Pin Clamp Cylinder Series C(L)KQG /C(L)KQP



types of guide pins

Compatible with a broad range of workpiece configurations

Guide pin diameter



Round type

Diamond type

Applicable Guide Pin Diameter

	Bound turns						Guid	le pin	diam	eter (mm)										
nound type	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	e For ø13 For ø15 For ø16																			
	Guide pin shape	Round type																			
		Guide pin diameter (mm)																			
	Round type								G	uide p	oin dia	amete	er (mr	n)							
I	Round type Diamond type	17.5	17.7	17.8	17.9	18.0	19.5	19.7	G 19.8	uide p 19.9	oin dia 20.0	amete 24.5	er (mr 24.7	n) 24.8	24.9	25.0	29.5	29.7	29.8	29.9	30.0
1	Round type Diamond type Applicable hole diameter of workpiece	17.5	17.7 F	17.8 or ø1	17.9 8	18.0	19.5	19.7 F	G 19.8 or ø2	uide p 19.9 0	pin dia 20.0	amete 24.5	er (mr 24.7 F	n) 24.8 or ø2	24.9 5	25.0	29.5	29.7 F	29.8 or ø3	29.9 0	30.0



D--X 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.



4 body types for a broad range of installation conditions



Pin Clamp Cylinder Mounting Variations

Series C(L)KQG . /C(L)KQP



Pin Clamp Cylinder Diseries Series CKQP D/CLKQPD



Symbol 125 127 128 129 130 145 147 148 149 150 155 157 158 159 160 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 Guide pin diameter Applicable hole diameter of workpiece For ø13 For ø15 For ø16 Guide pin shape Round type Round type Diamond type 175 177 178 179 180 195 197 198 199 200 245 247 248 249 250 295 297 298 299 300 Symbol 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

Pin Clamp Cylinder Series CKQ^G_PD/CLKQ^G_PD

Applicable cylinder series	Туре	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		D-P3DWSC				2-wire		0.3 m		DAK
		D-P4DWSC		Bro wired connector	_	(3–4)				-Z
		D-P3DWSE				2-wire				MK2T
		D-P4DWSE	AC magnetic field			(1-4)				CKQ CLKQ
	Solid state auto switch	D-P3DW	(Single-phase AC welding magnetic field)	Grommet	2-color display	olor lay 2-wire	24 VDC	0.5 m	Relay,	CK□1 -Z
		D-P3DWL						3 m		CLK2
		D-P4DWL							PLC Note 1)	
		D-P3DWZ								
		D-P4DWZ						511		
		D-P79WSE		Pre-wired connector	2-color display	2-wire (1-4)	24 VDC	0.3 m		
Series C(L)KQP	Reed auto switch	D-P74L	DC/AC magnetic field	Crommet	1-color	2-wire	24 VDC 100 VAC	3 m		
		D-P74Z		Grommet	display	2-wire		5 m		

Table 2. Applicable Auto Switches / For detailed specifications about an auto switch for itself, refer to pages 1893 to 2007.

Note 1) PLC: Programmable Logic Controller

Note 2) There are other applicable auto switches other than the listed above. For details, refer to page 1447.

D-🗆 -X🗆

Series CKQ^G_PD/CLKQ^GD



Basic Specifications

Action	Double acting			
Bore size (mm)	50			
Fluid	Air			
Minimum operating pressure	CKQD: 0.1 MPa CLKQD (With lock): 0.15 M			
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			
Clamp stroke	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.

Weight

				Unit: kg
Model		C(L)	(Q [₽] D	
Guide pin	Witho	ut lock	With	lock
diameter (mm)	L	Н	L	Н
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

Clamp Specifications

										(N)
Madal	Guide pin			Op	erating	press	ure (MI	Pa)		
woder	diameter	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CKOG	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	_	-	_
CKUp	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2	1484.1
	ø12.5 to ø13.0	82.4	247.3	412.2	577.1	742.0	906.9	_	_	_
CLKQp	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 CLKQD 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.

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				



Pin Clamp Cylinder Series CKQ^G D/CLKQ^G D

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.

Spare Parts

Replacement Parts: Grease Pack

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

* Consult SMC when replacing the actuating cylinders.

