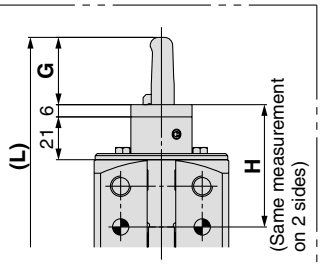
With shims
(Clamping height: HIGH type)



Round type

Diamond type
(Guide pin dia.:
ø17.5 or more)

Guide pin shape



Clamping height: LOW type

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø13	9	ø30	ø12.5	≈10	33	Without shims 60±0.05	Without shims 90±0.05	6	204.5	234.5	4	—	ø36
			ø12.7	≈9									
			ø12.8	≈8		With shims 60	With shims 90						
			ø12.9	≈8									
			ø13.0	≈7									
ø15	11	ø30	ø14.5	≈9	34	Without shims 60±0.05	Without shims 90±0.05	7	205.5	235.5	5	—	ø36
			ø14.7	≈8									
			ø14.8	≈8		With shims 60	With shims 90						
			ø14.9	≈7									
			ø15.0	≈7									
ø16	11	ø30	ø15.5	≈10	34	Without shims 60±0.05	Without shims 90±0.05	7	205.5	235.5	5.5	—	ø36
			ø15.7	≈9									
			ø15.8	≈8		With shims 60	With shims 90						
			ø15.9	≈8									
			ø16.0	≈7									

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø18	12	ø35	ø17.5	≈10	37	Without shims 60±0.05	Without shims 90±0.05	7	208.5	238.5	6	6	ø40
			ø17.7	≈9									
			ø17.8	≈8		With shims 60	With shims 90						
			ø17.9	≈8									
			ø18.0	≈7									
ø20	13	ø35	ø19.5	≈10	39	Without shims 60±0.05	Without shims 90±0.05	8	210.5	240.5	7	7	ø40
			ø19.7	≈9									
			ø19.8	≈8		With shims 60	With shims 90						
			ø19.9	≈8									
			ø20.0	≈7									
ø25	16	ø40	ø24.5	≈10	39	Without shims 60±0.05	Without shims 90±0.05	8	210.5	240.5	9.5	7	ø47
			ø24.7	≈9									
			ø24.8	≈8		With shims 60	With shims 90						
			ø24.9	≈8									
			ø25.0	≈7									
ø30	18	ø40	ø29.5	≈10	39	Without shims 60±0.05	Without shims 90±0.05	8	210.5	240.5	11	9	ø47
			ø29.7	≈9									
			ø29.8	≈8		With shims 60	With shims 90						
			ø29.9	≈8									
			ø30.0	≈7									

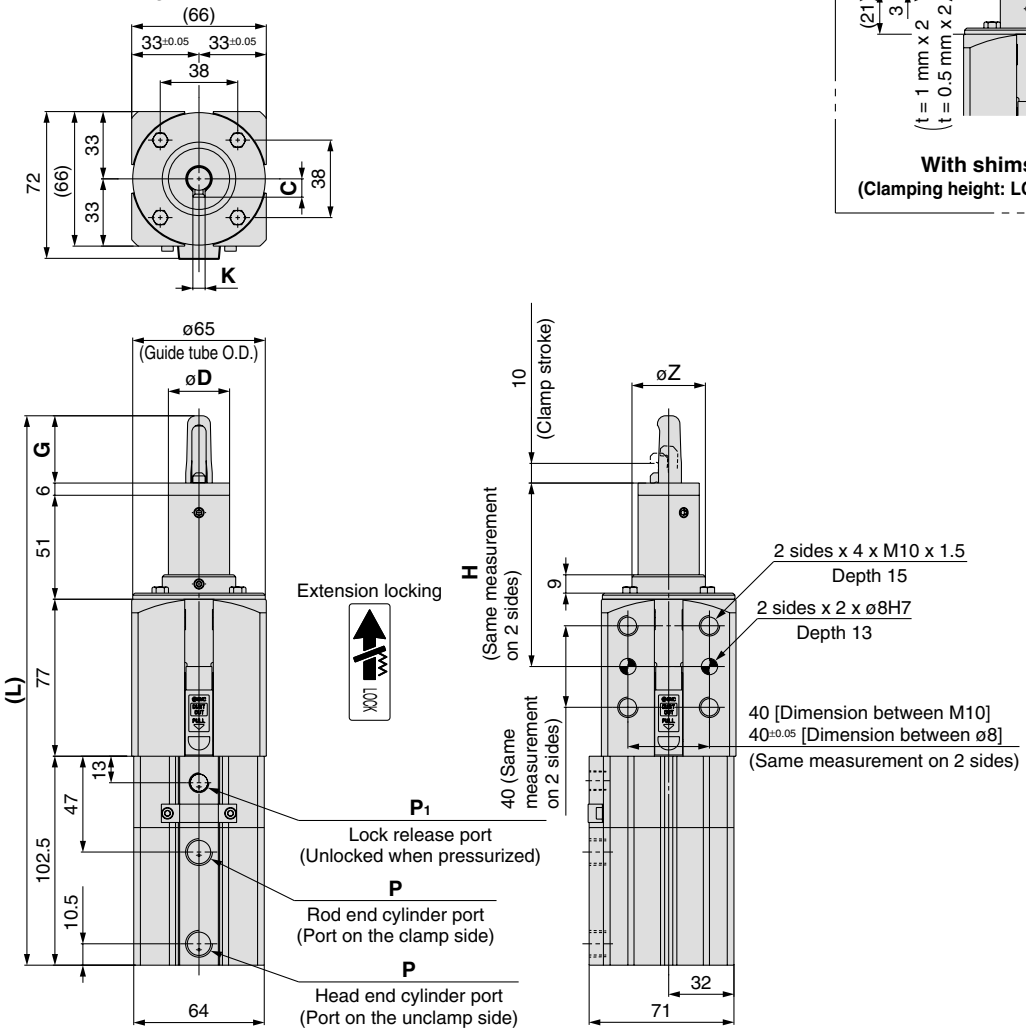
P		
Nil	TN	TF
Rc 1/4	NPT 1/4	G 1/4

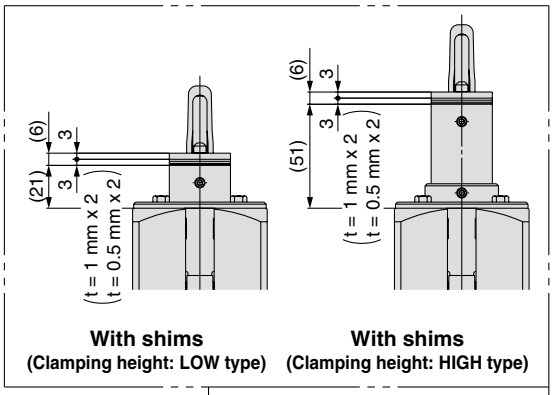
Dimensions

CLKQ$^{G}_{P}$DA50

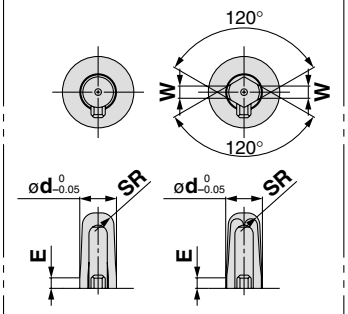
(**CLKQ$^{G}_{P}$DB50** The angle of the cylinder port location against the mounting surface is 90°.)

* Refer to "How to Order" on page 1268 for relationship between the mounting surface and a port location.
* The below figures indicate the CLKQ$^{G}_{P}$DA50-□RAH.



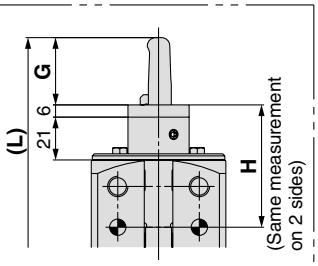


With shims (Clamping height: LOW type) **With shims (Clamping height: HIGH type)**



Round type **Diamond type** (Guide pin dia.: ø17.5 or more)

Guide pin shape



Clamping height: LOW type

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø13	9	ø30	ø12.5	≈10	33	Without shims 60±0.05	Without shims 90±0.05	6	239.5	269.5	4	—	ø36
			ø12.7	≈9									
			ø12.8	≈8		With shims 60	With shims 90						
			ø12.9	≈8									
			ø13.0	≈7									
ø15	11	ø30	ø14.5	≈9	34	Without shims 60±0.05	Without shims 90±0.05	7	240.5	270.5	5	—	ø36
			ø14.7	≈8									
			ø14.8	≈8		With shims 60	With shims 90						
			ø14.9	≈7									
			ø15.0	≈7									
ø16	11	ø30	ø15.5	≈10	34	Without shims 60±0.05	Without shims 90±0.05	7	240.5	270.5	5.5	—	ø36
			ø15.7	≈9									
			ø15.8	≈8		With shims 60	With shims 90						
			ø15.9	≈8									
			ø16.0	≈7									

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø18	12	ø35	ø17.5	≈10	37	Without shims 60±0.05	Without shims 90±0.05	7	243.5	273.5	6	6	ø40
			ø17.7	≈9									
			ø17.8	≈8		With shims 60	With shims 90						
			ø17.9	≈8									
			ø18.0	≈7									
ø20	13	ø35	ø19.5	≈10	39	Without shims 60±0.05	Without shims 90±0.05	8	245.5	275.5	7	7	ø40
			ø19.7	≈9									
			ø19.8	≈8		With shims 60	With shims 90						
			ø19.9	≈8									
			ø20.0	≈7									
ø25	16	ø40	ø24.5	≈10	39	Without shims 60±0.05	Without shims 90±0.05	8	245.5	275.5	9.5	7	ø47
			ø24.7	≈9									
			ø24.8	≈8		With shims 60	With shims 90						
			ø24.9	≈8									
			ø25.0	≈7									
ø30	18	ø40	ø29.5	≈10	39	Without shims 60±0.05	Without shims 90±0.05	8	245.5	275.5	11	9	ø47
			ø29.7	≈9									
			ø29.8	≈8		With shims 60	With shims 90						
			ø29.9	≈8									
			ø30.0	≈7									

P			P1		
Nil	TN	TF	Nil	TN	TF
Rc 1/4	NPT 1/4	G 1/4	Rc 1/8	NPT 1/8	G 1/8

Pin Clamp Cylinder U series

Series CKQ$^{G}_{P}$U/CLKQ$^{G}_{P}$U

How to Order

Built-in standard magnet
With magnetic field resistant auto switch

C□KQGU**A**50□-177**R**A**L**□-P4DWSC□

Built-in strong magnet
With magnetic field resistant auto switch

C□KQPU**A**50□-198**R**A**L**□-P79WSE□

With lock on the clamp side

Nil	Without lock
L	With lock

Mounting surface (viewed from top)

Symbol	Port location
A	Port, Mounting surface
B	Port, Mounting surface

Bore size

50	50 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Guide pin diameter

∗ For guide pin diameter, refer to Table 1 below.

Body shape

Symbol	Dimension	Mounting hole (tap, pin hole) arrangement		Mounting	Mounting surface (viewed from top)
U	□66		○: Mounting tap ◔: Pin hole	Mounting tap: 2 x M10 x 1.5 Pin hole: 2 x ø8H7	 Mounting surface (Two facing sides)

Guide pin shape

R	Round type
D	Diamond type∗

∗ Diamond type guide pin diameter is ø17.5 or more.

Number of auto switches

Nil	2 pcs.
S	1 pc. (Unclamp side)

∗ The D-P4/P7 type is different-surface mounting. (Refer to page 1308.)

Auto switch type

Nil	Without auto switch (Built-in magnet)

∗ For applicable auto switch models, refer to page 1279.
∗ Auto switches are included, (but not assembled).

Shim

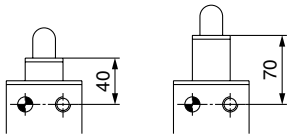
Nil	Without shims
S	With 3 mm shims∗

∗ When a model includes shims, two 1 mm shims and two 0.5 mm shims are attached.

Clamping height (Refer to the below figure.)

L	LOW type (40 mm)
H	HIGH type (70 mm)

LOW type **HIGH type**



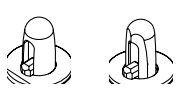
Clamping height

Clamp arm position (clockwise viewed from top)

A	Same direction as port Port, Clamp arm, Guide pin	**C**	180° from port Port, Guide pin, Clamp arm
B	90° from port Port, Clamp arm, Guide pin	**D**	270° from port Port, Clamp arm, Guide pin

Table 1. Guide Pin Diameter

Symbol	125	127	128	129	130	145	147	148	149	150	155	157	158	159	160
Guide pin diameter	12.5	12.7	12.8	12.9	13.0	14.5	14.7	14.8	14.9	15.0	15.5	15.7	15.8	15.9	16.0
Applicable hole diameter of workpiece	For ø13					For ø15					For ø16				
Guide pin shape	Round type														



Round type **Diamond type**

Symbol	175	177	178	179	180	195	197	198	199	200	245	247	248	249	250	295	297	298	299	300
Guide pin diameter	17.5	17.7	17.8	17.9	18.0	19.5	19.7	19.8	19.9	20.0	24.5	24.7	24.8	24.9	25.0	29.5	29.7	29.8	29.9	30.0
Applicable hole diameter of workpiece	For ø18					For ø20					For ø25					For ø30				
Guide pin shape	Round type, Diamond type																			

Table 2. Applicable Auto Switches / For detailed specifications about an auto switch for itself, refer to pages 1719 to 1827.

Applicable cylinder series	Type	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no in use)	Load voltage	Lead wire length	Applicable load
Series C(L)KQG	**Solid state auto switch**	**D-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 Note 1)
		D-P4DWSE				2-wire (1–4)			
		D-P4DWL		Grommet		2-wire		3 m	
		D-P4DWZ						5 m	
Series C(L)KQP	**Reed auto switch**	**D-P79WSE**	DC/AC magnetic field	Pre-wired connector	2-color display	2-wire (1–4)	24 VDC	0.3 m	
		D-P74L		Grommet	1-color display	2-wire	24 VDC 100 VAC	3 m	
		D-P74Z						5 m	

Note 1) PLC: Programmable Logic Controller
Note 2) There are other applicable auto switches other than the listed above. For details, refer to page 1307.

Series CKQ$^{G}_{P}$U/CLKQ$^{G}_{P}$U

Basic Specifications

Action	Double acting	
Bore size (mm)	50	
Fluid	Air	
Minimum operating pressure	CKQ□: 0.1 MPa	CLKQ□ (With lock): 0.15 MPa*
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Cushion	None	
Lubrication	Non-lube	
Piston speed (Clamp speed)	50 to 150 mm/sec	
Port size (Cylinder port)	1/4 (Rc, NPT, G)	

* Minimum operating pressure is 0.2 MPa when cylinder part and locking part use the same piping.

Proof Pressure/Maximum Operating Pressure

Guide pin diameter	Proof pressure	Max. operating pressure
ø12.5 to ø13.0	1.0 MPa	0.7 MPa
ø14.5 to ø30.0	1.5 MPa	1.0 MPa

Clamp Specifications

Clamp stroke	Without shims	With shims
	10 mm	10 to 13 mm
Clamp arm	1 pc.	
Guide pin shape	Round type, Diamond type	

* Refer to the below "Clamp Specifications" and Selection regarding detailed specifications of the clamping force, etc.
* Diamond type guide pin diameter is ø17.5 or more.

Lock Specifications

Locking action	Spring locking (Exhaust locking)
Unlocking pressure	0.2 MPa or more
Lock starting pressure	0.05 MPa or less
Locking direction	Lock at extended direction (Clamp holding)
Port size (Lock release port)	1/8 (Rc, NPT, G)
Holding force (N) (Maximum static load)	982

Mass

Unit: kg

Model	C(L)KQ$^{G}_{P}$U			
Guide pin diameter (mm)	Without lock		With lock	
	L	H	L	H
ø12.5 to 13.0	1.67	1.84	2.19	2.36
ø14.5 to 15.0	1.67	1.84	2.19	2.36
ø15.5 to 16.0	1.68	1.85	2.19	2.36
ø17.5 to 18.0	1.72	1.9	2.24	2.41
ø19.5 to 20.0	1.73	1.91	2.24	2.42
ø24.5 to 25.0	1.79	2	2.3	2.51
ø29.5 to 30.0	1.83	2.04	2.35	2.55

Clamp Specifications

(N)

Model	Guide pin diameter	Operating pressure (MPa)								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CKQ$^{G}_{P}$	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	—	—	—
	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2	1484.1
CLKQ$^{G}_{P}$	ø12.5 to ø13.0	82.4	247.3	412.2	577.1	742.0	906.9	—	—	—
	ø14.5 to ø30.0	82.4	247.3	412.2	577.1	742.0	906.9	Note 1) 1071.8	Note 1) 1236.7	Note 1) 1401.6

Note 1) Lock holding force of the CLKQ□ is 982 N. Design the circuit such that the lock holding force is taken into consideration when the operating pressure exceeds 0.75 MPa. The operating pressure should be not greater than the lock holding force as it may cause wearing out and/or damage of the locking part and shorten lock life and may lead to possible failure if applied with a load larger than the lock holding force.

Note 2) It takes approximately 0.3 seconds for the cylinder to operate to generate clamping force from an unclamping state (when no speed controller is installed). Design circuit taking into consideration the time before the clamping force is generated.

Note 3) Determine the clamping force according to the strength of the workpiece. It can be damaged if the clamping force is too large.

Maintenance Parts

Replacement Parts: Seal Kit

Kit No.	Content
CQ2B50-PS	Piston seal Rod seal Tube gasket

* Consult SMC for maintenance service. Seal kit for maintenance of the CLKQ$^{G}_{P}$ series with lock is not available.

Replacement Parts: Grease Pack

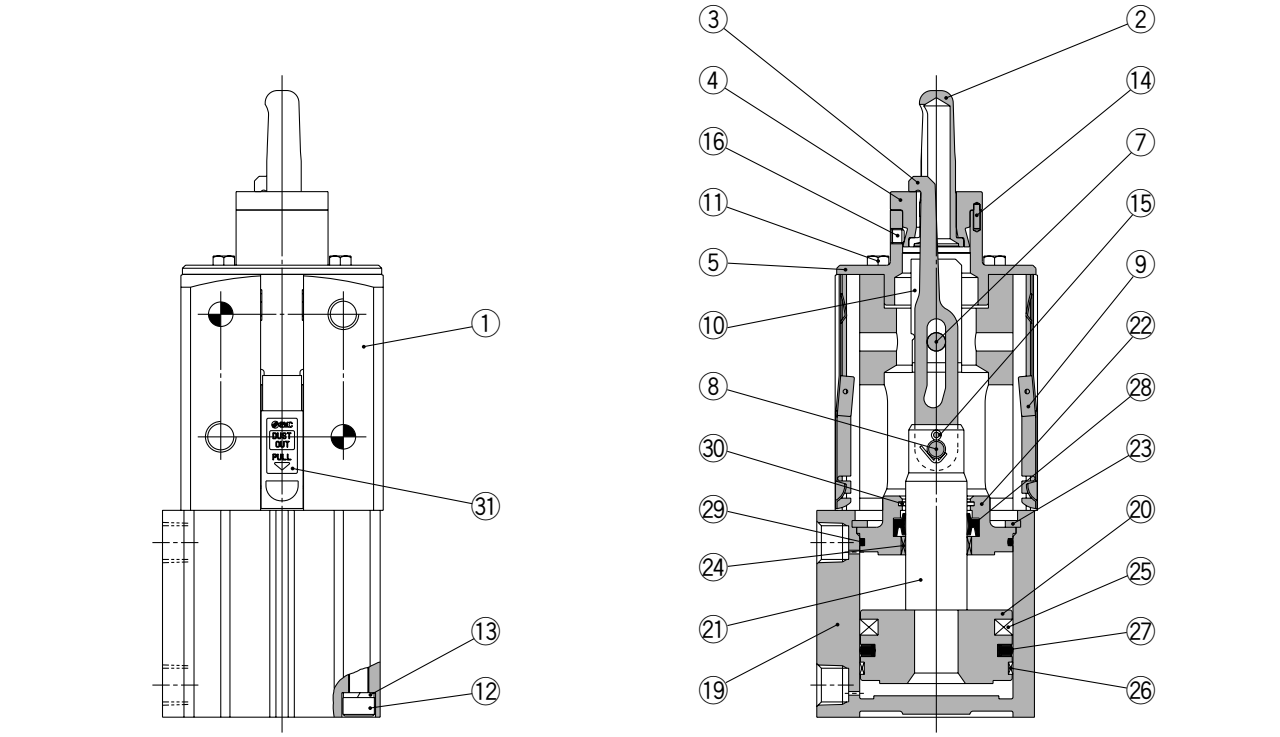
Kit No.	Content
GR-S-010	Grease 10 g

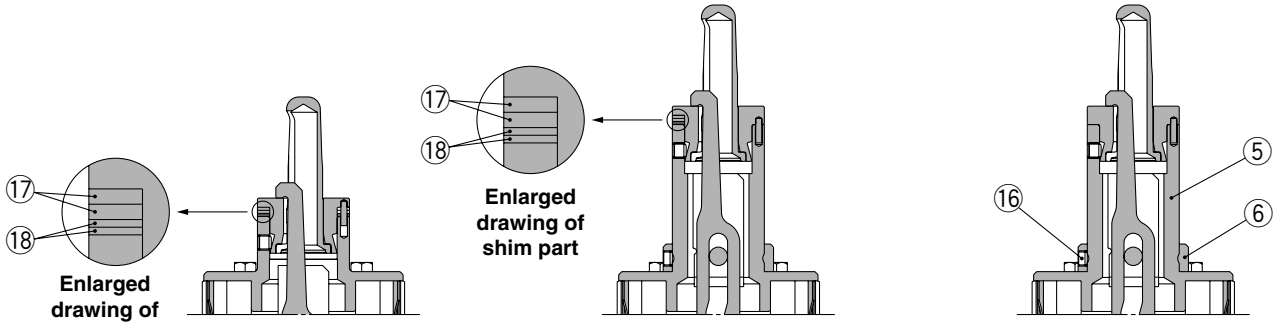
* Consult SMC when replacing the actuating cylinders.