Guide Pir	ns Assem	bly		* Parallel pin (2 x 8 L, 1 pc.)	
Diameter	Shape	Without shim	With shim	Shape	Without shim	With shim
12.5		CKQG-R125	CKQG-R125S			/
12.7		CKQG-R127	CKQG-R127S			
12.8		CKQG-R128	CKQG-R128S			
12.9		CKQG-R129	CKQG-R129S			
13.0]	CKQG-R130	CKQG-R130S			
14.5]	CKQG-R145	CKQG-R145S			/
14.7]	CKQG-R147	CKQG-R147S		/	
14.8	1	CKQG-R148	CKQG-R148S	7		
14.9]	CKQG-R149	CKQG-R149S			
15.0]	CKQG-R150	CKQG-R150S			
15.5	1	CKQG-R155	CKQG-R155S	7		
15.7]	CKQG-R157	CKQG-R157S		/	
15.8	1	CKQG-R158	CKQG-R158S	7 /		
15.9	1	CKQG-R159	CKQG-R159S	7 /		
16.0]	CKQG-R160	CKQG-R160S			
17.5	1	CKQG-R175	CKQG-R175S		CKQG-D175	CKQG-D175S
17.7	1	CKQG-R177	CKQG-R177S	7	CKQG-D177	CKQG-D177S
17.8	Round	CKQG-R178	CKQG-R178S		CKQG-D178	CKQG-D178S
17.9]	CKQG-R179	CKQG-R179S		CKQG-D179	CKQG-D179S
18.0]	CKQG-R180	CKQG-R180S		CKQG-D180	CKQG-D180S
19.5]	CKQG-R195	CKQG-R195S		CKQG-D195	CKQG-D195S
19.7]	CKQG-R197	CKQG-R197S		CKQG-D197	CKQG-D197S
19.8		CKQG-R198	CKQG-R198S		CKQG-D198	CKQG-D198S
19.9		CKQG-R199	CKQG-R199S		CKQG-D199	CKQG-D199S
20.0]	CKQG-R200	CKQG-R200S	Diamond	CKQG-D200	CKQG-D200S
24.5		CKQG-R245	CKQG-R245S	Diamonu	CKQG-D245	CKQG-D245S
24.7		CKQG-R247	CKQG-R247S		CKQG-D247	CKQG-D247S
24.8		CKQG-R248	CKQG-R248S		CKQG-D248	CKQG-D248S
24.9		CKQG-R249	CKQG-R249S		CKQG-D249	CKQG-D249S
25.0		CKQG-R250	CKQG-R250S		CKQG-D250	CKQG-D250S
29.5]	CKQG-R295	CKQG-R295S		CKQG-D295	CKQG-D295S
29.7]	CKQG-R297	CKQG-R297S		CKQG-D297	CKQG-D297S
29.8]	CKQG-R298	CKQG-R298S		CKQG-D298	CKQG-D298S
29.9]	CKQG-R299	CKQG-R299S		CKQG-D299	CKQG-D299S
30.0]	CKQG-R300	CKQG-R300S	7	CKQG-D300	CKQG-D300S

Clamp Arm Pins Assembly

-	-
Applicable hole diameter	Kit no.
12.5 to 13.0	CKQG-13A
14.5 to 16.0	CKQG-15A
17.5 to 18.0	CKQG-18A
19.5 to 20.0	CKQG-20A
24.5 to 25.0	CKQG-25A
29.5 to 30.0	CKQG-30A

* Cotter pin (1.6 x 12 L, 1 pc.)

Series CKQ^G_PD/CLKQ^G_PD

Construction

CKQGDA50

* The below figures indicate the CKQGDA50-□RAL.









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

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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	

Pin Clamp Cylinder Series CKQ^G_PD/CLKQ^G_PD

Construction

13

14

15

16

Spring washer

Hexagon socket he set screw

Parallel pin

Cotter pin

Stainless steel

Tool steel

Stainless steel

Structural steel

29

30

31

32

Dust cover

Piston

Dust cover holding bol

Unit holding bolt

Steel strip

Structural steel

Structural steel

Aluminum allov

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45

46

Spring pin

Parallel pin

Coil scraper

D-□ -X□

Tool steel

Stainless stee

1413

Series CKQ^G_PD/CLKQ^G_PD

Construction

CKQPDA50

* The below figures indicate the CKQPDA50-□RAL.