Construction

CKQGUA50

∗ The below figures indicate the CKQGUA50-□RAL.





CKQGU□50□-□R□LS
Clamping height: LOW type
With shims

CKQGU□50□-□R□HS
Clamping height: HIGH type
With shims

CKQGU□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

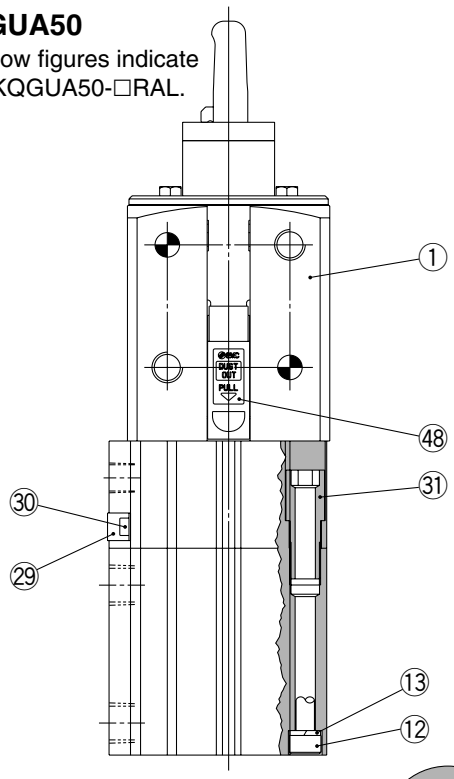
Component Parts

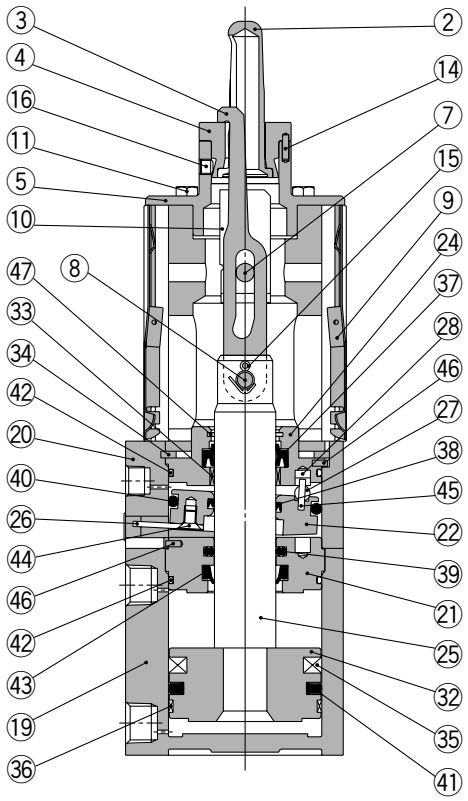
No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Piston**	Aluminum alloy	
21	**Piston rod**	Structural steel	
22	**Collar**	Aluminum alloy	
23	**Retaining ring**	Tool steel	
24	**Bushing**	Lead-bronze casted	
25	**Magnet**	—	
26	**Wear ring**	Resin	
27	**Piston seal**	NBR	
28	**Rod seal**	NBR	
29	**Tube gasket**	NBR	
30	**Coil scraper**	Bronze	
31	**Seal**	PET	

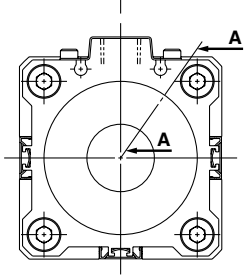
Construction

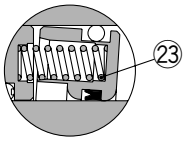
CLKQGUA50

∗ The below figures indicate the CLKQGUA50-□RAL.

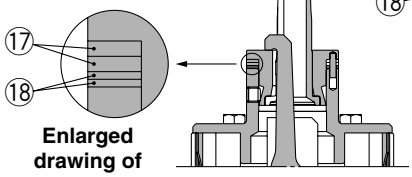






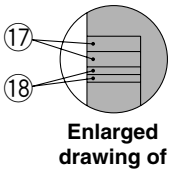


Section A-A

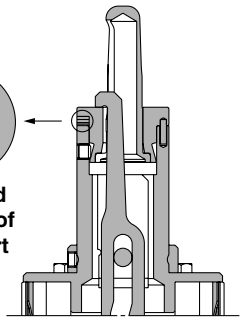


Enlarged drawing of shim part

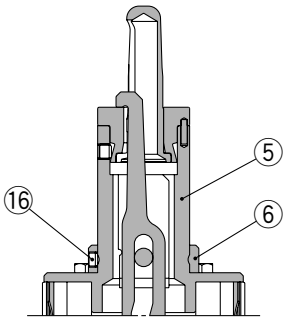
CLKQGU□50□-□R□LS
Clamping height: LOW type
With shims



Enlarged drawing of shim part



CLKQGU□50□-□R□HS
Clamping height: HIGH type
With shims



CLKQGU□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	
2	Guide pin	Stainless steel	
3	Clamp arm	Structural steel	
4	Seat	Stainless steel	
5	Guide tube	Structural steel	
6	Ring	Aluminum alloy	
7	Pin A	Structural steel	
8	Pin B	Structural steel	
9	Cover assembly	Stainless steel	
10	Spatter cover	Tough pitch copper	
11	Hexagon bolt	Structural steel	
12	Hexagon socket head cap screw	Stainless steel	
13	Spring washer	Stainless steel	
14	Parallel pin	Tool steel	
15	Cotter pin	Stainless steel	
16	Hexagon socket head set screw	Structural steel	

Component Parts

No.	Description	Material	Note
17	Shim A	Stainless steel	t = 1 mm
18	Shim B	Stainless steel	t = 0.5 mm
19	Cylinder tube	Aluminum alloy	
20	Lock body	Aluminum alloy	
21	Intermediate collar	Aluminum alloy	
22	Lock ring	Tool steel	
23	Brake spring	Steel wire	
24	Collar	Aluminum alloy	
25	Piston rod	Structural steel	
26	Lever	Stainless steel	
27	Pivot pin	Structural steel	
28	Pivot key	Structural steel	
29	Dust cover	Steel strip	
30	Dust cover holding bolt	Structural steel	
31	Unit holding bolt	Structural steel	
32	Piston	Aluminum alloy	

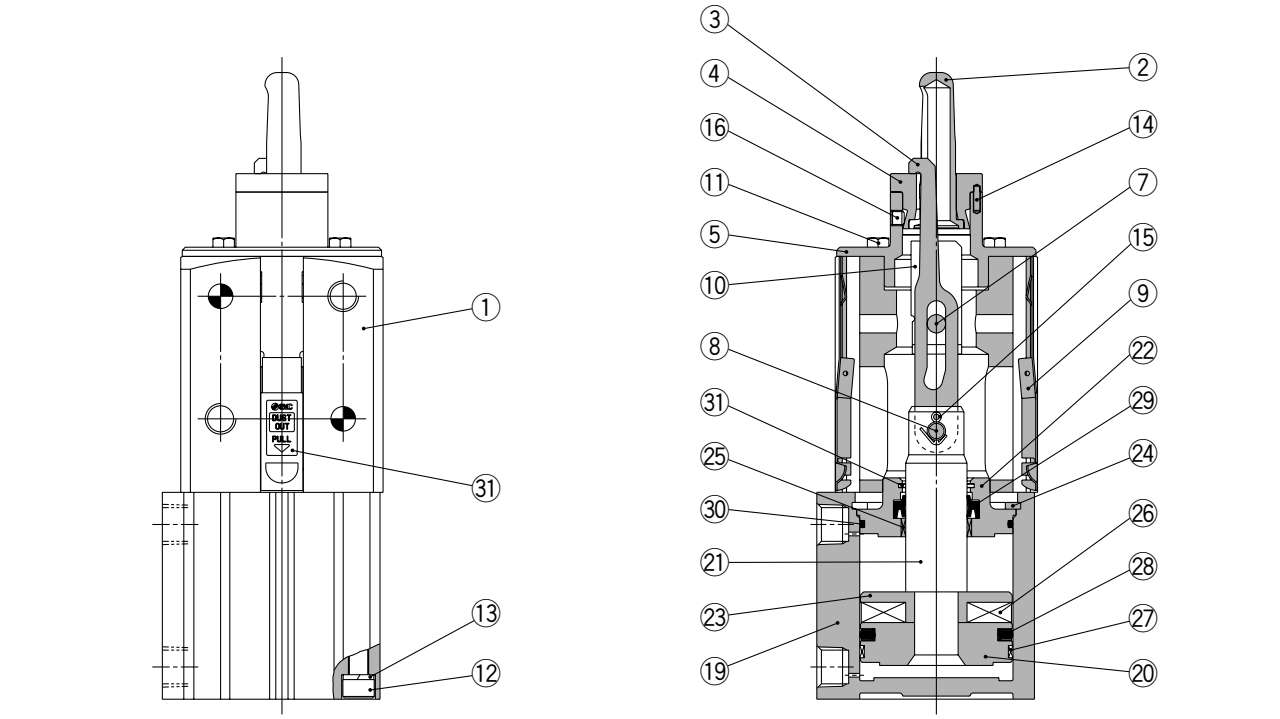
Component Parts

No.	Description	Material	Note
33	Bushing	Lead-bronze casted	
34	Retaining ring	Tool steel	
35	Magnet	—	
36	Wear ring	Resin	
37	Rod seal A	NBR	
38	Rod seal B	NBR	
39	Rod seal C	NBR	
40	Piston seal A	NBR	
41	Piston seal B	NBR	
42	Tube gasket	NBR	
43	Scraper	NBR	
44	Hex. socket counter-sunk head screw	Structural steel	
45	Spring pin	Tool steel	
46	Parallel pin	Stainless steel	
47	Coil scraper	Bronze	
48	Seal	PET	

Construction

CKQPUA50

∗ The below figures indicate the CKQPUA50-□RAL.



CKQPU□50□-□R□LS
Clamping height: LOW type
With shims

CKQPU□50□-□R□HS
Clamping height: HIGH type
With shims

CKQPU□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

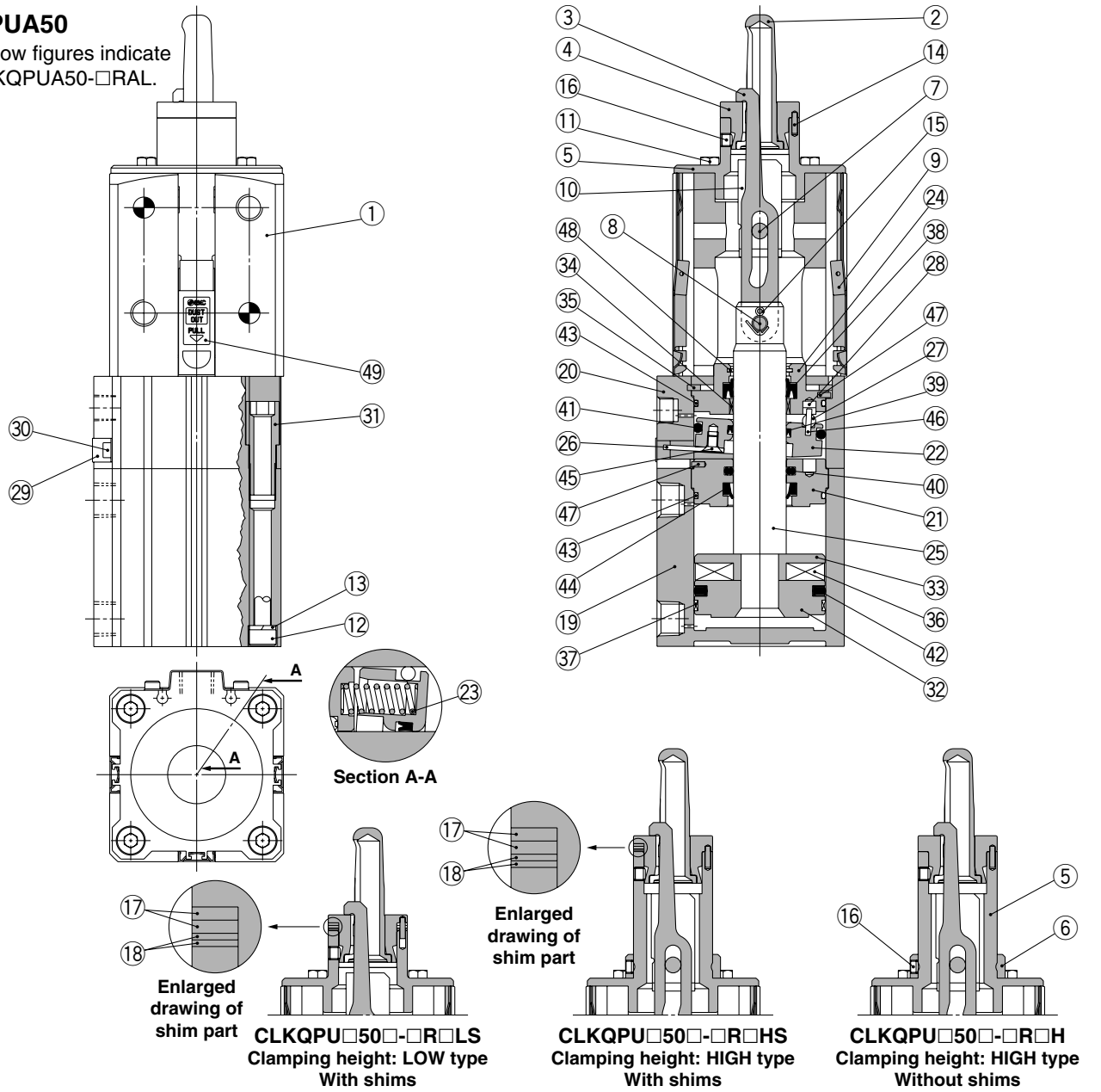
Component Parts

No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Piston**	Aluminum alloy	
21	**Piston rod**	Stainless steel	
22	**Collar**	Aluminum alloy	
23	**Magnet holder**	Aluminum alloy	
24	**Retaining ring**	Tool steel	
25	**Bushing**	Lead-bronze casted	
26	**Magnet**	—	
27	**Wear ring**	Resin	
28	**Piston seal**	NBR	
29	**Rod seal**	NBR	
30	**Tube gasket**	NBR	
31	**Coil scraper**	Bronze	
32	**Seal**	PET	

Construction

CLKQPUA50

∗ The below figures indicate the CLKQPUA50-□RAL.



CLKQPU□50□-□R□LS
Clamping height: LOW type
With shims

CLKQPU□50□-□R□HS
Clamping height: HIGH type
With shims

CLKQPU□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	
17	**Shim A**	Stainless steel	t = 1 mm

Component Parts

No.	Description	Material	Note
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Lock body**	Aluminum alloy	
21	**Intermediate collar**	Aluminum alloy	
22	**Lock ring**	Tool steel	
23	**Brake spring**	Steel wire	
24	**Collar**	Aluminum alloy	
25	**Piston rod**	Stainless steel	
26	**Lever**	Stainless steel	
27	**Pivot pin**	Structural steel	
28	**Pivot key**	Structural steel	
29	**Dust cover**	Steel strip	
30	**Dust cover holding bolt**	Structural steel	
31	**Unit holding bolt**	Structural steel	
32	**Piston**	Aluminum alloy	
33	**Magnet holder**	Aluminum alloy	
34	**Bushing**	Lead-bronze casted	

Component Parts

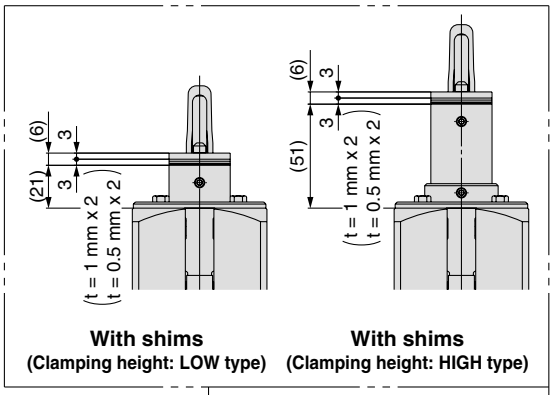
No.	Description	Material	Note
35	**Retaining ring**	Tool steel	
36	**Magnet**	—	
37	**Wear ring**	Resin	
38	**Rod seal A**	NBR	
39	**Rod seal B**	NBR	
40	**Rod seal C**	NBR	
41	**Piston seal A**	NBR	
42	**Piston seal B**	NBR	
43	**Tube gasket**	NBR	
44	**Scraper**	NBR	
45	**Hex. socket counter-sunk head screw**	Structural steel	
46	**Spring pin**	Tool steel	
47	**Parallel pin**	Stainless steel	
48	**Coil scraper**	Bronze	
49	**Seal**	PET	

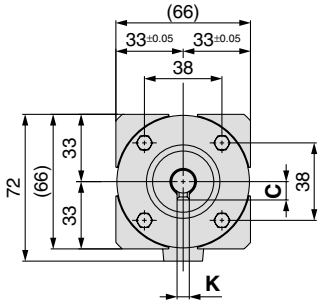
Dimensions

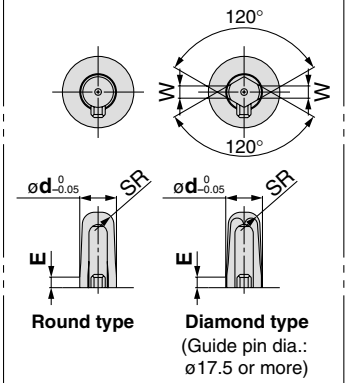
$CKQ^{G}_{P}UA50$

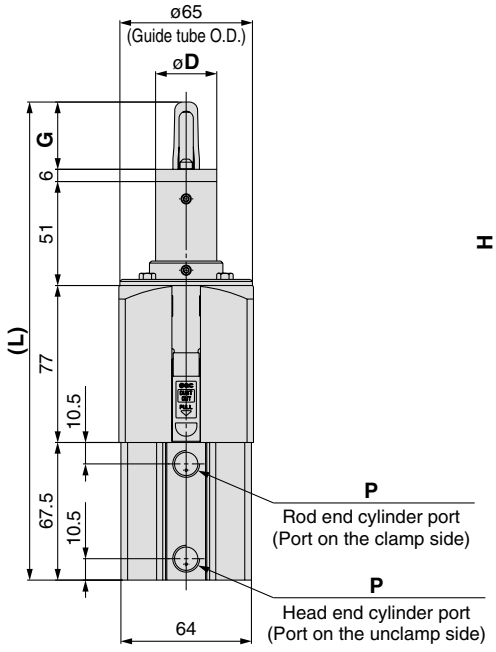
(**$CKQ^{G}_{P}UB50$** The angle of the cylinder port location against the mounting surface is 90°.)

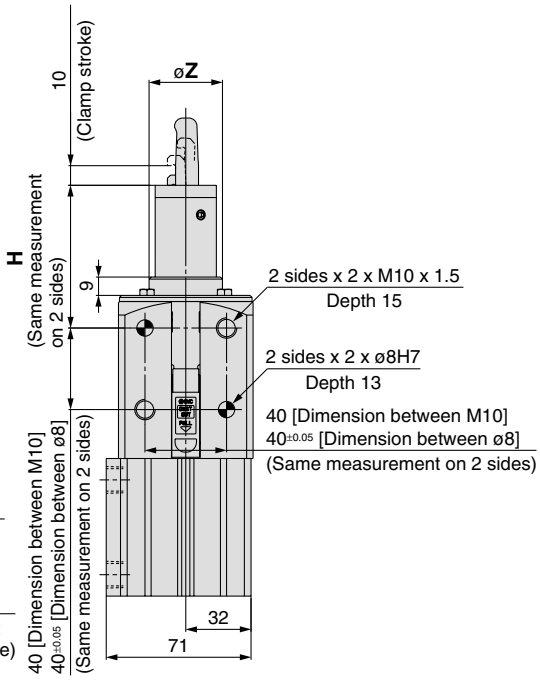
* Refer to "How to Order" on page 1278 for relationship between the mounting surface and a port location.
* The below figures indicate the $CKQ^{G}_{P}UA50$-□RAH.

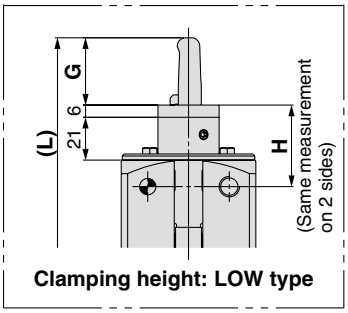












Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø13	9	ø30	ø12.5	≈10	33	Without shims 40±0.05	Without shims 70±0.05	6	204.5	234.5	4	—	ø36
			ø12.7	≈9									
			ø12.8	≈8		With shims 40	With shims 70						
			ø12.9	≈8									
			ø13.0	≈7									
ø15	11	ø30	ø14.5	≈9	34	Without shims 40±0.05	Without shims 70±0.05	7	205.5	235.5	5	—	ø36
			ø14.7	≈8									
			ø14.8	≈8		With shims 40	With shims 70						
			ø14.9	≈7									
			ø15.0	≈7									
ø16	11	ø30	ø15.5	≈10	34	Without shims 40±0.05	Without shims 70±0.05	7	205.5	235.5	5.5	—	ø36
			ø15.7	≈9									
			ø15.8	≈8		With shims 40	With shims 70						
			ø15.9	≈8									
			ø16.0	≈7									

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø18	12	ø35	ø17.5	≈10	37	Without shims 40±0.05	Without shims 70±0.05	7	208.5	238.5	6	6	ø40
			ø17.7	≈9									
			ø17.8	≈8		With shims 40	With shims 70						
			ø17.9	≈8									
			ø18.0	≈7									
ø20	13	ø35	ø19.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	7	7	ø40
			ø19.7	≈9									
			ø19.8	≈8		With shims 40	With shims 70						
			ø19.9	≈8									
			ø20.0	≈7									
ø25	16	ø40	ø24.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	9.5	7	ø47
			ø24.7	≈9									
			ø24.8	≈8		With shims 40	With shims 70						
			ø24.9	≈8									
			ø25.0	≈7									
ø30	18	ø40	ø29.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	11	9	ø47
			ø29.7	≈9									
			ø29.8	≈8		With shims 40	With shims 70						
			ø29.9	≈8									
			ø30.0	≈7									

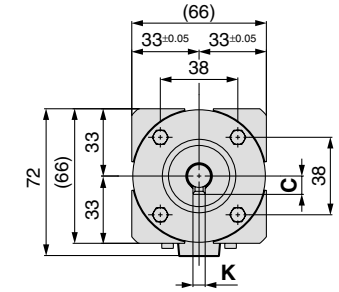
P		
Nil	TN	TF
Rc 1/4	NPT 1/4	G 1/4

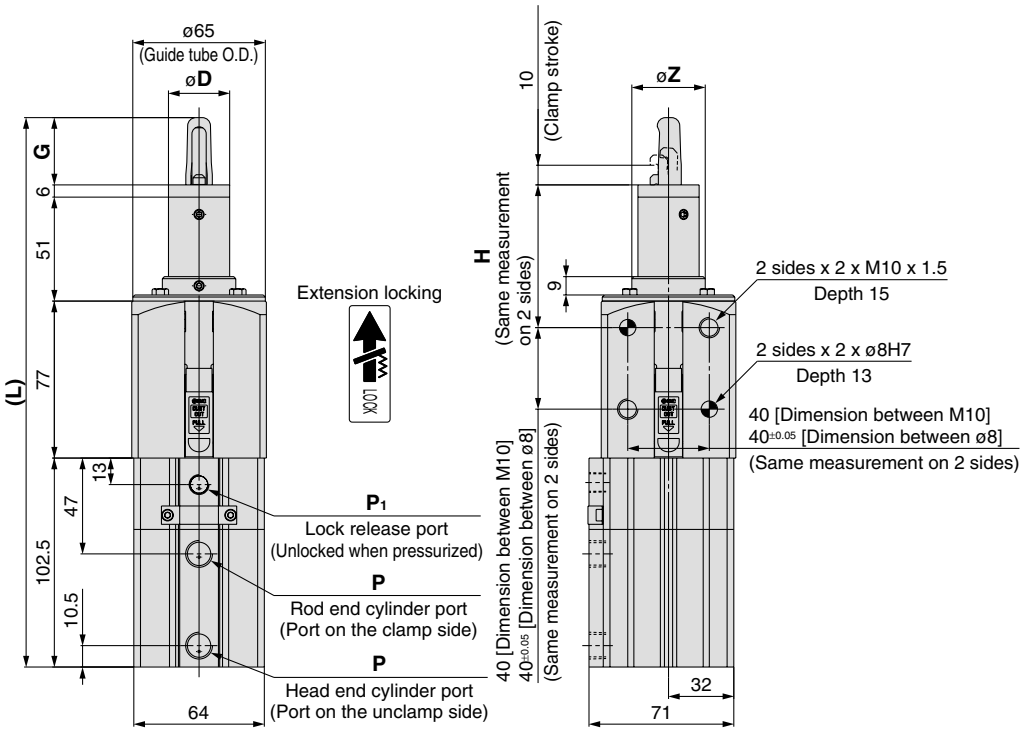
Dimensions

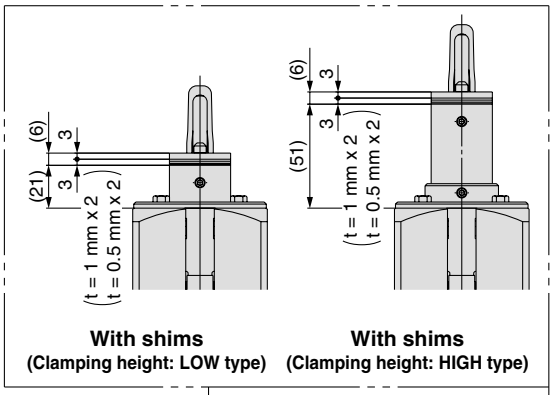
CLKQ$^{G}_{P}$UA50

(**CLKQ$^{G}_{P}$UB50** The angle of the cylinder port location against the mounting surface is 90°.)

* Refer to "How to Order" on page 1278 for relationship between the mounting surface and a port location.
* The below figures indicate the CLKQ$^{G}_{P}$UA50-□RAH.

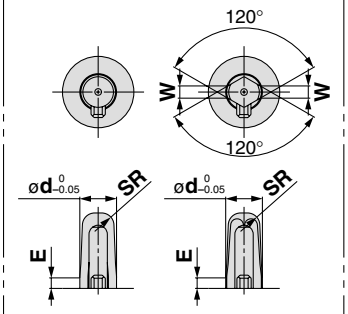






With shims
(Clamping height: LOW type)

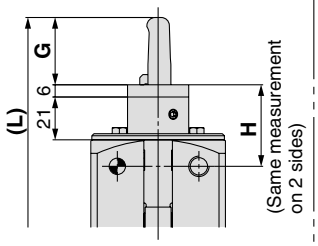
With shims
(Clamping height: HIGH type)



Round type

Diamond type
(Guide pin dia.:
ø17.5 or more)

Guide pin shape



Clamping height: LOW type

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø13	9	ø30	ø12.5	≈10	33	Without shims 40±0.05	Without shims 70±0.05	6	239.5	269.5	4	—	ø36
			ø12.7	≈9									
			ø12.8	≈8		With shims 40	With shims 70						
			ø12.9	≈8									
			ø13.0	≈7									
ø15	11	ø30	ø14.5	≈9	34	Without shims 40±0.05	Without shims 70±0.05	7	240.5	270.5	5	—	ø36
			ø14.7	≈8									
			ø14.8	≈8		With shims 40	With shims 70						
			ø14.9	≈7									
			ø15.0	≈7									
ø16	11	ø30	ø15.5	≈10	34	Without shims 40±0.05	Without shims 70±0.05	7	240.5	270.5	5.5	—	ø36
			ø15.7	≈9									
			ø15.8	≈8		With shims 40	With shims 70						
			ø15.9	≈8									
			ø16.0	≈7									

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø18	12	ø35	ø17.5	≈10	37	Without shims 40±0.05	Without shims 70±0.05	7	243.5	273.5	6	6	ø40
			ø17.7	≈9									
			ø17.8	≈8		With shims 40	With shims 70						
			ø17.9	≈8									
			ø18.0	≈7									
ø20	13	ø35	ø19.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	7	7	ø40
			ø19.7	≈9									
			ø19.8	≈8		With shims 40	With shims 70						
			ø19.9	≈8									
			ø20.0	≈7									
ø25	16	ø40	ø24.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	9.5	7	ø47
			ø24.7	≈9									
			ø24.8	≈8		With shims 40	With shims 70						
			ø24.9	≈8									
			ø25.0	≈7									
ø30	18	ø40	ø29.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	11	9	ø47
			ø29.7	≈9									
			ø29.8	≈8		With shims 40	With shims 70						
			ø29.9	≈8									
			ø30.0	≈7									

P			P1		
Nil	TN	TF	Nil	TN	TF
Rc 1/4	NPT 1/4	G 1/4	Rc 1/8	NPT 1/8	G 1/8

Pin Clamp Cylinder

K series

Series CKQ$^{G}_{P}$K/CLKQ$^{G}_{P}$K

How to Order

Built-in standard magnet
With magnetic field resistant auto switch

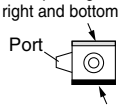
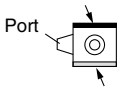
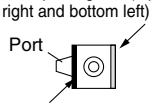
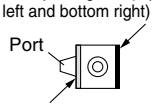
Built-in strong magnet
With magnetic field resistant auto switch

C	□	KQG	K	C	50	□	–	177	R	A	L	□	–	P4DWSC	□
C	□	KQP	K	C	50	□	–	198	R	A	L	□	–	P79WSE	□

With lock on the clamp side

Nil	Without lock
L	With lock

Mounting surface (viewed from top)

Symbol	Port location	Symbol	Port location
C	Mounting surface with the taps diagonal (top right and bottom left)  Mounting surface with the taps diagonal (top left and bottom right)	**E**	Mounting surface with the taps diagonal (top left and bottom right)  Mounting surface with the taps diagonal (top right and bottom left)
D	Mounting surface with the taps diagonal (top right and bottom left)  Mounting surface with the taps diagonal (top left and bottom right)	**F**	Mounting surface with the taps diagonal (top left and bottom right)  Mounting surface with the taps diagonal (top right and bottom left)

Bore size

50	50 mm

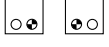
Port thread type

Nil	Rc
TN	NPT
TF	G

Guide pin diameter

∗ For guide pin diameter, refer to Table 1 below.

Body shape

Symbol	Dimension	Mounting hole (tap, pin hole) arrangement		Mounting	Mounting surface (viewed from top)
K	□66		○: Mounting tap ◔: Pin hole	Mounting tap: 2 x M10 x 1.5 Pin hole: 2 x ø10H7	 Mounting surface (Two facing sides)

Guide pin shape

R	Round type
D	Diamond type∗

∗ Diamond type guide pin diameter is ø17.5 or more.

Number of auto switches

Nil	2 pcs.
S	1 pc. (Unclamp side)

∗ The D-P4/P7 type is different-surface mounting. (Refer to page 1308.)

Auto switch type

Nil	Without auto switch (Built-in magnet)

∗ For applicable auto switch models, refer to page 1289.
∗ Auto switches are included, (but not assembled).

Shim

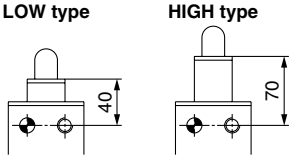
Nil	Without shims
S	With 3 mm shims∗

∗ When a model includes shims, two 1 mm shims and two 0.5 mm shims are attached.

Clamping height (Refer to the below figure.)

L	LOW type (40 mm)
H	HIGH type (70 mm)

LOW type **HIGH type**



Clamping height

Clamp arm position (clockwise viewed from top)

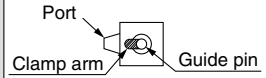
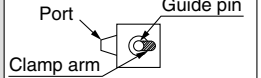
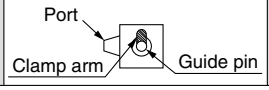
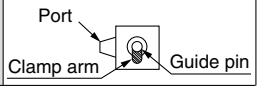
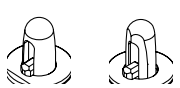
A	Same direction as port 	**C**	180° from port 
B	90° from port 	**D**	270° from port 

Table 1. Guide Pin Diameter

Symbol	125	127	128	129	130	145	147	148	149	150	155	157	158	159	160
Guide pin diameter	12.5	12.7	12.8	12.9	13.0	14.5	14.7	14.8	14.9	15.0	15.5	15.7	15.8	15.9	16.0
Applicable hole diameter of workpiece	For ø13					For ø15					For ø16				
Guide pin shape	Round type														



Round type **Diamond type**

Symbol	175	177	178	179	180	195	197	198	199	200	245	247	248	249	250	295	297	298	299	300
Guide pin diameter	17.5	17.7	17.8	17.9	18.0	19.5	19.7	19.8	19.9	20.0	24.5	24.7	24.8	24.9	25.0	29.5	29.7	29.8	29.9	30.0
Applicable hole diameter of workpiece	For ø18					For ø20					For ø25					For ø30				
Guide pin shape	Round type, Diamond type																			

SMC

Table 2. Applicable Auto Switches / For detailed specifications about an auto switch for itself, refer to pages 1719 to 1827.

Applicable cylinder series	Type	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no in use)	Load voltage	Lead wire length	Applicable load
Series C(L)KQG	**Solid state auto switch**	**D-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 Note 1)
		D-P4DWSE				2-wire (1–4)			
		D-P4DWL		Grommet		2-wire		3 m	
		D-P4DWZ						5 m	
Series C(L)KQP	**Reed auto switch**	**D-P79WSE**	DC/AC magnetic field	Pre-wired connector	2-color display	2-wire (1–4)	24 VDC	0.3 m	
		D-P74L		Grommet	1-color display	2-wire	24 VDC 100 VAC	3 m	
		D-P74Z						5 m	

Note 1) PLC: Programmable Logic Controller
Note 2) There are other applicable auto switches other than the listed above. For details, refer to page 1307.

Series CKQ$^{G}_{P}$K/CLKQ$^{G}_{P}$K

Basic Specifications

Action	Double acting	
Bore size (mm)	50	
Fluid	Air	
Minimum operating pressure	CKQ□: 0.1 MPa	CLKQ□ (With lock): 0.15 MPa*
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Cushion	None	
Lubrication	Non-lube	
Piston speed (Clamp speed)	50 to 150 mm/sec	
Port size (Cylinder port)	1/4 (Rc, NPT, G)	

* Minimum operating pressure is 0.2 MPa when cylinder part and locking part use the same piping.

Proof Pressure/Maximum Operating Pressure

Guide pin diameter	Proof pressure	Max. operating pressure
ø12.5 to ø13.0	1.0 MPa	0.7 MPa
ø14.5 to ø30.0	1.5 MPa	1.0 MPa

Clamp Specifications

Clamp stroke	Without shims	With shims
	10 mm	10 to 13 mm
Clamp arm	1 pc.	
Guide pin shape	Round type, Diamond type	

* Refer to the below "Clamp Specifications" and Selection regarding detailed specifications of the clamping force, etc.
* Diamond type guide pin diameter is ø17.5 or more.

Mass

Unit: kg

Model	C(L)KQ$^{G}_{P}$K			
Guide pin diameter (mm)	Without lock		With lock	
	L	H	L	H
ø12.5 to 13.0	1.67	1.84	2.19	2.35
ø14.5 to 15.0	1.67	1.84	2.19	2.35
ø15.5 to 16.0	1.68	1.84	2.19	2.36
ø17.5 to 18.0	1.72	1.89	2.23	2.41
ø19.5 to 20.0	1.73	1.9	2.24	2.42
ø24.5 to 25.0	1.79	1.99	2.3	2.51
ø29.5 to 30.0	1.83	2.03	2.34	2.55

Lock Specifications

Locking action	Spring locking (Exhaust locking)
Unlocking pressure	0.2 MPa or more
Lock starting pressure	0.05 MPa or less
Locking direction	Lock at extended direction (Clamp holding)
Port size (Lock release port)	1/8 (Rc, NPT, G)
Holding force (N) (Maximum static load)	982

Clamp Specifications

(N)

Model	Guide pin diameter	Operating pressure (MPa)								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CKQ$^{G}_{P}$	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	—	—	—
	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2	1484.1
CLKQ$^{G}_{P}$	ø12.5 to ø13.0	82.4	247.3	412.2	577.1	742.0	906.9	—	—	—
	ø14.5 to ø30.0	82.4	247.3	412.2	577.1	742.0	906.9	Note 1) 1071.8	Note 1) 1236.7	Note 1) 1401.6

Note 1) Lock holding force of the CLKQ□ is 982 N. Design the circuit such that the lock holding force is taken into consideration when the operating pressure exceeds 0.75 MPa. The operating pressure should be not greater than the lock holding force as it may cause wearing out and/or damage of the locking part and shorten lock life and may lead to possible failure if applied with a load larger than the lock holding force.

Note 2) It takes approximately 0.3 seconds for the cylinder to operate to generate clamping force from an unclamping state (when no speed controller is installed). Design circuit taking into consideration the time before the clamping force is generated.

Note 3) Determine the clamping force according to the strength of the workpiece. It can be damaged if the clamping force is too large.

Maintenance Parts

Replacement Parts: Seal Kit

Kit No.	Content
CQ2B50-PS	Piston seal Rod seal Tube gasket

* Consult SMC for maintenance service. Seal kit for maintenance of the CLKQ$^{G}_{P}$ series with lock is not available.