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				

No.	Description	Material	Note		
17	Shim A	Stainless steel	t = 1 mm		
18	Shim B	Stainless steel	t = 0.5 m		
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			

Pin Clamp Cylinder Series CKQ^G_PD/CLKQ^G_PD





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Series CKQ^G_PD/CLKQ^G_PD

Dimensions



teler iece						ŀ	1		I	_										
Hde dian of workp	С	øD	ød	E	G	LOW type	HIGH type	ĸ	LOW type	HIGH type	SR	w	øΖ							
			ø12.5	≡10		Without	Without													
			ø12.7	≡9		shims	shims		204.5 234.5											
ø 13	9	ø30	ø12.8	≡8	33	60±0.05	90±0.05	6		234.5	4	-	ø36							
			ø12.9	≡8	1	shims	shims													
			ø13.0	≡7		60 90														
			ø14.5	≡9		Without Without														
			ø14.7	≡8	shims	shims														
ø 15	11	ø30	ø14.8	≡8	34	00±0.05	90±0.05	7	205.5	235.5	235.5 5	-	ø36							
			ø14.9	≡7	shim		s	shims	shims	shims	shims	shims	shims	shims						
			ø15.0	≡7		60	90													
			ø15.5	≡10		Without	Without													
			ø15.7	≡9		shims	shims													
ø 16	11	ø30	ø15.8	≡8	34	00±0.05	90±0.05	7	205.5	235.5	5.5	-	ø36							
			ø15.9	≡8		shime	shims													
			ø16.0	≅7		60	90													

Р								
Nil	TN	TF						
Rc 1/4	NPT 1/4	G 1/4						
1416								

teler	200					ŀ	1		L	_			-
Hdedian	C	øD	ød	E	G	LOW type	HIGH type	ĸ	LOW type	HIGH type	SR	w	øΖ
_			ø17.5	≡10		Without	Without						
			ø17.7	≡9		shims	shims						
ø1	3 12	ø35	ø17.8	≡8	37	0U±0.05	90±0.05	7	208.5	238.5	6	6	ø40
			ø17.9	≡8		shims	shims						
_			ø18.0	≡7		60	90						
			ø19.5	≡10		Without	Without						
			ø19.7	≡9		shims	shims	8					
ø 2) 13	ø35	ø19.8	≡8	39	00±0.05	90±0.05		210.5	240.5	7	7	ø40
			ø19.9	≡8		shims	shims						
			ø20.0	≡7		60	90						
			ø24.5	≡10		Without	Without		210.5				
			ø24.7	≡9		shims	shims			240.5 9.			ø47
ø 2	5 16	ø40	ø24.8	≡8	39	With	90±0.05	8			9.5	7	
			ø24.9	≡8		shims	shims						
			ø25.0	≡7		60	90						
			ø29.5	≡10		Without	Without						
			ø29.7	≡9		shims	shims						
ø 3	ø 30 18	8 ø40	ø29.8	≡8	39	With	With	8	210.5	240.5	11	9	ø47
			ø29.9	≡8		shims	shims						
			ø30.0	≡7		60	90						

Pin Clamp Cylinder Series CKQPD/CLKQPD

Dimensions



Pin Clamp Cylinder Useries CKQP U/CLKQPU



How to Order

Symbol	125	127	128	129	130	145	147	148	149	150	155	157	158	159	160]	\cap			
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		M.	A	M.	
Applicable hole diameter of workpiece		For ø13 For ø15 For ø16										L)	(ď	Ш)						
Guide pin shape		Round type Round type Diamond ty								vpe										
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																		

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Pin Clamp Cylinder Series CKQ^GU/CLKQ^GU