Replacement Parts: Grease Pack

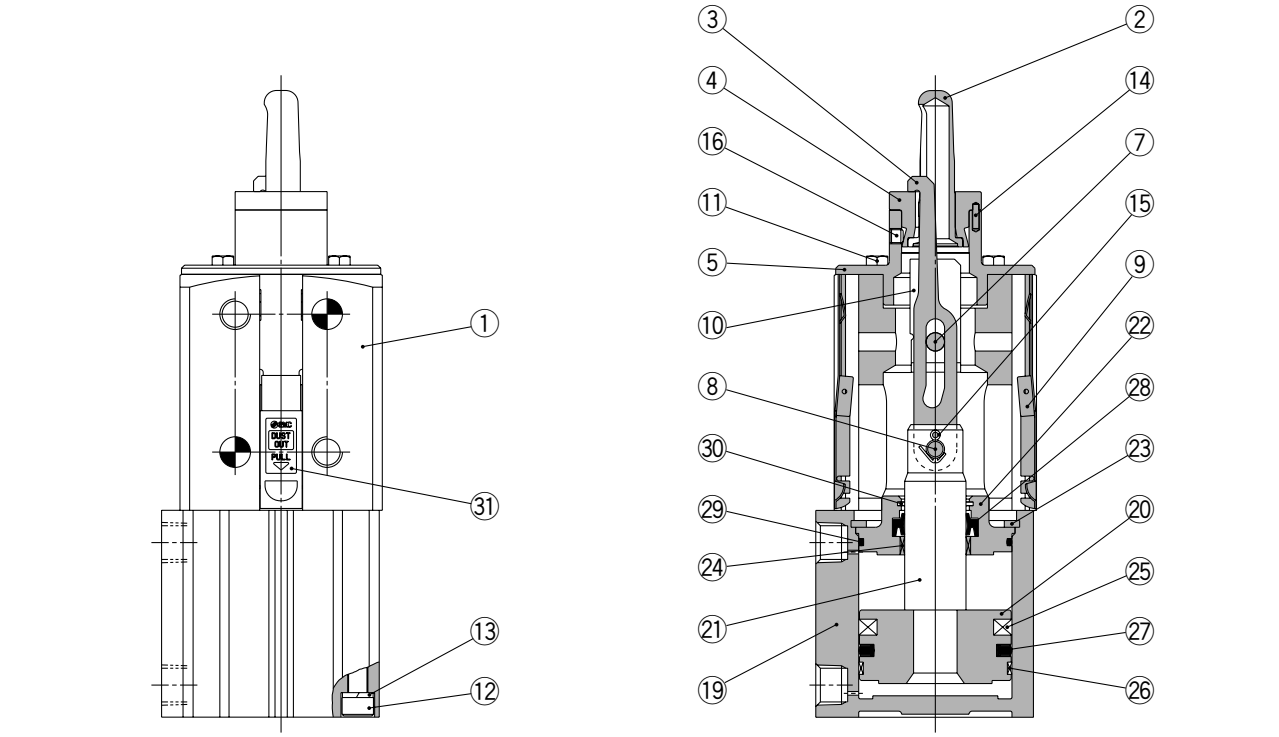
Kit No.	Content
GR-S-010	Grease 10 g

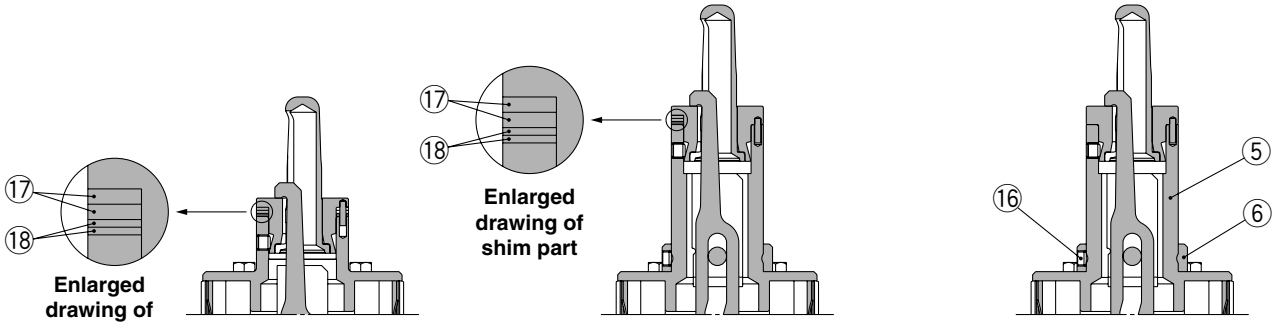
* Consult SMC when replacing the actuating cylinders.

Construction

CKQGKC50

∗ The below figures indicate the CKQGKC50-□RAL.





CKQGK□50□-□R□LS
Clamping height: LOW type
With shims

CKQGK□50□-□R□HS
Clamping height: HIGH type
With shims

CKQGK□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

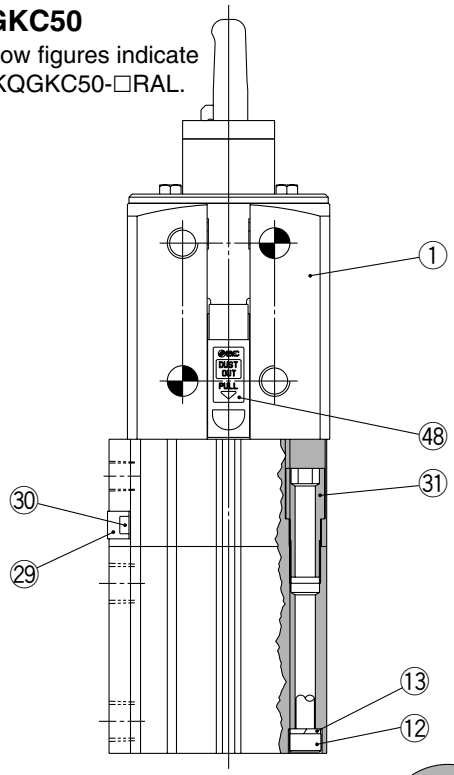
Component Parts

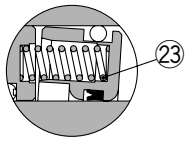
No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Piston**	Aluminum alloy	
21	**Piston rod**	Structural steel	
22	**Collar**	Aluminum alloy	
23	**Retaining ring**	Tool steel	
24	**Bushing**	Lead-bronze casted	
25	**Magnet**	—	
26	**Wear ring**	Resin	
27	**Piston seal**	NBR	
28	**Rod seal**	NBR	
29	**Tube gasket**	NBR	
30	**Coil scraper**	Bronze	
31	**Seal**	PET	

Construction

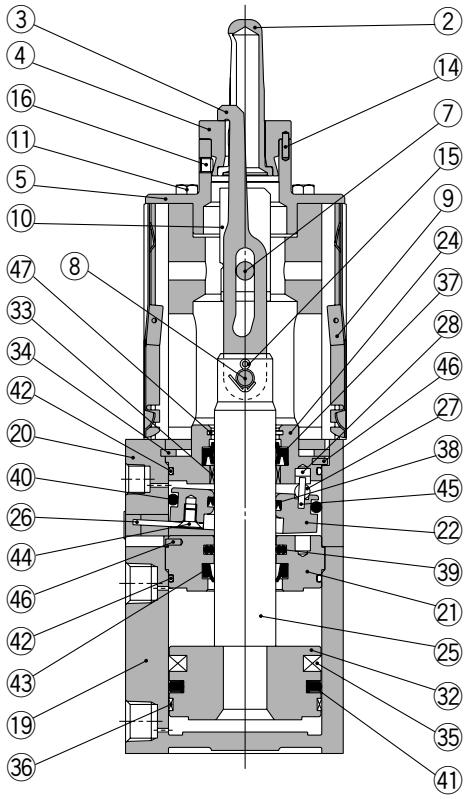
CLKQGKC50

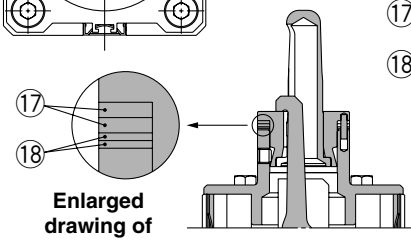
∗ The below figures indicate the CLKQGKC50-□RAL.





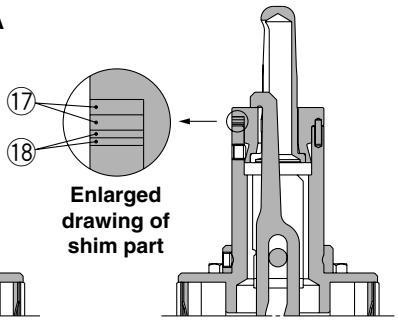
Section A-A





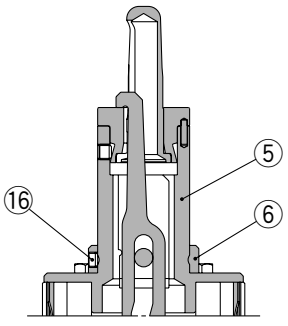
Enlarged drawing of shim part

CLKQGK□50□-□R□LS
Clamping height: LOW type
With shims



Enlarged drawing of shim part

CLKQGK□50□-□R□HS
Clamping height: HIGH type
With shims



CLKQGK□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

Component Parts

No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Lock body**	Aluminum alloy	
21	**Intermediate collar**	Aluminum alloy	
22	**Lock ring**	Tool steel	
23	**Brake spring**	Steel wire	
24	**Collar**	Aluminum alloy	
25	**Piston rod**	Structural steel	
26	**Lever**	Stainless steel	
27	**Pivot pin**	Structural steel	
28	**Pivot key**	Structural steel	
29	**Dust cover**	Steel strip	
30	**Dust cover holding bolt**	Structural steel	
31	**Unit holding bolt**	Structural steel	
32	**Piston**	Aluminum alloy	

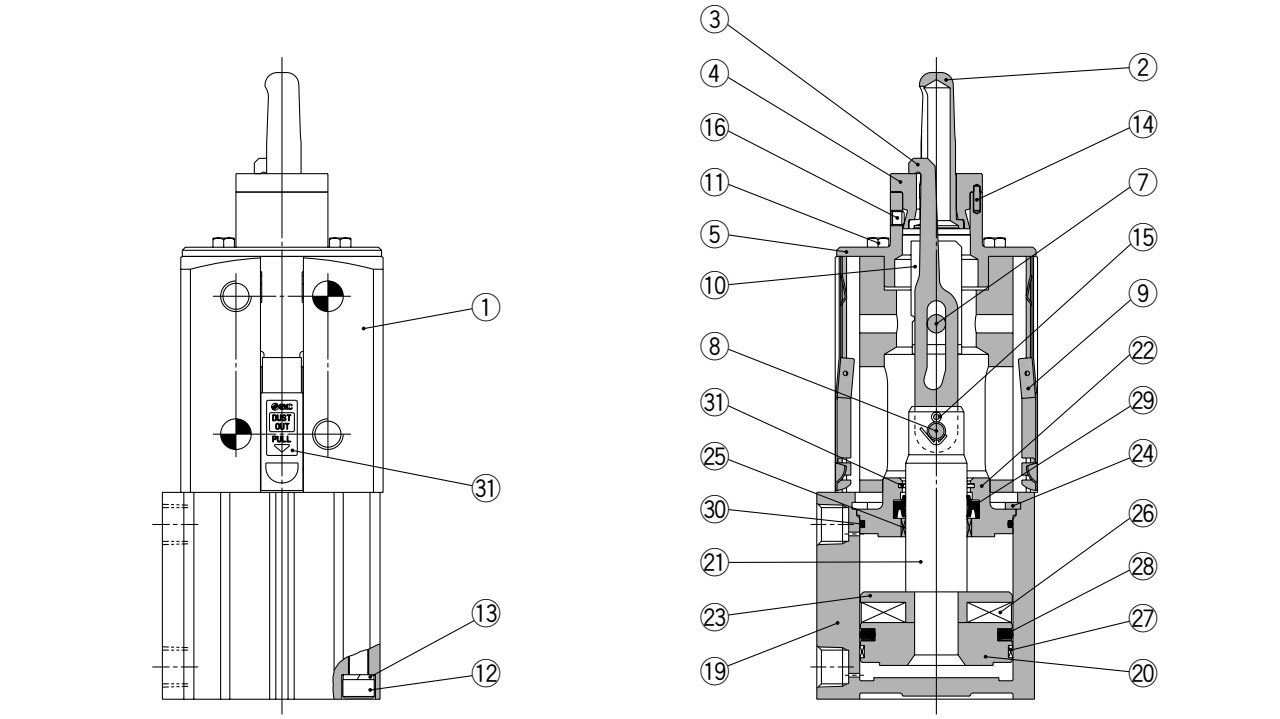
Component Parts

No.	Description	Material	Note
33	**Bushing**	Lead-bronze casted	
34	**Retaining ring**	Tool steel	
35	**Magnet**	—	
36	**Wear ring**	Resin	
37	**Rod seal A**	NBR	
38	**Rod seal B**	NBR	
39	**Rod seal C**	NBR	
40	**Piston seal A**	NBR	
41	**Piston seal B**	NBR	
42	**Tube gasket**	NBR	
43	**Scraper**	NBR	
44	**Hex. socket counter-sunk head screw**	Structural steel	
45	**Spring pin**	Tool steel	
46	**Parallel pin**	Stainless steel	
47	**Coil scraper**	Bronze	
48	**Seal**	PET	

Construction

CKQPKC50

∗ The below figures indicate the CKQPKC50-□RAL.



CKQPK□50□-□R□LS
Clamping height: LOW type
With shims

CKQPK□50□-□R□HS
Clamping height: HIGH type
With shims

CKQPK□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

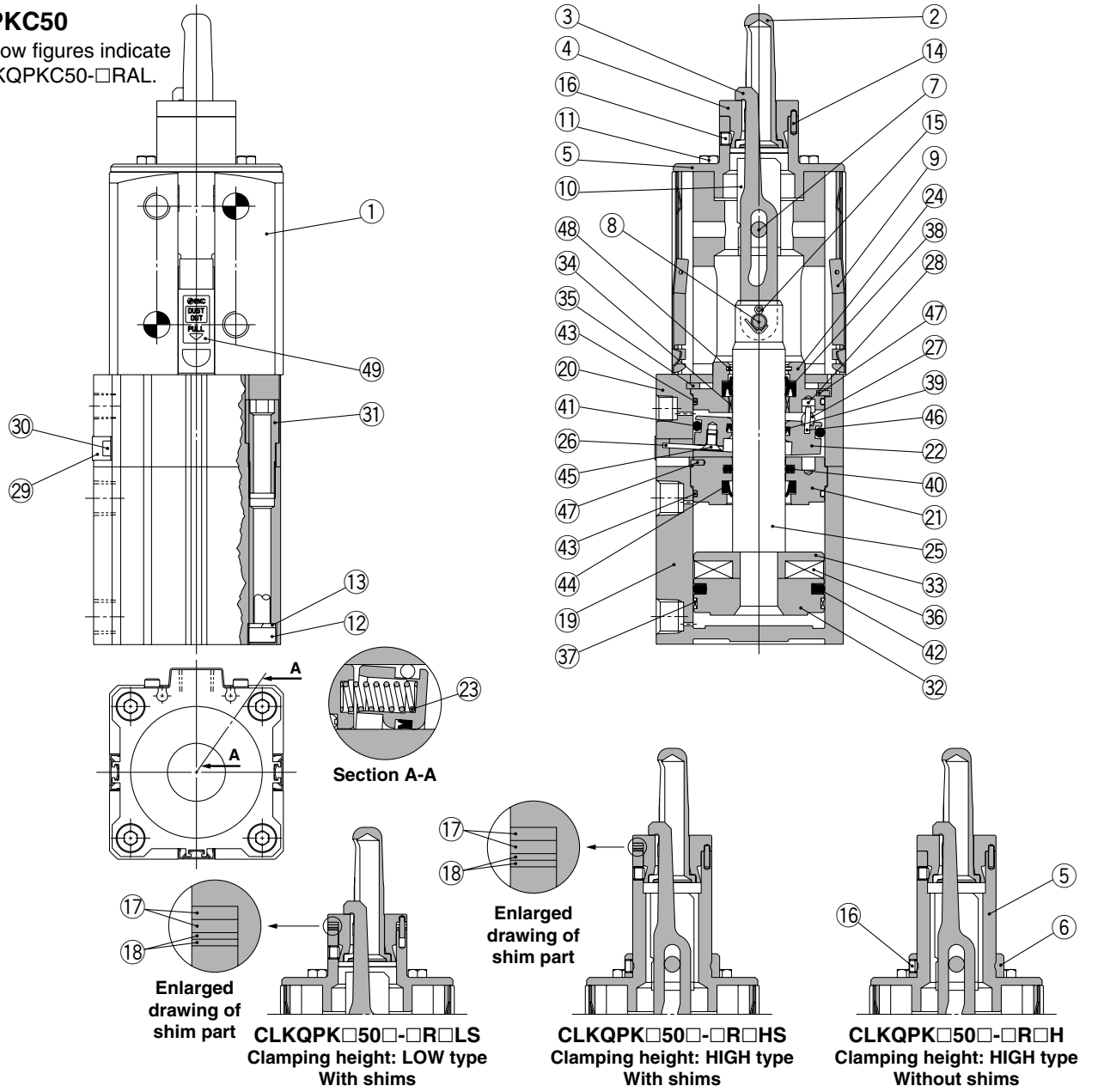
Component Parts

No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Piston**	Aluminum alloy	
21	**Piston rod**	Stainless steel	
22	**Collar**	Aluminum alloy	
23	**Magnet holder**	Aluminum alloy	
24	**Retaining ring**	Tool steel	
25	**Bushing**	Lead-bronze casted	
26	**Magnet**	—	
27	**Wear ring**	Resin	
28	**Piston seal**	NBR	
29	**Rod seal**	NBR	
30	**Tube gasket**	NBR	
31	**Coil scraper**	Bronze	
32	**Seal**	PET	

Construction

CLKQPKC50

∗ The below figures indicate the CLKQPKC50-□RAL.



CLKQPK□50□-□R□LS
Clamping height: LOW type
With shims

CLKQPK□50□-□R□HS
Clamping height: HIGH type
With shims

CLKQPK□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	
17	**Shim A**	Stainless steel	t = 1 mm

Component Parts

No.	Description	Material	Note
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Lock body**	Aluminum alloy	
21	**Intermediate collar**	Aluminum alloy	
22	**Lock ring**	Tool steel	
23	**Brake spring**	Steel wire	
24	**Collar**	Aluminum alloy	
25	**Piston rod**	Stainless steel	
26	**Lever**	Stainless steel	
27	**Pivot pin**	Structural steel	
28	**Pivot key**	Structural steel	
29	**Dust cover**	Steel strip	
30	**Dust cover holding bolt**	Structural steel	
31	**Unit holding bolt**	Structural steel	
32	**Piston**	Aluminum alloy	
33	**Magnet holder**	Aluminum alloy	
34	**Bushing**	Lead-bronze casted	

Component Parts

No.	Description	Material	Note
35	**Retaining ring**	Tool steel	
36	**Magnet**	—	
37	**Wear ring**	Resin	
38	**Rod seal A**	NBR	
39	**Rod seal B**	NBR	
40	**Rod seal C**	NBR	
41	**Piston seal A**	NBR	
42	**Piston seal B**	NBR	
43	**Tube gasket**	NBR	
44	**Scraper**	NBR	
45	**Hex. socket counter-sunk head screw**	Structural steel	
46	**Spring pin**	Tool steel	
47	**Parallel pin**	Stainless steel	
48	**Coil scraper**	Bronze	
49	**Seal**	PET	

Dimensions

CKQ$^{G}_{P}$KC50

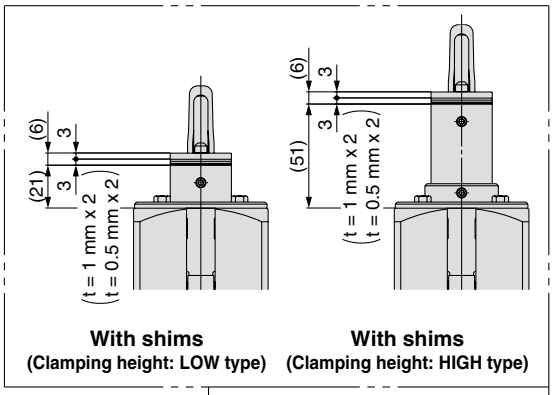
(**CKQ$^{G}_{P}$KD50** Relationship between the mounting surface and a port location is ⊡.)

(**CKQ$^{G}_{P}$KE50** Relationship between the mounting surface and a port location is ⊡.)

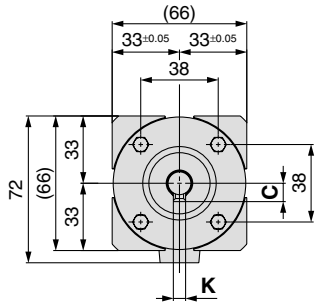
(**CKQ$^{G}_{P}$KF50** Relationship between the mounting surface and a port location is ⊡.)

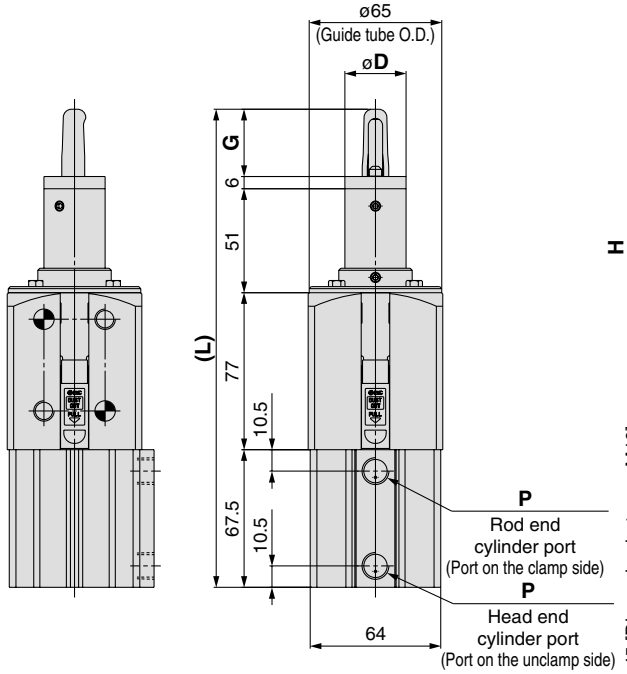
∗ Refer to "How to Order" on page 1288 for relationship between the mounting surface and a port location.

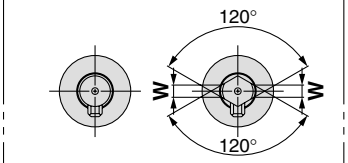
∗ The below figures indicate the CKQ$^{G}_{P}$KC50-□RAH.

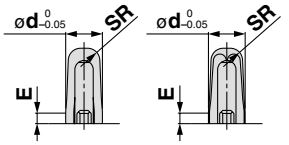


With shims (Clamping height: LOW type) **With shims (Clamping height: HIGH type)**



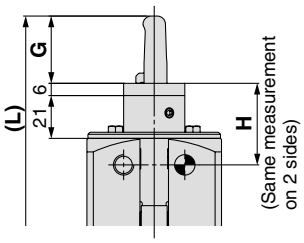






Round type **Diamond type** (Guide pin dia.: ø17.5 or more)

Guide pin shape



Clamping height: LOW type

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø13	9	ø30	ø12.5	≈10	33	Without shims 40±0.05	Without shims 70±0.05	6	204.5	234.5	4	—	ø36
			ø12.7	≈9									
			ø12.8	≈8		With shims 40	With shims 70						
			ø12.9	≈8									
			ø13.0	≈7									
ø15	11	ø30	ø14.5	≈9	34	Without shims 40±0.05	Without shims 70±0.05	7	205.5	235.5	5	—	ø36
			ø14.7	≈8									
			ø14.8	≈8		With shims 40	With shims 70						
			ø14.9	≈7									
			ø15.0	≈7									
ø16	11	ø30	ø15.5	≈10	34	Without shims 40±0.05	Without shims 70±0.05	7	205.5	235.5	5.5	—	ø36
			ø15.7	≈9									
			ø15.8	≈8		With shims 40	With shims 70						
			ø15.9	≈8									
			ø16.0	≈7									

P		
Nil	TN	TF
Rc 1/4	NPT 1/4	G 1/4

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø18	12	ø35	ø17.5	≈10	37	Without shims 40±0.05	Without shims 70±0.05	7	208.5	238.5	6	6	ø40
			ø17.7	≈9									
			ø17.8	≈8		With shims 40	With shims 70						
			ø17.9	≈8									
			ø18.0	≈7									
ø20	13	ø35	ø19.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	7	7	ø40
			ø19.7	≈9									
			ø19.8	≈8		With shims 40	With shims 70						
			ø19.9	≈8									
			ø20.0	≈7									
ø25	16	ø40	ø24.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	9.5	7	ø47
			ø24.7	≈9									
			ø24.8	≈8		With shims 40	With shims 70						
			ø24.9	≈8									
			ø25.0	≈7									
ø30	18	ø40	ø29.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	11	9	ø47
			ø29.7	≈9									
			ø29.8	≈8		With shims 40	With shims 70						
			ø29.9	≈8									
			ø30.0	≈7									

Dimensions

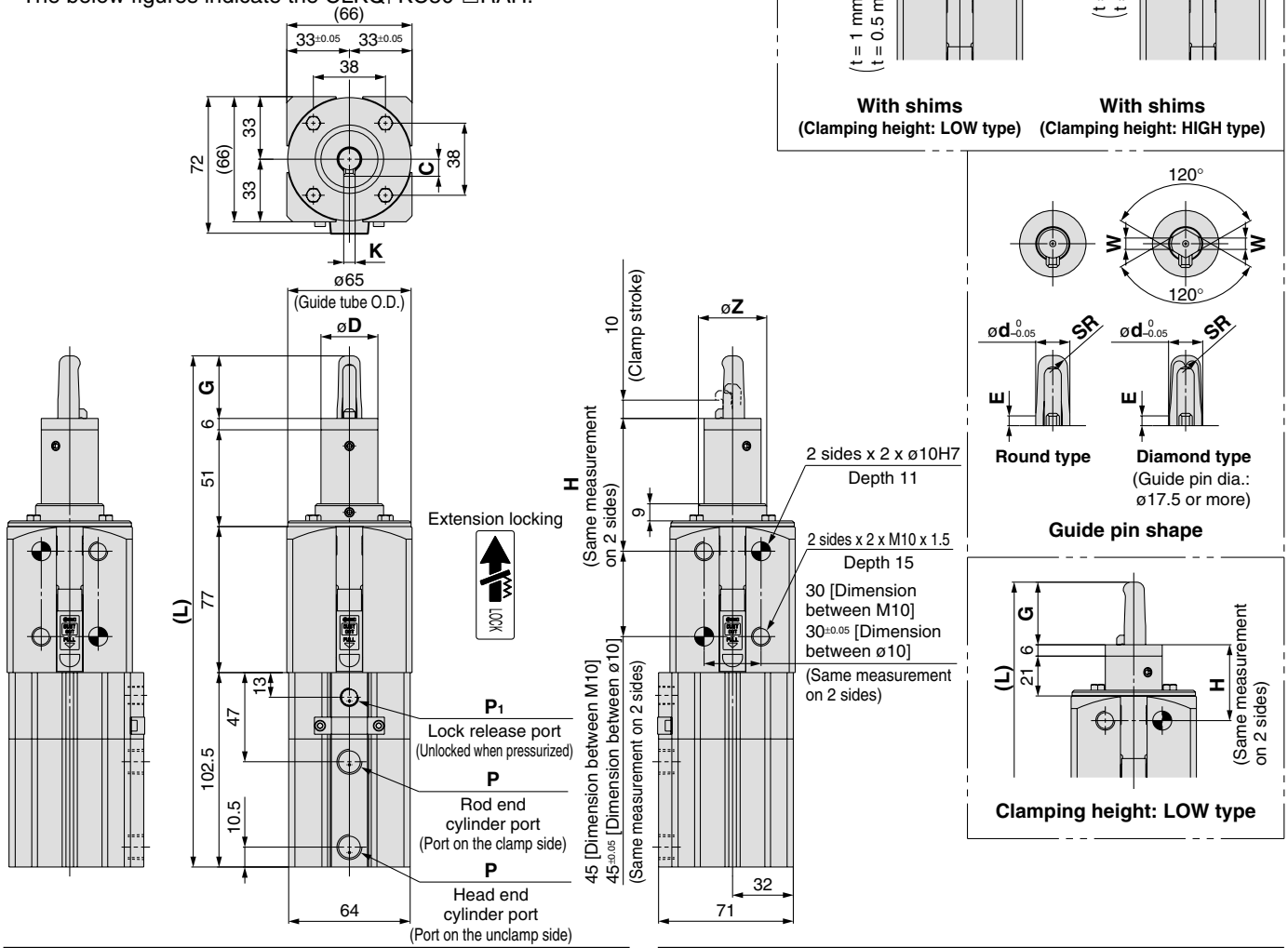
CLKQ$^{G}_{P}$KC50

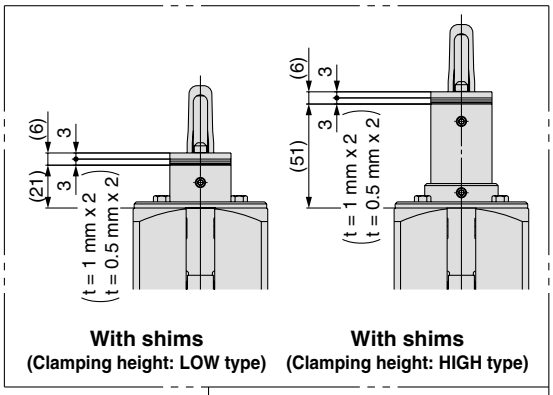
(**CLKQ$^{G}_{P}$KD50** Relationship between the mounting surface and a port location is  .)

(**CLKQ$^{G}_{P}$KE50** Relationship between the mounting surface and a port location is  .)

(**CLKQ$^{G}_{P}$KF50** Relationship between the mounting surface and a port location is  .)

* Refer to "How to Order" on page 1288 for relationship between the mounting surface and a port location.
* The below figures indicate the CLKQ$^{G}_{P}$KC50-□RAH.





Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø13	9	ø30	ø12.5	≈10	33	Without shims 40±0.05	Without shims 70±0.05	6	239.5	269.5	4	—	ø36
			ø12.7	≈9									
			ø12.8	≈8		With shims 40	With shims 70						
			ø12.9	≈8									
			ø13.0	≈7									
ø15	11	ø30	ø14.5	≈9	34	Without shims 40±0.05	Without shims 70±0.05	7	240.5	270.5	5	—	ø36
			ø14.7	≈8									
			ø14.8	≈8		With shims 40	With shims 70						
			ø14.9	≈7									
			ø15.0	≈7									
ø16	11	ø30	ø15.5	≈10	34	Without shims 40±0.05	Without shims 70±0.05	7	240.5	270.5	5.5	—	ø36
			ø15.7	≈9									
			ø15.8	≈8		With shims 40	With shims 70						
			ø15.9	≈8									
			ø16.0	≈7									

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø18	12	ø35	ø17.5	≈10	37	Without shims 40±0.05	Without shims 70±0.05	7	243.5	273.5	6	6	ø40
			ø17.7	≈9									
			ø17.8	≈8		With shims 40	With shims 70						
			ø17.9	≈8									
			ø18.0	≈7									
ø20	13	ø35	ø19.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	7	7	ø40
			ø19.7	≈9									
			ø19.8	≈8		With shims 40	With shims 70						
			ø19.9	≈8									
			ø20.0	≈7									
ø25	16	ø40	ø24.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	9.5	7	ø47
			ø24.7	≈9									
			ø24.8	≈8		With shims 40	With shims 70						
			ø24.9	≈8									
			ø25.0	≈7									
ø30	18	ø40	ø29.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	11	9	ø47
			ø29.7	≈9									
			ø29.8	≈8		With shims 40	With shims 70						
			ø29.9	≈8									
			ø30.0	≈7									

P			P1		
Nil	TN	TF	Nil	TN	TF
Rc 1/4	NPT 1/4	G 1/4	Rc 1/8	NPT 1/8	G 1/8

Pin Clamp Cylinder

M series

Series CKQ$^{G}_{P}$M/CLKQ$^{G}_{P}$M

How to Order

Built-in standard magnet
With magnetic field resistant auto switch

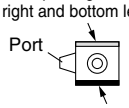
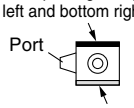
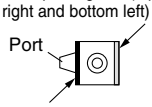
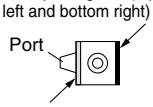
Built-in strong magnet
With magnetic field resistant auto switch

C	□	KQG	M	C	50	□	–	177	R	A	L	□	–	P4DWSC	□
C	□	KQP	M	C	50	□	–	198	R	A	L	□	–	P79WSE	□

With lock on the clamp side

Nil	Without lock
L	With lock

Mounting surface (viewed from top)

Symbol	Port location	Symbol	Port location
C	Mounting surface with the taps diagonal (top right and bottom left)  Mounting surface with the taps diagonal (top left and bottom right)	E	Mounting surface with the taps diagonal (top left and bottom right)  Mounting surface with the taps diagonal (top right and bottom left)
D	Mounting surface with the taps diagonal (top right and bottom left)  Mounting surface with the taps diagonal (top left and bottom right)	F	Mounting surface with the taps diagonal (top left and bottom right)  Mounting surface with the taps diagonal (top right and bottom left)

Bore size

50	50 mm

Port thread type

Nil	Rc
TN	NPT
TF	G

Guide pin diameter

∗ For guide pin diameter, refer to Table 1 below.

Number of auto switches

Nil	2 pcs.
S	1 pc. (Unclamp side)

∗ The D-P4/P7 type is different-surface mounting. (Refer to page 1308)

Auto switch type

Nil	Without auto switch (Built-in magnet)

∗ For applicable auto switch models, refer to page 1299.
∗ Auto switches are included, (but not assembled).

Shim

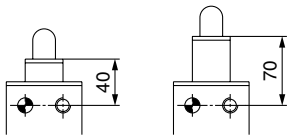
Nil	Without shims
S	With 3 mm shims∗

∗ When a model includes shims, two 1 mm shims and two 0.5 mm shims are attached.

Clamping height (Refer to the below figure.)

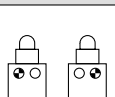
L	LOW type (40 mm)
H	HIGH type (70 mm)

LOW type **HIGH type**



Clamping height

Body shape

Symbol	Dimension	Mounting hole (tap, pin hole) arrangement		Mounting	Mounting surface (viewed from top)
M	□66		○: Mounting tap ◔: Pin hole	Mounting tap: 2 x M12 x 1.75 Pin hole: 2 x ø10H7	 Mounting surface (Two facing sides)

Guide pin shape

R	Round type
D	Diamond type∗

∗ Diamond type guide pin diameter is ø17.5 or more.

Clamp arm position (clockwise viewed from top)

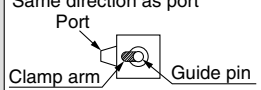
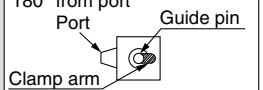
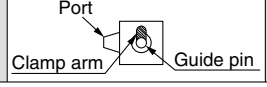
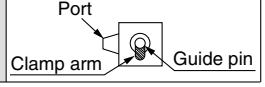
A	Same direction as port 	C	180° from port 
B	90° from port 	D	270° from port 

Table 1. Guide Pin Diameter

Symbol	125	127	128	129	130	145	147	148	149	150	155	157	158	159	160
Guide pin diameter	12.5	12.7	12.8	12.9	13.0	14.5	14.7	14.8	14.9	15.0	15.5	15.7	15.8	15.9	16.0
Applicable hole diameter of workpiece	For ø13					For ø15					For ø16				
Guide pin shape	Round type														

Round type **Diamond type**

Symbol	175	177	178	179	180	195	197	198	199	200	245	247	248	249	250	295	297	298	299	300
Guide pin diameter	17.5	17.7	17.8	17.9	18.0	19.5	19.7	19.8	19.9	20.0	24.5	24.7	24.8	24.9	25.0	29.5	29.7	29.8	29.9	30.0
Applicable hole diameter of workpiece	For ø18					For ø20					For ø25					For ø30				
Guide pin shape	Round type, Diamond type																			

SMC

Table 2. Applicable Auto Switches / For detailed specifications about an auto switch for itself, refer to pages 1719 to 1827.

Applicable cylinder series	Type	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no in use)	Load voltage	Lead wire length	Applicable load
Series C(L)KQG	**Solid state auto switch**	**D-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 Note 1)
		D-P4DWSE				2-wire (1–4)			
		D-P4DWL		Grommet		2-wire		3 m	
		D-P4DWZ						5 m	
Series C(L)KQP	**Reed auto switch**	**D-P79WSE**	DC/AC magnetic field	Pre-wired connector	2-color display	2-wire (1–4)	24 VDC	0.3 m	
		D-P74L		Grommet	1-color display	2-wire	24 VDC 100 VAC	3 m	
		D-P74Z						5 m	

Note 1) PLC: Programmable Logic Controller
Note 2) There are other applicable auto switches other than the listed above. For details, refer to page 1307.

Series CKQ$^{G}_{P}$M/CLKQ$^{G}_{P}$M

Basic Specifications

Action	Double acting	
Bore size (mm)	50	
Fluid	Air	
Minimum operating pressure	CKQ□: 0.1 MPa	CLKQ□ (With lock): 0.15 MPa*
Ambient and fluid temperature	–10 to 60°C (No freezing)	
Cushion	None	
Lubrication	Non-lube	
Piston speed (Clamp speed)	50 to 150 mm/sec	
Port size (Cylinder port)	1/4 (Rc, NPT, G)	

* Minimum operating pressure is 0.2 MPa when cylinder part and locking part use the same piping.

Proof Pressure/Maximum Operating Pressure

Guide pin diameter	Proof pressure	Max. operating pressure
ø12.5 to ø13.0	1.0 MPa	0.7 MPa
ø14.5 to ø30.0	1.5 MPa	1.0 MPa

Clamp Specifications

Clamp stroke	Without shims	With shims
	10 mm	10 to 13 mm
Clamp arm	1 pc.	
Guide pin shape	Round type, Diamond type	

* Refer to the below "Clamp Specifications" and Selection regarding detailed specifications of the clamping force, etc.
* Diamond type guide pin diameter is ø17.5 or more.

Mass

Unit: kg

Model	C(L)KQ$^{G}_{P}$M			
Guide pin diameter (mm)	Without lock		With lock	
	L	H	L	H
ø12.5 to 13.0	1.67	1.84	2.18	2.35
ø14.5 to 15.0	1.67	1.84	2.18	2.35
ø15.5 to 16.0	1.67	1.84	2.19	2.36
ø17.5 to 18.0	1.72	1.89	2.23	2.41
ø19.5 to 20.0	1.72	1.9	2.24	2.42
ø24.5 to 25.0	1.78	1.99	2.3	2.51
ø29.5 to 30.0	1.83	2.03	2.34	2.55

Lock Specifications

Locking action	Spring locking (Exhaust locking)
Unlocking pressure	0.2 MPa or more
Lock starting pressure	0.05 MPa or less
Locking direction	Lock at extended direction (Clamp holding)
Port size (Lock release port)	1/8 (Rc, NPT, G)
Holding force (N) (Maximum static load)	982

Clamp Specifications

(N)

Model	Guide pin diameter	Operating pressure (MPa)								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CKQ$^{G}_{P}$	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	—	—	—
	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2	1484.1
CLKQ$^{G}_{P}$	ø12.5 to ø13.0	82.4	247.3	412.2	577.1	742.0	906.9	—	—	—
	ø14.5 to ø30.0	82.4	247.3	412.2	577.1	742.0	906.9	Note 1) 1071.8	Note 1) 1236.7	Note 1) 1401.6

Note 1) Lock holding force of the CLKQ□ is 982 N. Design the circuit such that the lock holding force is taken into consideration when the operating pressure exceeds 0.75 MPa. The operating pressure should be not greater than the lock holding force as it may cause wearing out and/or damage of the locking part and shorten lock life and may lead to possible failure if applied with a load larger than the lock holding force.

Note 2) It takes approximately 0.3 seconds for the cylinder to operate to generate clamping force from an unclamping state (when no speed controller is installed). Design circuit taking into consideration the time before the clamping force is generated.

Note 3) Determine the clamping force according to the strength of the workpiece. It can be damaged if the clamping force is too large.

Maintenance Parts

Replacement Parts: Seal Kit

Kit No.	Content
CQ2B50-PS	Piston seal Rod seal Tube gasket

* Consult SMC for maintenance service. Seal kit for maintenance of the CLKQ$^{G}_{P}$ series with lock is not available.

Replacement Parts: Grease Pack

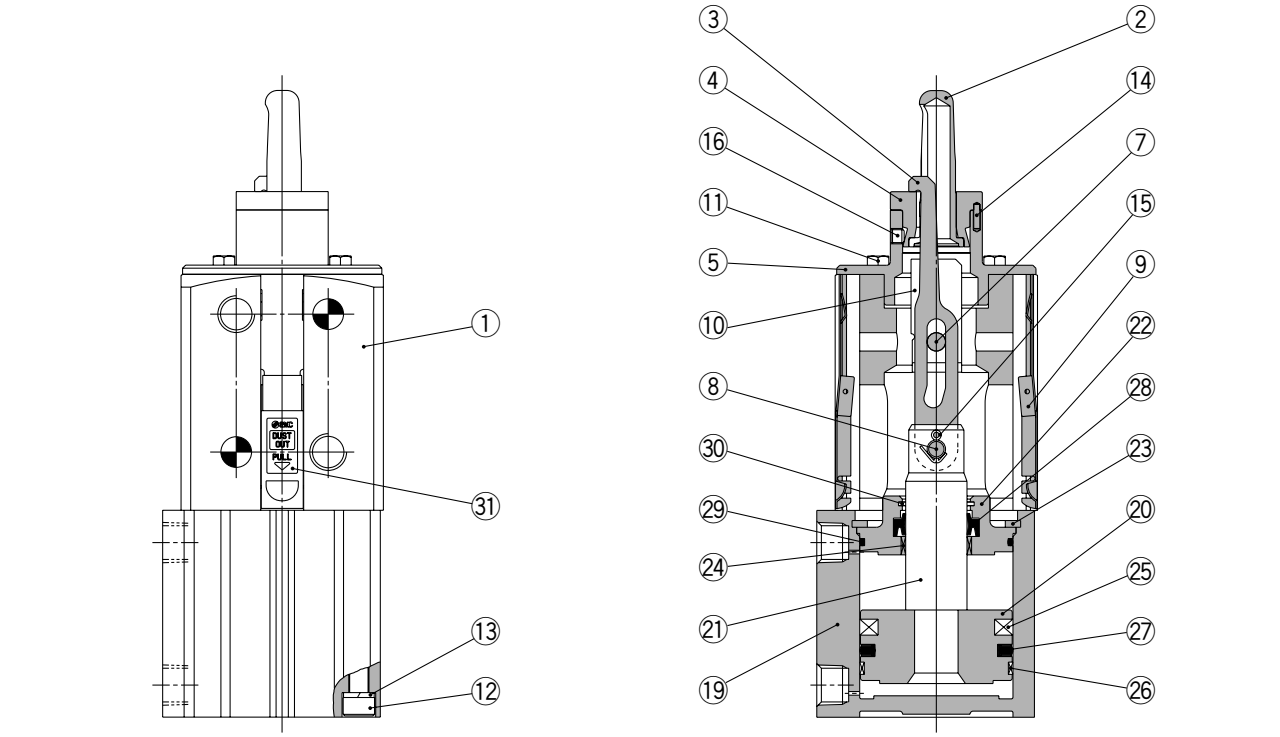
Kit No.	Content
GR-S-010	Grease 10 g

* Consult SMC when replacing the actuating cylinders.