Applicable cylinder series	Туре	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no in use)	Load voltage	Lead wire length	Applicable load	
		D-P3DWSC				2-wire				MK
	Solid state auto switch	D-P4DWSC	AC magnetic field (Single-phase AC welding magnetic field)	Pre-wired connector	2-color display	(3–4)	24 VDC	0.3 m		-Z
		D-P3DWSE		Pre-wired connector		2-wire (1–4)				MK2T
Series C(L)KQG		D-P4DWSE								CKQ CLKQ
		D-P3DW				2-wire		0.5 m		CK□1 -Z
		D-P3DWL		Grommet				3 m	Relay, PLC Note 1)	CLK2
		D-P4DWL								
		D-P3DWZ						5		
		D-P4DWZ						5 m		
		D-P79WSE		Pre-wired connector	2-color display	2-wire (1-4)	24 VDC	0.3 m]	
Series C(L)KQP	Reed auto switch	D-P74L	DC/AC magnetic field	Grommet	1-color display	2-wiro	24 VDC 100 VAC	3 m		
	-	D-P74Z				2-wire		5 m		

SMC

Table 2. Applicable Auto Switches / For detailed specifications about an auto switch for itself, refer to pages 1893 to 2007.

Note 1) PLC: Programmable Logic Controller

Note 2) There are other applicable auto switches other than the listed above. For details, refer to page 1447.



Series CKQ^G_PU/CLKQ^G_PU



Basic Specifications

Action	D	ouble 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				
Clamp stroke	10 mm 10 to 13 mn					
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.

Weight

				Unit: kg
Model		C(L)I	KQ ^g U	
Guide pin	Witho	ut lock With lock		
diameter (mm)	L	Н	L	Н
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)
Madal	Guide pin		Operating pressure (MPa)							
woder	diameter	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
СКОВ	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	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 CLKQD 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.

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

Maintenance Parts

Replacement Parts: Seal Kit

Kit No.	Content	
CQ2B50-PS	Piston seal	
	Rod seal	
	Tube gasket	
* Consult SMC for maintenance convice. Seel kit for maintenance of		

 $^{\rm s}$ Consult SMC for maintenance service. Seal kit for maintenance of the CLKQ_{\rm P}^{\rm S} 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.

Spare Parts

Guide pins and clamp arm assemblies are the same as those for D series. Refer to page 1411 for details.



Pin Clamp Cylinder Series CKQ^G_PU/CLKQ^G_PU

Construction

CKQGUA50

* The below figures indicate the CKQGUA50-DRAL.





MK -Z	
MK2T	
CKQ CLKQ	
CK□1 -Z	
CLK2	



With shims

(17

(18



Clamping height: HIGH type With shims



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				
Description	Material	Note		
Shim A	Stainless steel	t = 1 mm		
Shim B	Stainless steel	t = 0.5 mm		
Cylinder tube	Aluminum alloy			
Piston	Aluminum alloy			
Piston rod	Structural steel			
Collar	Aluminum alloy			
Retaining ring	Tool steel			
Bushing	Lead-bronze casted			
Magnet	—			
Wear ring	Resin			
Piston seal	NBR			
Rod seal	NBR			
Tube gasket	NBR			
Coil scraper	Bronze			
Seal	PET			
	Description Description Shim A Shim B Cylinder tube Piston Piston rod Collar Retaining ring Bushing Magnet Wear ring Piston seal Rod seal Tube gasket Coil scraper Seal	Description Material Description Material Shim A Stainless steel Shim B Stainless steel Cylinder tube Aluminum alloy Piston Aluminum alloy Piston rod Structural steel Collar Aluminum alloy Retaining ring Tool steel Bushing Lead-bronze casted Magnet — Wear ring Resin Piston seal NBR Rod seal NBR Coll scraper Bronze Seal PET		

-X🗆

D-🗆

Series CKQ^GU/CLKQ^GU

Construction



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	

Com	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		

R HS CLKQGU 50 R H H type Clamping height: HIGH type Without shims				
Com	ponent 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		

NBR

Structural steel Tool steel

Stainless steel

Bronze

PFT

43

44

45

46

47

48 Seal

Scraper Hex. socket counter-sunk head screw

Spring pin Parallel pin

Coil scraper



Pin Clamp Cylinder Series CKQ^G U/CLKQ^G U

Construction

CKQPUA50

* The below figures indicate the CKQPUA50-□RAL.