Construction

CKQGMC50

∗ The below figures indicate the CKQGMC50-□RAL.



CKQGM□50□-□R□LS
Clamping height: LOW type
With shims

CKQGM□50□-□R□HS
Clamping height: HIGH type
With shims

CKQGM□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

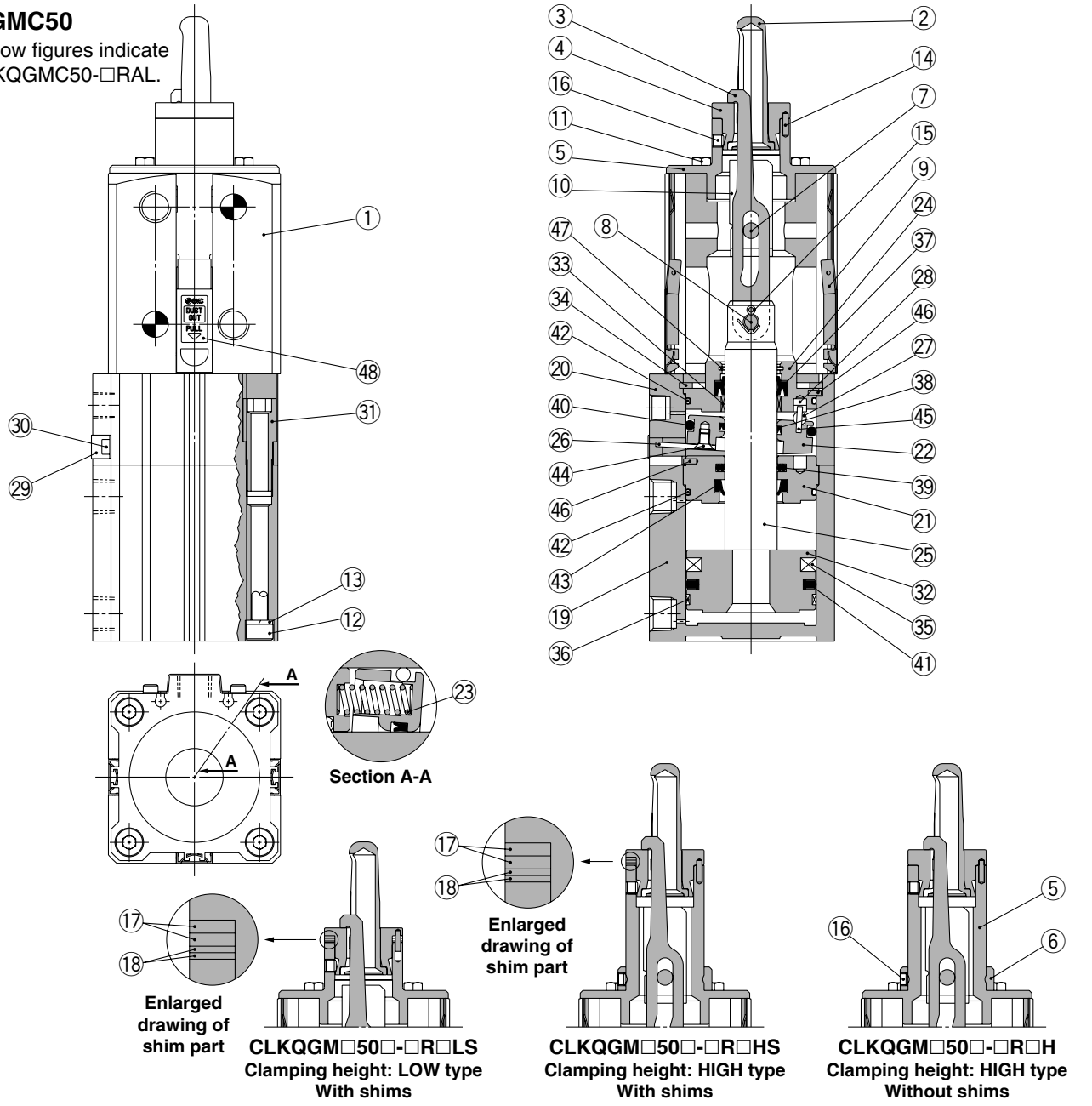
Component Parts

No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Piston**	Aluminum alloy	
21	**Piston rod**	Structural steel	
22	**Collar**	Aluminum alloy	
23	**Retaining ring**	Tool steel	
24	**Bushing**	Lead-bronze casted	
25	**Magnet**	—	
26	**Wear ring**	Resin	
27	**Piston seal**	NBR	
28	**Rod seal**	NBR	
29	**Tube gasket**	NBR	
30	**Coil scraper**	Bronze	
31	**Seal**	PET	

Construction

CLKQGMC50

∗ The below figures indicate the CLKQGMC50-□RAL.



CLKQGM□50□-□R□LS
Clamping height: LOW type
With shims

CLKQGM□50□-□R□HS
Clamping height: HIGH type
With shims

CLKQGM□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	
2	Guide pin	Stainless steel	
3	Clamp arm	Structural steel	
4	Seat	Stainless steel	
5	Guide tube	Structural steel	
6	Ring	Aluminum alloy	
7	Pin A	Structural steel	
8	Pin B	Structural steel	
9	Cover assembly	Stainless steel	
10	Spatter cover	Tough pitch copper	
11	Hexagon bolt	Structural steel	
12	Hexagon socket head cap screw	Stainless steel	
13	Spring washer	Stainless steel	
14	Parallel pin	Tool steel	
15	Cotter pin	Stainless steel	
16	Hexagon socket head set screw	Structural steel	

Component Parts

No.	Description	Material	Note
17	Shim A	Stainless steel	t = 1 mm
18	Shim B	Stainless steel	t = 0.5 mm
19	Cylinder tube	Aluminum alloy	
20	Lock body	Aluminum alloy	
21	Intermediate collar	Aluminum alloy	
22	Lock ring	Tool steel	
23	Brake spring	Steel wire	
24	Collar	Aluminum alloy	
25	Piston rod	Structural steel	
26	Lever	Stainless steel	
27	Pivot pin	Structural steel	
28	Pivot key	Structural steel	
29	Dust cover	Steel strip	
30	Dust cover holding bolt	Structural steel	
31	Unit holding bolt	Structural steel	
32	Piston	Aluminum alloy	

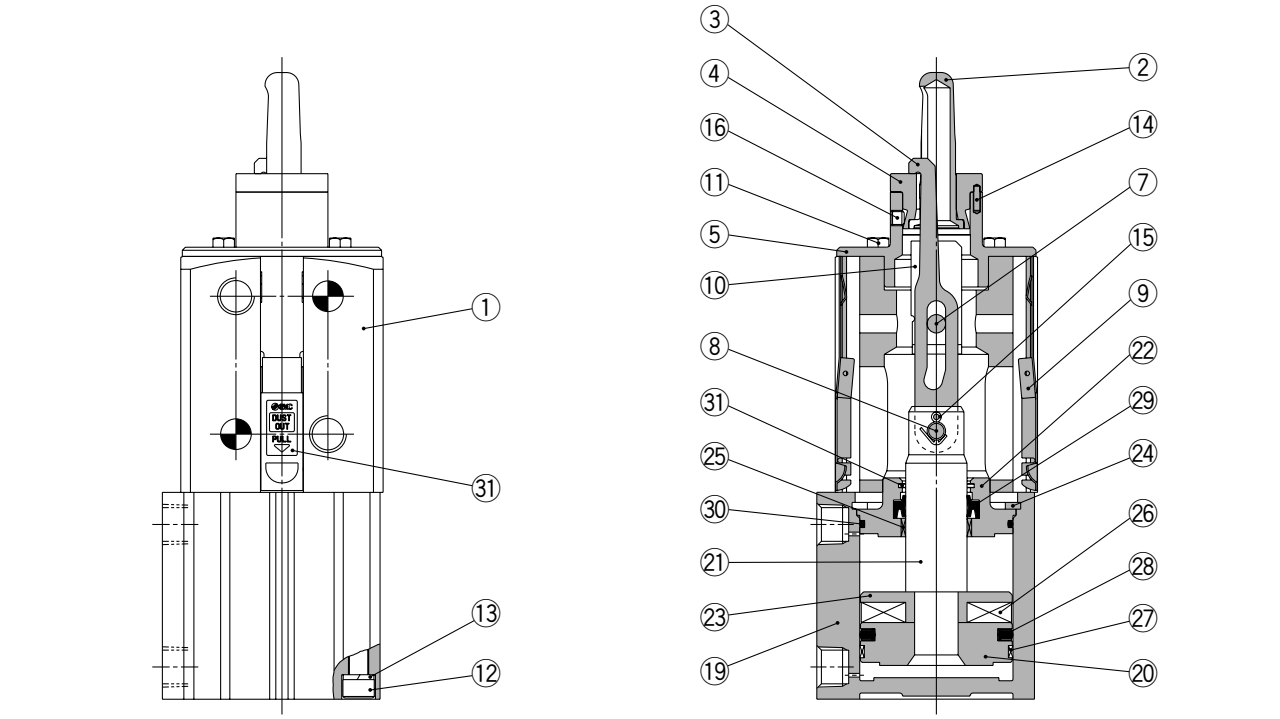
Component Parts

No.	Description	Material	Note
33	Bushing	Lead-bronze casted	
34	Retaining ring	Tool steel	
35	Magnet	—	
36	Wear ring	Resin	
37	Rod seal A	NBR	
38	Rod seal B	NBR	
39	Rod seal C	NBR	
40	Piston seal A	NBR	
41	Piston seal B	NBR	
42	Tube gasket	NBR	
43	Scraper	NBR	
44	Hex. socket counter-sunk head screw	Structural steel	
45	Spring pin	Tool steel	
46	Parallel pin	Stainless steel	
47	Coil scraper	Bronze	
48	Seal	PET	

Construction

CKQPMC50

∗ The below figures indicate the CKQPMC50-□RAL.



CKQPM□50□-□R□LS
Clamping height: LOW type
With shims

CKQPM□50□-□R□HS
Clamping height: HIGH type
With shims

CKQPM□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	**Body**	Aluminum alloy	
2	**Guide pin**	Stainless steel	
3	**Clamp arm**	Structural steel	
4	**Seat**	Stainless steel	
5	**Guide tube**	Structural steel	
6	**Ring**	Aluminum alloy	
7	**Pin A**	Structural steel	
8	**Pin B**	Structural steel	
9	**Cover assembly**	Stainless steel	
10	**Spatter cover**	Tough pitch copper	
11	**Hexagon bolt**	Structural steel	
12	**Hexagon socket head cap screw**	Stainless steel	
13	**Spring washer**	Stainless steel	
14	**Parallel pin**	Tool steel	
15	**Cotter pin**	Stainless steel	
16	**Hexagon socket head set screw**	Structural steel	

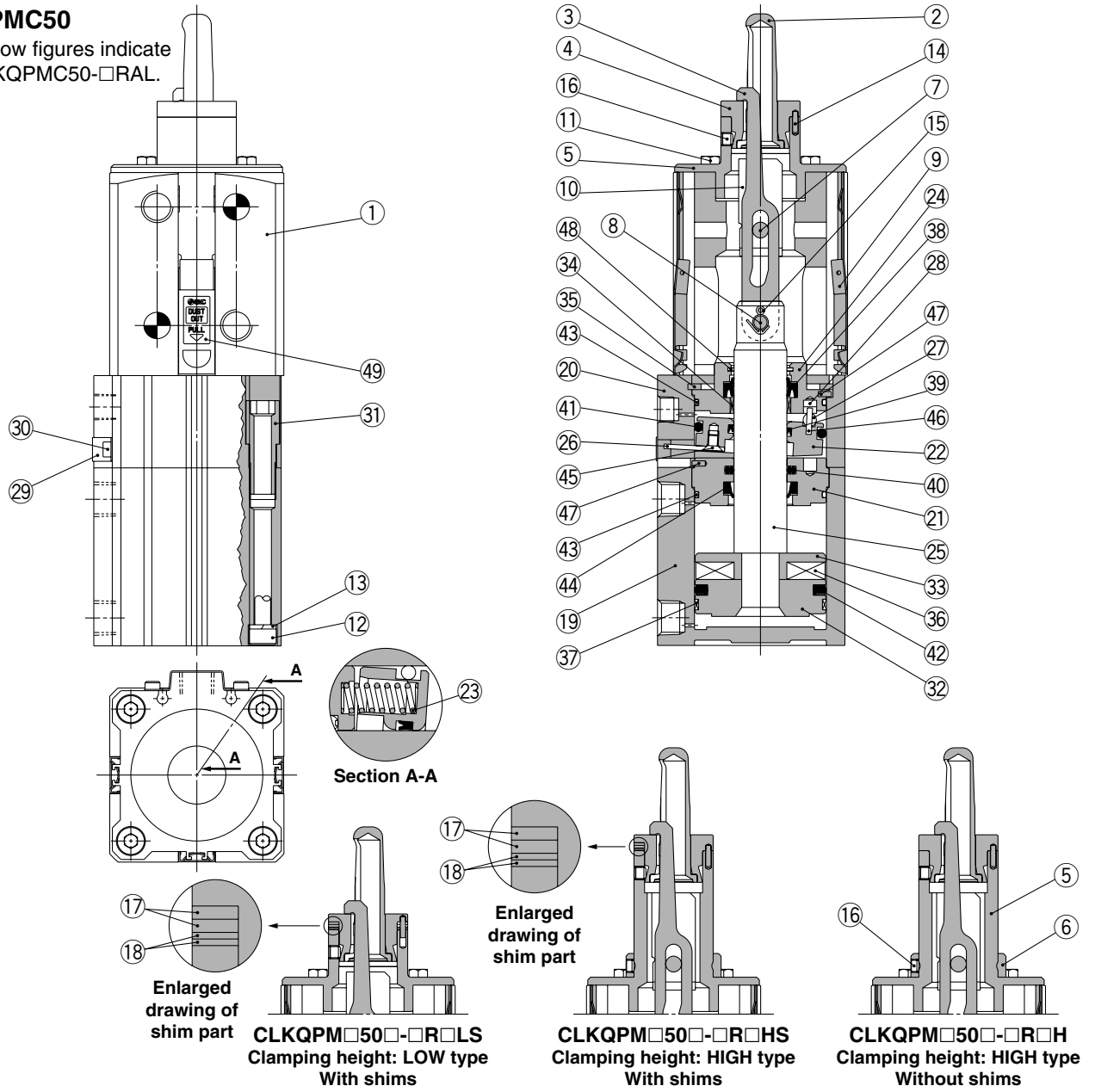
Component Parts

No.	Description	Material	Note
17	**Shim A**	Stainless steel	t = 1 mm
18	**Shim B**	Stainless steel	t = 0.5 mm
19	**Cylinder tube**	Aluminum alloy	
20	**Piston**	Aluminum alloy	
21	**Piston rod**	Stainless steel	
22	**Collar**	Aluminum alloy	
23	**Magnet holder**	Aluminum alloy	
24	**Retaining ring**	Tool steel	
25	**Bushing**	Lead-bronze casted	
26	**Magnet**	—	
27	**Wear ring**	Resin	
28	**Piston seal**	NBR	
29	**Rod seal**	NBR	
30	**Tube gasket**	NBR	
31	**Coil scraper**	Bronze	
32	**Seal**	PET	

Construction

CLKQPMC50

∗ The below figures indicate the CLKQPMC50-□RAL.



CLKQPM□50□-□R□LS
Clamping height: LOW type
With shims

CLKQPM□50□-□R□HS
Clamping height: HIGH type
With shims

CLKQPM□50□-□R□H
Clamping height: HIGH type
Without shims

Component Parts

No.	Description	Material	Note
1	Body	Aluminum alloy	
2	Guide pin	Stainless steel	
3	Clamp arm	Structural steel	
4	Seat	Stainless steel	
5	Guide tube	Structural steel	
6	Ring	Aluminum alloy	
7	Pin A	Structural steel	
8	Pin B	Structural steel	
9	Cover assembly	Stainless steel	
10	Spatter cover	Tough pitch copper	
11	Hexagon bolt	Structural steel	
12	Hexagon socket head cap screw	Stainless steel	
13	Spring washer	Stainless steel	
14	Parallel pin	Tool steel	
15	Cotter pin	Stainless steel	
16	Hexagon socket head set screw	Structural steel	
17	Shim A	Stainless steel	t = 1 mm

Component Parts

No.	Description	Material	Note
18	Shim B	Stainless steel	t = 0.5 mm
19	Cylinder tube	Aluminum alloy	
20	Lock body	Aluminum alloy	
21	Intermediate collar	Aluminum alloy	
22	Lock ring	Tool steel	
23	Brake spring	Steel wire	
24	Collar	Aluminum alloy	
25	Piston rod	Stainless steel	
26	Lever	Stainless steel	
27	Pivot pin	Structural steel	
28	Pivot key	Structural steel	
29	Dust cover	Steel strip	
30	Dust cover holding bolt	Structural steel	
31	Unit holding bolt	Structural steel	
32	Piston	Aluminum alloy	
33	Magnet holder	Aluminum alloy	
34	Bushing	Lead-bronze casted	

Component Parts

No.	Description	Material	Note
35	Retaining ring	Tool steel	
36	Magnet	—	
37	Wear ring	Resin	
38	Rod seal A	NBR	
39	Rod seal B	NBR	
40	Rod seal C	NBR	
41	Piston seal A	NBR	
42	Piston seal B	NBR	
43	Tube gasket	NBR	
44	Scraper	NBR	
45	Hex. socket counter-sunk head screw	Structural steel	
46	Spring pin	Tool steel	
47	Parallel pin	Stainless steel	
48	Coil scraper	Bronze	
49	Seal	PET	

Dimensions

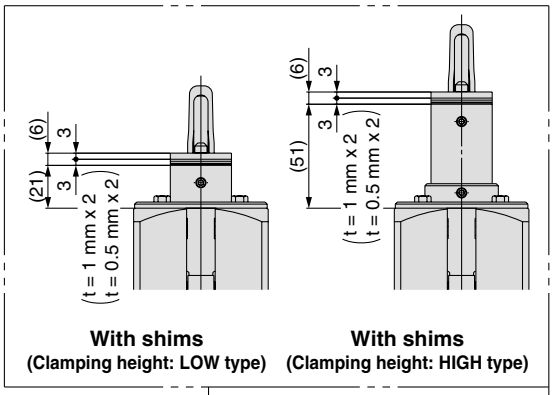
CKQ$^{G}_{P}$MC50

(**CKQ$^{G}_{P}$MD50** Relationship between the mounting surface and a port location is  .)

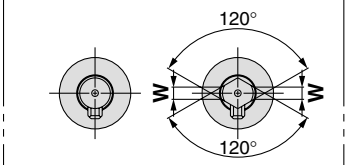
(**CKQ$^{G}_{P}$ME50** Relationship between the mounting surface and a port location is  .)

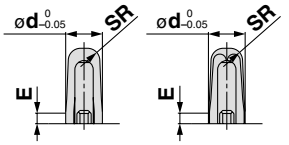
(**CKQ$^{G}_{P}$MF50** Relationship between the mounting surface and a port location is  .)

* Refer to "How to Order" on page 1298 for relationship between the mounting surface and a port location.
* The below figures indicate the CKQ$^{G}_{P}$MC50-□RAH.