Component Parts

Seal

32

SMC

Component Parts

(17

(18

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	

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		

PET

D-□ -X□

MK -Z

MK2T

CKQ Clkq

CK□1 -Z

CLK2

Series CKQ^GU/CLKQ^GU

Construction



1	воау	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

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	

SMC

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					

PET

49 Seal

Pin Clamp Cylinder Series CKQ^G U/CLKQ^G U

Dimensions



Series CKQ^G/CLKQ^G/CLKQ^G/

Dimensions



teler iece						ŀ	1			_				
Hde diar of workp	C	øD	ød	E	G	LOW type	HIGH type	ĸ	LOW type	HIGH type	SR	w	øΖ	
			ø12.5	≡10		Without	Without							
			ø12.7	≡9		shims	shims							
ø 13	9	ø30	ø12.8	≡8	33	40±0.05	10±0.05	62	239.5 26	269.5	4	-	ø36	
			ø12.9	≡8		shims	shims							
			ø13.0	≡7		40 70	70							
			ø14.5	≡9		Without shims 34 40±0.05 With	Without							
			ø14.7	≡8			34 Shims shims 40±0.05 With With shims shims	shims						
ø 15	11	ø30	ø14.8	≡8	34			10±0.05	7	240.5	270.5	5	-	ø36
			ø14.9	≅7		shims								
_			ø15.0	≡7		40	70							
			ø15.5	≡10		Without	Without							
			ø15.7	≡9	34	shims	shims							
ø16	11	ø30	ø15.8	≡8		4 With shims	With	7	240.5	270.5	5.5	-	ø36	
			ø15.9	≡8			shims							
			ø16.0	≅7		40	70							

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

	= -							-						
	Hide diarr of workpi	С	øD	ød	Е	G	LOW type	HIGH type	HGH K	LOW type	HIGH type	SR	w	øΖ
				ø17.5	≡10		Without	Without					6	
				ø17.7	≡9		shims	shims						
	ø 18	12	ø35	ø17.8	≡8	37	40±0.05	70±0.05	7	243.5	273.5	6		ø40
				ø17.9	≡8		shims	shims						
				ø18.0	≡7		40	70						
				ø19.5	≡10		Without	Without						
				ø19.7	≡9	■9 shims shims ■8 39 40±0.05 70±0.05 ₩ith With With With ■8 40 70	shims							
	ø 20 13	13	I3 ø35	ø19.8	≡8		39 With shims 40	10±0.05	With 8	245.5 275.5	275.5	7	7	ø40
				ø19.9	≡8			shims						
				ø20.0	≡7			70						
				ø24.5	≡10		Without shims	Without Without shims shims 40±0.05 70±0.05 8						
				ø24.7	≡9					245.5	275.5	9.5	7	ø47
	ø 25	16	ø40	ø24.8	≡8	39	40±0.05		8					
				ø24.9	≡8		shims	shims						
				ø25.0	≅7		40	70						
				ø29.5	≡10		Without	Without						
				ø29.7	≡9	39	shims	shims						ø47
	ø 30	18	ø40	ø29.8	≡8		With	With	8	245.5	275.5 1	11	9	
				ø29.9	≡8		shims	shims						
			ø30.0	≡7	1	40	70							

H le s

1426

MK -Z	
MK2T	
CKQ Clkq	
CK□1 -Z	
CLK2	



Pin Clamp Cylinder K series CKQP K/CLKQP K

How to Order



@SMC

Pin Clamp Cylinder Series CKQPGK/CLKQPGK

Applicable cylinder series	Туре	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		D-P3DWSC				2-wire	_			MK	
		D-P4DWSC		Pre-wired connector		(3–4)		0.3 m	0.0		-Z
		D-P3DWSE		Fie-wired connector		2-wire				MK2T	
	Solid state auto switch	D-P4DWSE	AC magnetic field			(1-4)				CKQ CLKQ	
		D-P3DW	(Single-phase AC welding magnetic field)	Grommet	2-color display	2-color display	24 VDC	0.5 m	[CK⊡1 -Z	
		D-P3DWL						3 m	Relay,	CLK2	
		D-P4DWL				2-wire		311	PLC Note 1)		
		D-P3DWZ									
		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	2-wire	24 VDC 100 VAC	3 m			
		D-P74Z		Grommet	display	2-wire		5 m			

Table 2. Applicable Auto Switches / For detailed specifications about an auto switch for itself, refer to pages 1893 to 2007.