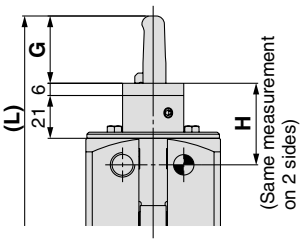
With shims (Clamping height: LOW type) **With shims (Clamping height: HIGH type)**



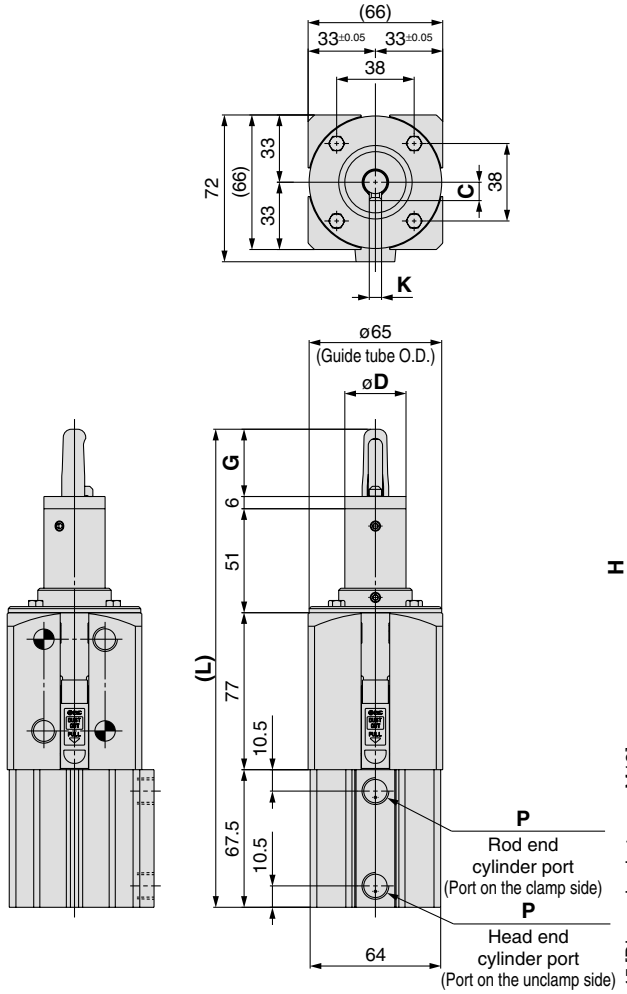


Round type **Diamond type** (Guide pin dia.: ø17.5 or more)

Guide pin shape



Clamping height: LOW type



Hole diameter of workpiece	C	øD	ød	E	G	H		K	L		SR	W	øZ
						LOW type	HIGH type		LOW type	HIGH type			
ø13	9	ø30	ø12.5	≈10	33	Without shims 40±0.05	Without shims 70±0.05	6	204.5	234.5	4	—	ø36
			ø12.7	≈9									
			ø12.8	≈8		With shims 40	With shims 70						
			ø12.9	≈8									
			ø13.0	≈7									
ø15	11	ø30	ø14.5	≈9	34	Without shims 40±0.05	Without shims 70±0.05	7	205.5	235.5	5	—	ø36
			ø14.7	≈8									
			ø14.8	≈8		With shims 40	With shims 70						
			ø14.9	≈7									
			ø15.0	≈7									
ø16	11	ø30	ø15.5	≈10	34	Without shims 40±0.05	Without shims 70±0.05	7	205.5	235.5	5.5	—	ø36
			ø15.7	≈9									
			ø15.8	≈8		With shims 40	With shims 70						
			ø15.9	≈8									
			ø16.0	≈7									
ø18	12	ø35	ø17.5	≈10	37	Without shims 40±0.05	Without shims 70±0.05	7	208.5	238.5	6	6	ø40
			ø17.7	≈9									
			ø17.8	≈8		With shims 40	With shims 70						
			ø17.9	≈8									
			ø18.0	≈7									
ø20	13	ø35	ø19.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	7	7	ø40
			ø19.7	≈9									
			ø19.8	≈8		With shims 40	With shims 70						
			ø19.9	≈8									
			ø20.0	≈7									
ø25	16	ø40	ø24.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	9.5	7	ø47
			ø24.7	≈9									
			ø24.8	≈8		With shims 40	With shims 70						
			ø24.9	≈8									
			ø25.0	≈7									
ø30	18	ø40	ø29.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	210.5	240.5	11	9	ø47
			ø29.7	≈9									
			ø29.8	≈8		With shims 40	With shims 70						
			ø29.9	≈8									
			ø30.0	≈7									

P		
Nil	TN	TF
Rc 1/4	NPT 1/4	G 1/4

Dimensions

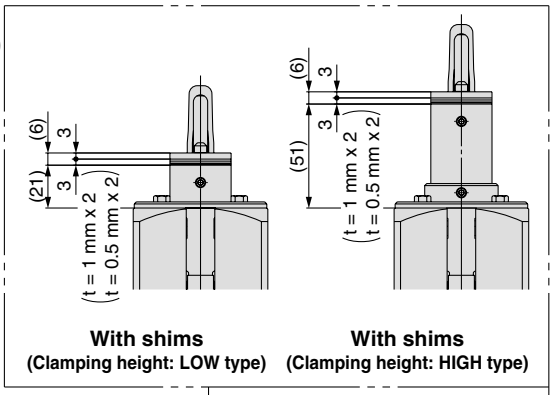
CLKQ$^{G}_{P}$MC50

(**CLKQ$^{G}_{P}$MD50** Relationship between the mounting surface and a port location is  .)

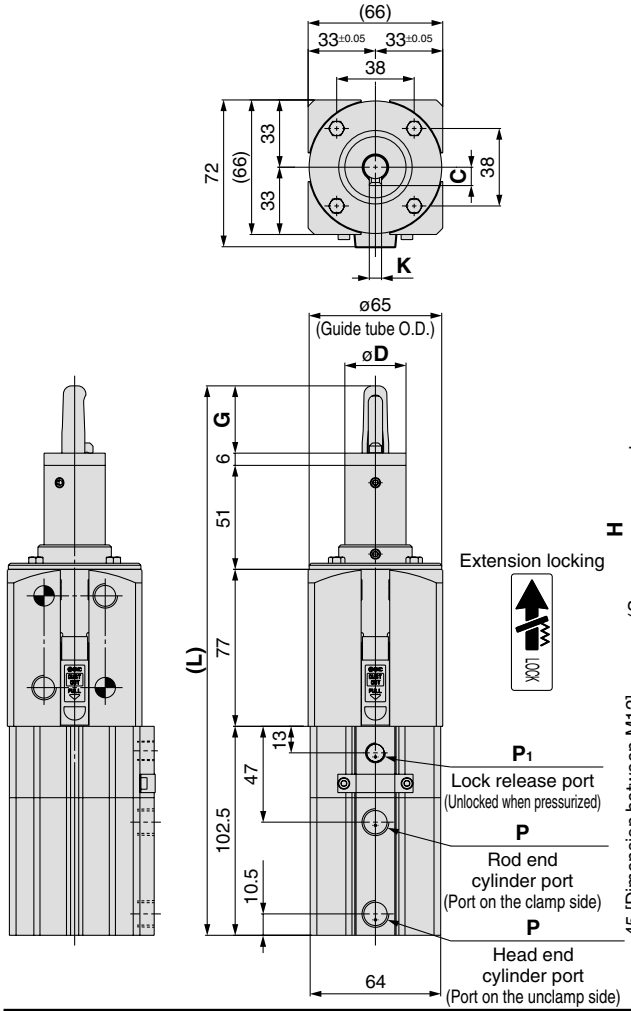
(**CLKQ$^{G}_{P}$ME50** Relationship between the mounting surface and a port location is  .)

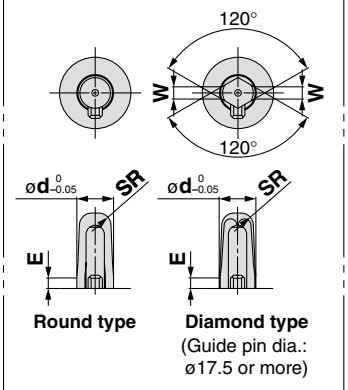
(**CLKQ$^{G}_{P}$MF50** Relationship between the mounting surface and a port location is  .)

* Refer to "How to Order" on page 1298 for relationship between the mounting surface and a port location.
* The below figures indicate the CLKQ$^{G}_{P}$MC50-□RAH.



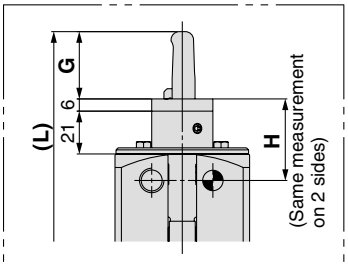
With shims (Clamping height: LOW type) **With shims (Clamping height: HIGH type)**





Round type **Diamond type** (Guide pin dia.: ø17.5 or more)

Guide pin shape



Clamping height: LOW type

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø13	9	ø30	ø12.5	≈10	33	Without shims 40±0.05	Without shims 70±0.05	6	239.5	269.5	4	—	ø36
			ø12.7	≈9									
			ø12.8	≈8		With shims 40	With shims 70						
			ø12.9	≈8									
			ø13.0	≈7									
ø15	11	ø30	ø14.5	≈9	34	Without shims 40±0.05	Without shims 70±0.05	7	240.5	270.5	5	—	ø36
			ø14.7	≈8									
			ø14.8	≈8		With shims 40	With shims 70						
			ø14.9	≈7									
			ø15.0	≈7									
ø16	11	ø30	ø15.5	≈10	34	Without shims 40±0.05	Without shims 70±0.05	7	240.5	270.5	5.5	—	ø36
			ø15.7	≈9									
			ø15.8	≈8		With shims 40	With shims 70						
			ø15.9	≈8									
			ø16.0	≈7									

Hole diameter of workpiece	C	øD	ød	E	G	H LOW type	H HIGH type	K	L LOW type	L HIGH type	SR	W	øZ
ø18	12	ø35	ø17.5	≈10	37	Without shims 40±0.05	Without shims 70±0.05	7	243.5	273.5	6	6	ø40
			ø17.7	≈9									
			ø17.8	≈8		With shims 40	With shims 70						
			ø17.9	≈8									
			ø18.0	≈7									
ø20	13	ø35	ø19.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	7	7	ø40
			ø19.7	≈9									
			ø19.8	≈8		With shims 40	With shims 70						
			ø19.9	≈8									
			ø20.0	≈7									
ø25	16	ø40	ø24.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	9.5	7	ø47
			ø24.7	≈9									
			ø24.8	≈8		With shims 40	With shims 70						
			ø24.9	≈8									
			ø25.0	≈7									
ø30	18	ø40	ø29.5	≈10	39	Without shims 40±0.05	Without shims 70±0.05	8	245.5	275.5	11	9	ø47
			ø29.7	≈9									
			ø29.8	≈8		With shims 40	With shims 70						
			ø29.9	≈8									
			ø30.0	≈7									

P			P1		
Nil	TN	TF	Nil	TN	TF
Rc 1/4	NPT 1/4	G 1/4	Rc 1/8	NPT 1/8	G 1/8

Auto Switch Mounting

For D-P4DW□□, D-P7□ and P79WSE models

1. Mount the auto switch mounting bracket onto the auto switch mounting nut by tightening bracket fixing screw lightly through the mounting hole on the top of bracket.

2. Insert the auto switch mounting bracket assembly (bracket + nut) into the mounting groove and set it at the auto switch mounting position.

3. Push the auto switch mounting screw lightly into the auto switch through the mounting hole to secure.

4. After reconfirming the detecting position, tighten the auto switch mounting screw to secure the auto switch mounting bracket and the auto switch. (Tightening torque should be 0.5 to 0.7 N·m.) (See Fig. 1 and Fig. 2.)

∗ Be aware that the D-P79WSE should be installed in the specified direction shown when installed to the auto switch mounting bracket. Be sure to mount it so that the soft resin mold surface is in contact with the auto switch mounting bracket. (See Fig. 2.)

Auto switch mounting bracket part number	Items and number of each item
BQP1T-050	• Switch mounting bracket x 1 • Switch mounting nut x 1 • Hexagon socket head cap screw x 2 • Hexagon socket head cap screw x 2 (with switch)

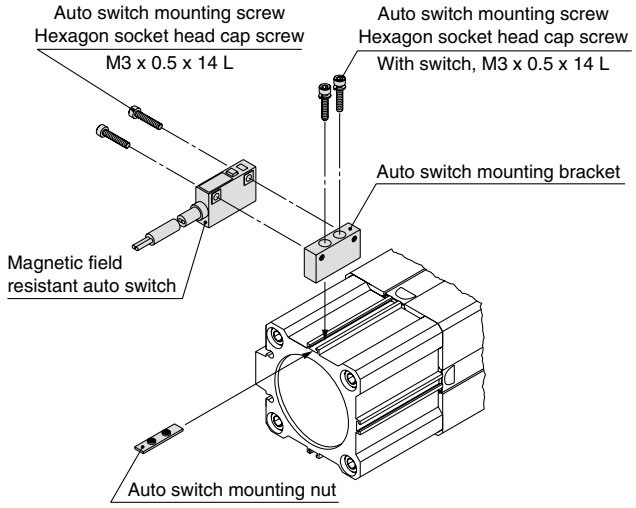


Figure 1

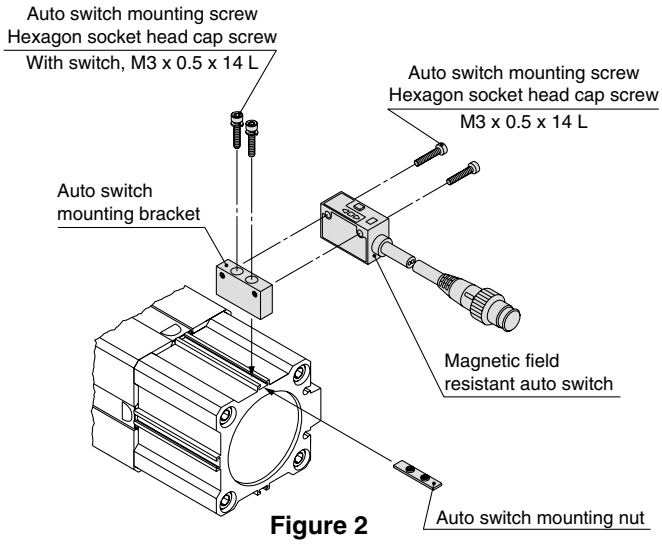


Figure 2

Besides the models listed in "How to Order," the following auto switches are applicable.

∗ For magnetic field resistant 2-color indication solid state auto switches, auto switches with pre-wired connector (D-P4DW□DPC type) are also available.
Refer to pages 1784 and 1785.

Auto Switch Proper Mounting Position and Its Mounting Height

Auto Switch Proper Mounting Position

Environment	Welding			
Mounting	Rail mounting			
Model	D-P4DWSE D-P4DWSC D-P4DWL D-P4DWZ		D-P74L D-P74Z D-P79WSE	
	A	B	A	B
CKQG	7	17 or more	—	—
CLKQG	42	52 or more	—	—
CKQP	—	—	5.5	20.5 or more
CLKQP	—	—	40.5	55.5 or more

Note) Adjust the auto switch after confirming the operation to set actually.

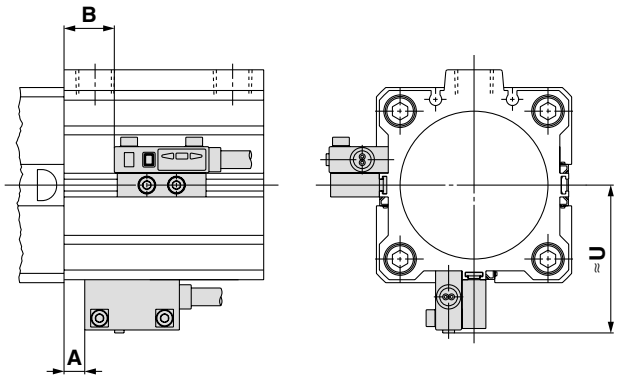
Auto Switch Proper Mounting Height

Environment	Welding	
Mounting	Rail mounting	
Model	D-P4DWSE D-P4DWSC D-P4DWL D-P4DWZ	D-P74L D-P74Z D-P79WSE
	≈U	
C(L)KQG	50	—
C(L)KQP	—	50

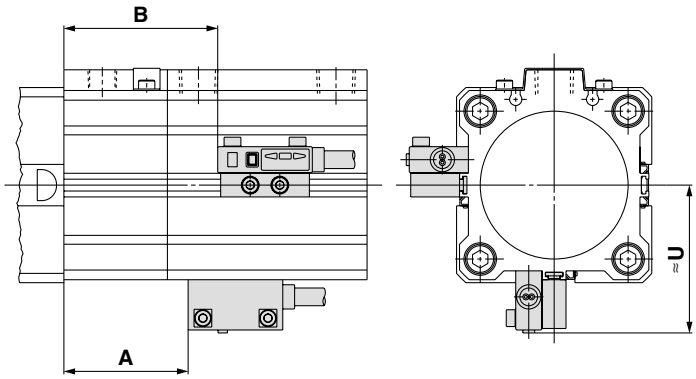
Rail mounting type (Different-surface mounting)

• Applicable auto switch: **D-P4DW□□**

[CKQG]

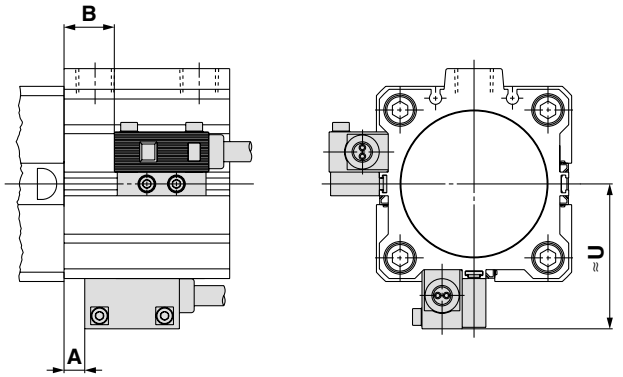


[CLKQG]

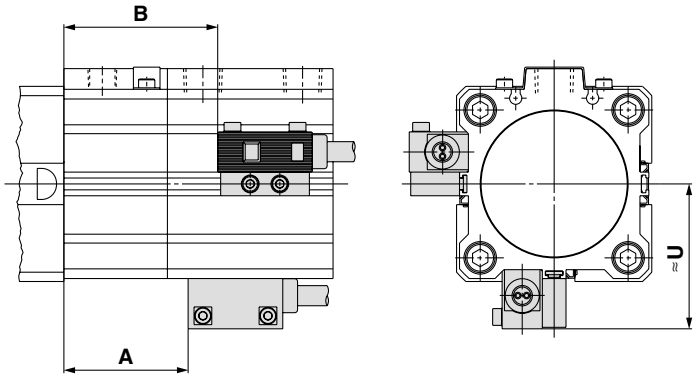


• Applicable auto switch: **D-P74□/D-P79WSE**

[CKQP]



[CLKQP]



Operating Range

Cylinder model	Auto switch model	Operating range
C(L)KQG	D-P4DWS□ D-P4DW□	6.5
C(L)KQP	D-P74□ D-P79WSE	10

∗ Since this is a guideline including hysteresis, not meant to be guaranteed.
(Assuming approximately ±30% dispersion.)
There may be the case it will vary substantially depending on an ambient environment.

Series $CKQ^{G}_{P}\square/CLKQ^{G}_{P}\square$
Specific Product Precautions 1

Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Design

⚠Warning

1. There is a possibility of dangerous sudden action by cylinders if sliding parts of machinery are twisted due to external forces, etc.

In such cases, human injury may occur; e.g., by catching hands or feet in the machinery, or damage to the machinery itself may occur. Therefore, the machine should be adjusted to operate smoothly and designed to avoid such dangers.

2. A protective cover is recommended to minimize the risk of personal injury.

If a stationary object and moving parts of a cylinder are in close proximity, personal injury may occur. Design the structure to avoid contact with the human body.

3. Securely tighten all stationary parts and connected parts so that they will not become loose.

Especially when a cylinder operates with high frequency or is installed where there is a lot of vibration, ensure that all parts remain secure.

4. Design the equipment so that the maximum theoretical force is not applied to the cylinder.

If the cylinder becomes damaged there is a danger of human injury and or equipment damage.

5. Select the mounting base by taking into consideration its rigidity because the cylinder applies a large amount of force.

Otherwise there is a danger of human injury and or equipment damage.