Note 1) PLC: Programmable Logic Controller

Note 2) There are other applicable auto switches other than the listed above. For details, refer to page 1447.

D-□ -X□

Series CKQ^G_PK/CLKQ^G_PK



Basic Specifications

Action	Double acting				
Bore size (mm)	50				
Fluid	Air				
Minimum operating pressure	CKQD: 0.1 MPa CLKQD (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

Cuido nin diamatar	Droof proceuro	May appreting pressure
Guide pin diameter	FIOOI 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			
Clamp stroke	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.

Weight

				Unit: kg
Model		C(L)KQ ^g K		
Guide pin	Without lock		With lock	
diameter (mm)	L	Н	L	н
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

Clamp Specifications

										(N)
Madal	Guide pin		Operating pressure (MPa)							
woder	diameter	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ovo6	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	—	—	—
CKQP	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2	1484.1
	ø12.5 to ø13.0	82.4	247.3	412.2	577.1	742.0	906.9	_	_	_
CLKQp	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

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.

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

Maintenance Parts

Replacement Parts: Seal Kit

_ ·	
Kit No.	Content
	Piston seal
CQ2B50-PS	Rod seal
	Tube gasket
0	des Ossel 1/4 fan malatanaan of

 \ast Consult SMC for maintenance service. Seal kit for maintenance of the CLKQ $_{P}^{G}$ 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.

Spare Parts

Guide pins and clamp arm assemblies are the same as those for D series. Refer to page 1411 for details.



Pin Clamp Cylinder Series CKQ^G_PK/CLKQ^G_PK

Construction

CKQGKC50

* The below figures indicate the CKQGKC50-□RAL.





MK -Z
MK2T
CKQ CLKQ
CK□1 -Z
CLK2





(17

(18



Clamping height: HIGH type With shims



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	

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D-🗆

Series CKQ^GK/CLKQ^GK

Construction



INO.	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 mn
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	
SMC			

CLKQG Clamping With	AKD50F	6 R H H type
escription	Material	Note
ina	Load branza apated	

INO.	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	

Pin Clamp Cylinder Series CKQ^G_PK/CLKQ^G_PK

Construction

CKQPKC50

* The below figures indicate the CKQPKC50-□RAL.



SMC

Component Parts

(17

(18

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				

D-□ -X□

Series CKQ^G_PK/CLKQ^G_PK

Construction



15

Cotter pin

Shim A

Hexagon socket head set screw Stainless stee

Structural steel

Stainless steel t = 1 mm



Aluminum alloy

Aluminum alloy

Lead-bronze casted

49 Seal

PET

Piston

Bushing

Magnet holder

32

33

34

Pin Clamp Cylinder Series CKQ^G_PK/CLKQ^G_PK

Dimensions





Series CKQ^G_PK/CLKQ^G_PK

Dimensions





Pin Clamp Cylinder Meries CKQP M/CLKQP M

How to Order



@SMC

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Pin Clamp Cylinder Series CKQPGM/CLKQPGM

Applicable cylinder series	Туре	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 Solic auto		D-P3DWSC	AC magnetic field (Single-phase AC welding magnetic field)		2	2-wire		0.3 m		DAI/
		D-P4DWSC		Pre-wired connector		(3–4)				-Z
		D-P3DWSE				2-wire				MK2T
		D-P4DWSE				(14)			CKQ CLKQ	
	Solid state auto switch	D-P3DW		Grommet	2-color display		24 VDC			CK⊡1 -Z
		D-P3DWL							Relay,	CLK2
		D-P4DWL				2-wire	3 m PLC Note 1]			
		D-P3DWZ						5 m		
		D-P4DWZ								
Series C(L)KQP	Reed auto switch D-P74L DC/AC magnetic field D-P74Z	Pre-wired connector	2-color display	2-wire (1-4)	24 VDC	0.3 m]			
		D-P74L	DC/AC magnetic field	Grammat	1-color display	2 wire	24 VDC	3 m	ı	
		D-P74Z		Gionmet		play 2-wire	100 VAC	5 m		

Table 2. Applicable Auto Switches / For detailed specifications about an auto switch for itself, refer to pages 1893 to 2007.

Note 1) PLC: Programmable Logic Controller

Note 2) There are other applicable auto switches other than the listed above. For details, refer to page 1447.