6. Consider the possibility of a decrease in circuit pressure when power is turned off.

If the cylinder is used for a clamping application there is a danger of the workpiece being released since the circuit pressure decreases when the power is turned off. Install safety equipment to prevent human injury and damage to machine and or equipment. The same consideration should be given for hanging or lift applications to prevent dropping of a workpiece.

7. Consider a possible loss of power source.

Measures should be taken to protect against bodily injury and equipment damage in the event that there is a loss of power to equipment controlled by pneumatics, electricity, or hydraulics.

8. Consider emergency stops.

Design so that human injury and/or damage to machinery and equipment will not be caused when machinery is stopped by a safety device under abnormal conditions, a power outage or a manual emergency stop.

9. Consider the action when operation is restarted after an emergency stop or abnormal stop.

Design the machinery so that human injury or equipment damage will not occur upon restart of operation.

When the cylinder has to be reset at the starting position, install manual safely equipment.

10. Intermediate stop

In the case of 3-position closed center of a valve, it is difficult to make a piston stop at the required position as accurately and precisely as with hydraulic pressure due to compressibility of air. Furthermore, since valves and cylinders, etc. are not guaranteed for zero air leakage, it may not be possible to hold a stopped position for an extended period of time. Contact SMC in the case it is necessary to hold a stopped position for an extended period. Do not intermediately stop the CLKQ cylinder during a locking operation because it will shorten the life of the cylinder.

Selection

⚠Warning

1. Confirm the specifications.

The products featured in this catalog are designed for use in industrial compressed air systems. If the products are used in conditions where pressure and/or temperature are outside the range of specifications, damage and/or malfunctions may occur. Do not use in these conditions. (Refer to the specifications.)
Consult SMC if you use a fluid other than compressed air.

2. Do not use for applications other than clamping.

Since the cylinder performs both positioning and clamping simultaneously, any other application may cause an accident or damage to the cylinder.

3. Do not modify the cylinder.

Do not modify the cylinder because it may cause damage to it, shorten the protect life, and or cause an accident.

4. The following table shows the maximum thickness of workpieces that be clamped.

Model	Without shims	With shims
CKQG	10 mm	10 to 13 mm
CLKQG	10 mm	10 to 13 mm
CKQP	10 mm	10 to 13 mm
CLKQP	10 mm	10 to 13 mm

Workpieces to be clamped should not be thicker than those shown in the table.

5. Clamp only the flat side of a workpiece.

6. If a workpiece is transferred three dimensionally and at high speed by a robot after it is clamped, the work weight must be 1/10 or less of the theoretical thrust (clamping force), or stoppers should be installed as a preventive measure for the movement of the workpiece.

7. Do not clamp without setting the workpiece on a work surface.

If the clamp arm makes contact with the seat surface without clamping a workpiece, the surface flatness condition of the seat surface and the clamp arm (the clamping surface) will be adversely effected.

8. Do not apply an impact load, strong vibrations or rotating force to the product.

Since the cylinder is composed of precisely manufactured parts, they may be damaged and the life may be shortened if a strong impact load, strong vibration or rotating force are applied.

Series $CKQ^{G}_{P}\square/CLKQ^{G}_{P}\square$
Specific Product Precautions 2

Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Selection

⚠Warning

[For the CLKQG/P series only]

9. Do not use for intermediate cylinder stops.

This cylinder is designed to lock in a clamped condition to prevent unwanted movement. Do not perform any intermediate stops while the cylinder is operating, since it will shorten the product life.

10. Select the correct locking position since this cylinder does not generate a holding force opposite to the locking direction.

The forwarded lock type (F type) clamp does not generate a holding force in the opposite direction (clamping direction). In addition the locking direction can not be changed.

11. Even when locked, there may be a stroke movement of approximately 1 mm in the locking direction due to external forces, such as the weight of the workpiece.

Even when locked, if air pressure drops, a stroke movement of approximately 1 mm may occur in the locking direction. This is caused by external forces, such as, the workpiece weight due to the general characteristics of the locking mechanism.

Applicable Guide Pin Diameter

Model	Guide pin diameter (mm)														
	12.5	12.7	12.8	12.9	13.0	14.5	14.7	14.8	14.9	15.0	15.5	15.7	15.8	15.9	16.0
Applicable hole diameter of workpiece	For ø13					For ø15					For ø16				
Guide pin shape	Round type														

Model	Guide pin diameter (mm)																			
	17.5	17.7	17.8	17.9	18.0	19.5	19.7	19.8	19.9	20.0	24.5	24.7	24.8	24.9	25.0	29.5	29.7	29.8	29.9	30.0
Applicable hole diameter of workpiece	For ø18					For ø20					For ø25					For ø30				
Guide pin shape	Round type, Diamond type																			

Clamping Force (N)

Model	Guide pin diameter (mm)	Operating pressure (MPa)								
		0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CKQG **CKQP**	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	1154	1319	1484
	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	—	—	—
CLKQG **CLKQP**	ø12.5 to ø13.0	82.4	247.3	412.2	577.1	742.0	906.9	1071.8 Note 1)	1236.7 Note 1)	1401.6 Note 1)
	ø14.5 to ø30.0	82.4	247.3	412.2	577.1	742.0	906.9	—	—	—

Note 1) When designing a circuit with an operating pressure that exceeds 0.75 MPa, consider the holding force of the lock since the holding force for the CLKQG/P lock is 982 N. The cylinder should be used below the maximum theoretical holding force because damage, shortening of life, and or an accident may occur due to friction in the lock section or damage from a load which exceeds the lock holding force.

Note 2) Design a circuit taking into consideration that it takes approximately 0.3 seconds from the time an unclamped cylinder starts to operate to the time that the clamping force is generated.

Note 3) Take into consideration the durability of a workpiece because it may be damaged if the clamping force is too great.

⚠Caution

1. To adjust the cylinder speed, attach a speed controller and begin to adjust the speed by setting it to a low speed first. Gradually increase the set speed till the required speed is reached.

Series CKQ$^{G}_{P}$□/CLKQ$^{G}_{P}$□
Specific Product Precautions 3

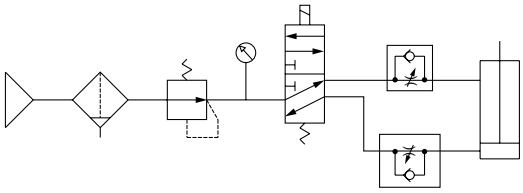
Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Pneumatic Circuit

⚠Warning

1. Recommended pneumatic circuit for the CKQG/P series

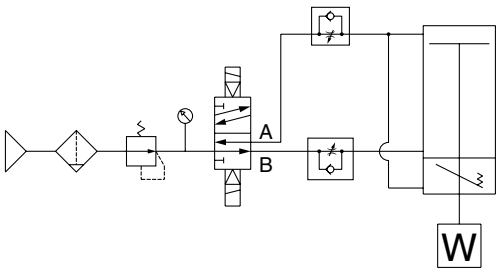
The following is an example of a basic meter-out control circuit for operating a cylinder using an air filter, a regulator, a solenoid valve and a speed controller.



Recommended pneumatic circuit

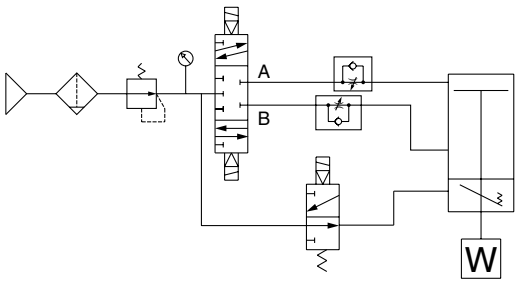
2. Recommended pneumatic circuit for the CLKQG/P series

1) Do not use a 3-positioning valve (double check valve, exhaust center or pressure center types) for any application because the lock may fail due to unlocking pressure.
2) Install speed controllers for meter-out control.
   If it used in meter-in control, it may result in malfunction.
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.
4) Branch off of the compressed air piping for the lock unit between the cylinder and the speed controller.
   Branching off of another part may shorten the product life.
5) Construct piping so that the piping length from the branched point to the lock unit is short. If it is long, unlocking may not function well, and it may shorten product life of the lock.
6) SMC recommends a 2-position double solenoid valve is used.



Recommended pneumatic circuit

7) It is possible to use the pneumatic circuit shown below. However, unlock the cylinder before operating. Also, unlock the cylinder first before operating the cylinder in any direction.
   In the event that unlocking is initially delayed, it will cause product damage and drastic shortening of product life. It is also highly dangerous because there is possibility of the cylinder lurching at high speed. The cylinder must be unlocked before operating it in free direction, as well.
8) When the pneumatic circuit indicated below is used, please remember that the work displacement at the locked position of the cylinder to the direction that the stroke advances may be a large degree.
   Depending on the piping length and the exhaust time, the activation of the locking function may be delayed, resulting in a large degree of work displacement in the direction of the advancing stroke.



Mounting

⚠Caution

1. Do not use the cylinder until it is confirmed that the equipment is operating correctly.

After installation, maintenance or replacement, connect the compressed air or electricity and verify that the installation is correct by performing appropriate function and/or leakage tests.

2. Do not dent the cylinder tube or the guide pin parts.

Slight deformation will cause a malfunction since the tube I.D. is manufactured with a tight tolerance. Excessive impact will cause damage to the guide pin because it is heat treated.

3. Prevent any foreign materials, such as machining chips, from entering into internal cylinder from the air supply port.

When the mounting holes for the cylinder are made, machined chips may enter the cylinder from the air supply port if the cylinder is left near the installation site. Prevent the machining chips from entering into the cylinder.

4. The opening part of a guide pin should not face in the same direction as oncoming spatter.

If the spatter enters the cylinder from the opening part of the guide pin, it will shorten the product life and cause a malfunction.

Series $CKQ^{G}_{P}\square/CLKQ^{G}_{P}\square$
Specific Product Precautions 4

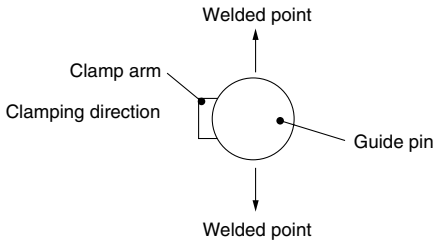
Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Mounting

⚠Caution

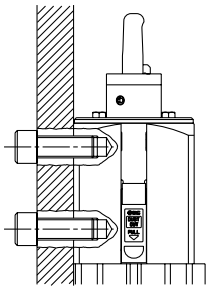
5. Consider the welding point of the guide pin when determining the direction of the clamp arm setting.

The clamp arm will be damaged if clamping is performed at the welded point of the guide pin. Therefore, set the clamping direction as illustrated below, so that the welded point is not effected by clamping.



6. When assembling and adjusting the product, begin the task by applying pressure only to the unlocking port (for the CLKQG/P series only).

7. When attaching a cylinder to the equipment, use the tightening torque specified in the below table.



Thread size	Tightening torque (N·m)
M10	20 to 25
M12	35 to 42

8. Check the auto switch operation when the product is used where welding is performed.

9. When installing a cylinder with an auto switch, secure enough space on the bottom side of the cylinder providing the minimum bending radius for the lead wire to permit better serviceability (such as replacement of groove mounting auto switches).

10. Operating manual

Install the products and operate them only after reading the operating manual carefully and understanding its contents. Also, keep the manual where it can be referred to as necessary.

Piping

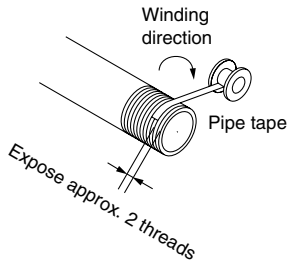
⚠Caution

1. Before piping

Before piping, it should be thoroughly blown out with air (flushing) or washed to remove chips, cutting oil and other debris from inside the pipe.

2. Wrapping of pipe tape

When screwing piping or fittings into ports, ensure that chips from the pipe threads or sealing material do not get inside the piping. Also, when the pipe tape is used, leave 1.5 to 2 thread ridges exposed at the end of the threads.



3. Piping length should be short.

If the piping to the cylinder is too long, the volume of water vapor in the internal tubing increases beyond that of the internal cylinder due to the generation of water vapor by adiabatic expansion. Since the water vapor stays inside of the tubing without being released into the air, repeated operation results in the generation of water. Grease in the cylinder is drained out as it flows away with the water. This action lowers the smoothness in the cylinder, resulting in air leakage due to worn out seals, and or malfunction due to increased friction resistance. Please do the following to prevent this problem:

1) Tubing from a solenoid valve to a cylinder should be as short as possible to assure the evacuation of the generated water vapor into the air.
   As a guide, the air capacity in the cylinder, which when converted to atmospheric pressure x 0.7 should be ≥ the piped tubing capacity.
2) Pipe a speed exhaust controller ASV and a quick exhaust valve to a cylinder to exhaust the exhaust pressure directly to the air.
3) Piping port should face downward so that the generated moisture inside tubing does not easily return to the cylinder.

Series $CKQ^{G}_{P}\square/CLKQ^{G}_{P}\square$
Specific Product Precautions 5

Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Lubrication

⚠Caution

1. Lubrication for the CKQG/P cylinder

The cylinder is lubricated at the factory, and can be used without further lubrication.
In the event that lubricant is used, install a lubricator in the circuit and use Class 1 turbine oil (without additives) ISO VG-32.
A malfunction can occur due to loss of the original lubricant if lubrication is stopped in the future. Therefore, once lubrication is applied, it must be used continuously.

2. Lubrication for the CLKQG/P cylinder

Do not lubricate because it may considerably lower the locking performance.

Maintenance

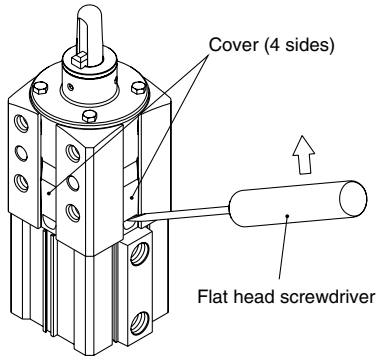
⚠Caution

1. If spatter enters the cylinder body, remove it by first detaching the covers. Do not scratch or make dents on the sliding parts of the piston rod by striking it with other objects or grasping them with other objects.

Since the outside diameter of a piston rod is manufactured with a tight tolerance, even a slight deformation can cause an operation malfunction.
Any scratches and dents on the sliding parts of the piston rod can cause damage to the seals, resulting in air leakage.

2. To release the cover, insert a flat head screwdriver in the notch on the cover and apply force.

If a finger is used to remove the cover, the edge of the cover's notch may injure the finger.



3. Drain flushing

Remove drainage from air filters regularly. (Refer to the specifications.)

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. 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 the back of page 1314, or move the welding cable away from the cylinder.
3) Cannot be used in an environment where welding cables surround the cylinder.
4) Consult SMC when a welding cable and welding gun electrodes (something energized with secondary current) are near multiple switches.

2. In an environment where spatter directly hits the lead wire, cover the lead wire with protective tubing. Use protective tubing I.D. ø8 or more that has excellent heat resistance and flexibility.

Contact Capacity

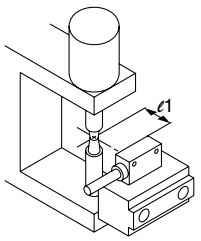
Never operate a load that exceeds the maximum contact capacity of the auto switch.

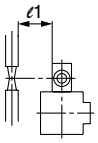
Series $CKQ^{G}_{P}\square/CLKQ^{G}_{P}\square$
Specific Product Precautions 6

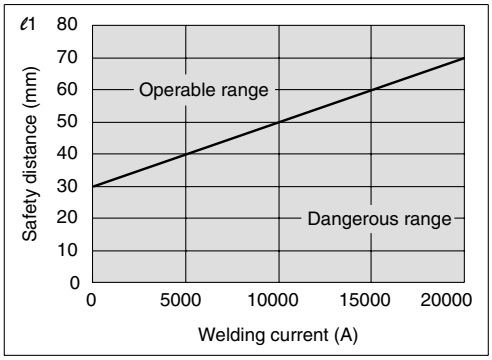
Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

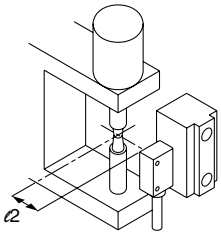
Data: Magnetic Field Resistant Reed Switch (D-P79WSE type, D-P74□ type) Safety Distance

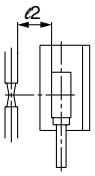
Safety Distance from Side of Auto Switch

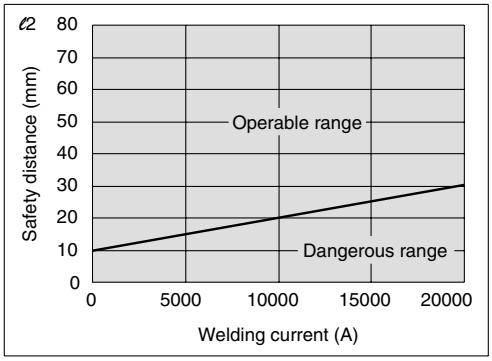




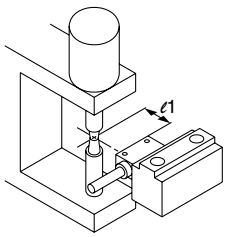


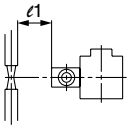


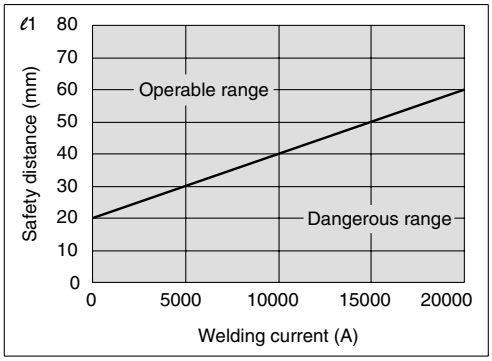


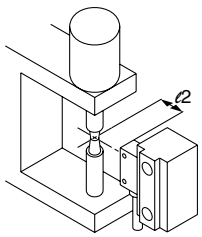


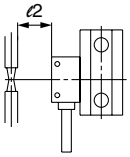
Safety Distance from Top of Auto Switch

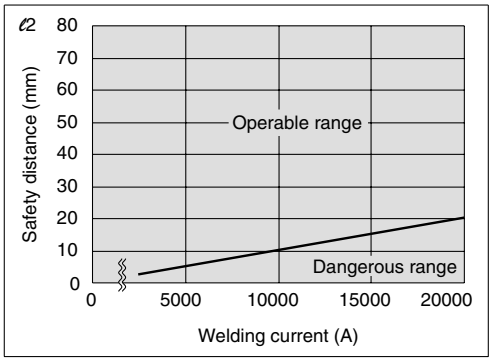












Series $CKQ^{G}_{P}\square/CLKQ^{G}_{P}\square$
Specific Product Precautions 7

Be sure to read before handling.
Refer to front matters 42 and 43 for Safety Instructions and pages 3 to 11 for Actuator and Auto Switch Precautions.

Operation

⚠Warning

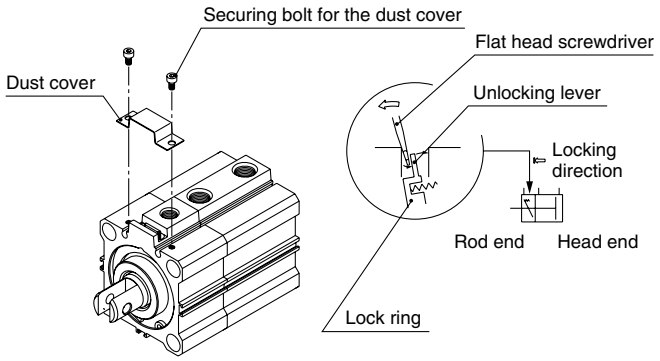
1. Do not unlock when an external force, such as a load or spring force is being applied.

This is very dangerous because the cylinder will move suddenly. Take the following steps.

1) Restore the air pressure in the B line of the pneumatic circuit to operating pressure. Once restored, gradually let the air pressure drop.
2) If air pressure cannot be used, prevent cylinder movement with a lifting device such as a jack, then release the lock.

2. After all safety precautions have been confirmed, perform the manual release by following the steps shown below.

Carefully confirm that no one is inside the load movement range, that there is no danger even if the load moves suddenly, etc.



How to unlock manually

1) Remove the dust cover.
2) Insert a flat head screwdriver on the rod end of the manual unlocking lever as shown in the figure above, and lightly push the screwdriver in the direction of the arrow (rod end) to unlock.