Series CKQ^GM/CLKQ^GM



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)	d) 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	
Clamp stroke	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.

Weight

				Unit: kg
Model		C(L)	(Q [₽] M	
Guide pin	Witho	ut lock	With	lock
diameter (mm)	L	Н	L	н
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

Clamp Specifications

										(N)
Madal	Guide pin		Operating pressure (MPa)							
woder	diameter	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
CKOG	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	—	—	—
CKQP	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	1154.3	1319.2	1484.1
	ø12.5 to ø13.0	82.4	247.3	412.2	577.1	742.0	906.9	_	_	_
CLKQP	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.

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

Maintenance Parts

Replacement Parts: Seal Kit

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

 $^{\rm e}$ Consult SMC for maintenance service. Seal kit for maintenance of the CLKQ $_{\rm P}^{\rm G}$ 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.

Spare Parts

Guide pins and clamp arm assemblies are the same as those for D series. Refer to page 1411 for details.

Pin Clamp Cylinder Series CKQPGM/CLKQPGM

Construction

CKQGMC50

* The below figures indicate the CKQGMC50-□RAL.





MK -Z	
MK2T	
CKQ CLKQ	
CK⊡1 -Z	
CLK2	







CKQGMU50U-URUH 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		

D-□ -X□

Series CKQ^GM/CLKQ^GM

Construction



No.	Description	ption Material	
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	7 Pin A Structural steel		
8	Pin B	Structural steel	
9	Cover assembly	Stainless steel	
10	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	

-оп	omponent 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				

SMC

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	

Pin Clamp Cylinder Series CKQPGM/CLKQPGM

Construction

CKQPMC50

∗ The below figures indicate the CKQPMC50-□RAL.



Component Parts

(17

(18

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. Material Description 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 allov 21 Piston rod Stainless steel 22 Collar Aluminum alloy Aluminum alloy 23 Magnet holder Retaining ring 24 Tool steel Lead-bronze casted 25 Bushina 26 Magnet 27 Wear ring Resin NBR 28 Piston seal NBR 29 Rod seal NBR 30 Tube gasket 31 Coil scraper Bronze PET 32 Seal

- D-□ - -X□

MK -Z

MK2T

CKQ CLKQ

CK⊡1 -Z

CLK2

Series CKQ^GM/CLKQ^GM

Construction



Hexagon socket head set screw

Shim A

Structural stee

Stainless steel t = 1 mm



Magnet holder

Bushing

33

34

Aluminum alloy

Lead-bronze casted

Pin Clamp Cylinder Series CKQPGM/CLKQPGM

Dimensions



Series CKQ^G_PM/CLKQ^G_PM

Dimensions



Series CKQ^G /CLKQ^G Auto Switch Mounting 1

Auto Switch Mounting

For D-P3DW model

- 1. Fix the auto switch and the auto switch mounting bracket temporarily by tightening the hexagon socket head cap screw (M2.5 x 9.5 L), included with the auto switch, 1 to 2 turns.
- 2. Insert the temporarily tightened mounting bracket into the mating groove of the cylinder/actuator, and slide the auto switch onto the cylinder/actuator through the groove. To insert the auto switch onto the cylinder/actuator through the groove, first hold the back part of the auto switch (lead wire side)
- and the back part of the auto switch mounting bracket together. 3. Check the detecting position of the auto switch and fix the auto
- switch firmly with the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9.5 L).*
- If the detecting position is changed, go back to step 2.
- * The hexagon socket head cap screw (M2.5 x 6 L) is used to fix the mounting bracket and cylinder/actuator.
- This enables the replacement of the auto switch without adjusting the auto switch position.
- Note 1) Ensure that the auto switch is covered with the mating groove to protect the auto switch.
- Note 2) The torque for tightening the hexagon socket head cap screw (M2.5 x 6 L, M2.5 x 9.5 L) is 0.2 to 0.3 N·m.
- Note 3) Tighten the hexagon socket head cap screws evenly.

Caution for the Cylinder/Actuator Mounting

* When mounting the D-P3DW onto a cylinder/actuator with ø50. to avoid mutual interference, use a fitting with width across flats 14 mm or less. Also, if the corner of the fitting interferes with the housing of the auto switch, adjust the tightening of the fitting to eliminate the interference. In the case of interference with an elbow type fitting, direct the port of the fitting away from the auto switch. Such interference must be avoided especially when a speed controller and speed exhaust controller with a fitting are selected.

Auto switch mounting bracket part number	Items and number of each item	
BQ6-032S	 Auto switch mounting bracket x 1 Hexagon socket head cap screw (M2.5 x 6 L) x 1 	

For D-P7 , P79WSE and D-P4DW

- 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	Auto switch mounting bracket x 1 Auto switch mounting nut x 1 Hexagon socket head cap screw x 2 (with spring washer)



Refer to pages 1960 and 1961.

Series CKQ^g□/CLKQ^g□ Auto Switch Mounting 2

Auto Switch Proper Mounting Position and Its Mounting Height

Auto Switch Proper Mounting Position

Environment		Welding				
Mounting	Round groo	ve mounting		Rail mo	ounting	
Model	D-P3I D-P3I D-P3I D-P3I D-P3I	DWSC D-P4DWSE D-P74 DWSE D-P4DWSC D-P74 DW D-P4DW D-P74Z DWZ D-P4DWZ D-P79W		D-P4DWSE D-P4DWSC D-P4DW D-P4DWZ		4 4Z 9WSE
A B A		В	Α	В		
CKQG	5	18	7	17 or more	_	—
CLKQG	40	50	42	52 or more	_	_
CKQP	-	—	_	-	5.5	20.5 more
CLKQP	_	_	_	_	40.5	55.5 more
Note) Adjust the suite switch after confirming the operation to set actually						

Auto Switch Proper Mounting Height

Environment	Welding			
Mounting	Round groove mounting	Round groove mounting Rail mounting		
Model	D-P3DWSC D-P3DWSE D-P3DW D-P3DW D-P3DWZ	D-P4DWSE D-P4DWSC D-P4DWSC D-P4DW D-P4DWZ D-P79WSE		
		=U		
C(L)KQG	44	50	—	
C(L)KQP	44	—	50	

Round groove mounting type (Same-surface mounting)

Applicable auto switch: D-P3DW









Rail mounting type (Different-surface mounting)

Applicable auto switch: D-P4DW

[CKQG]





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

[CKQP]





Operating Range

Cylinder model	Auto switch model	Operating range
CUNCOC	D-P3DWS□ D-P3DW□	5.5
C(L)KQG	D-P4DWS□ D-P4DW□	6.5
C(L)KQP	D-P74□ D-P79WSE	10









 \ast Since this is a guideline including hysteresis, not meant to be guaranteed. (Assuming approximately $\pm 30\%$ dispersion.)

There may be the case it will vary substantially depending on an ambient environment.



Series CKQ^G_P /CLKQ^G_P Made to Order Specifications

Please contact SMC for detailed dimensions, specifications and lead times.

1 ø32 Pin Clamp Cylinder





Plate Cylinder Type CKU32 LOW type (-X2091) CKU32 HIGH type (-X2092)

MK -Z
MK2T
CKQ Clkq
CK□1 -Z
CLK2

Added ø32 pin clamp cylinder •Compact design makes it applicable to a broad range of workpieces. · Contributes to a lightweight jig.

■2 types of clamping heights can be selected. Height: 30 mm (LOW type), 100 mm (HIGH type)



Added plate cylinder type CKU32 with a body thickness of 29 mm.

- Compatible with installing in narrow spaces
- For clamping small and lightweight workpiece, etc.



Newly added guide pins for workpieces with ø8 and ø10 hole diameters. Added ø8,

- Guide pin diameter: ø7.5 to ø20 (48 types)
- Applicable hole diameter of workpiece for ø8 to ø20 (8 types)

Magnetic field resistant auto switch (D-P3DW□) available.



For details about this product, refer to the product catalog available on SMC's website.



ø10 types

D-🗆

-X 🗆



Be sure to read before handling. Refer to front matter 39 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Design

MWarning

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

A 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.

 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.



Be sure to read before handling. Refer to front matter 39 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Selection

[For the CLKQG/P series only]

Warning

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.

 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

Madal	Guide pin diameter (mm)																			
woder	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 di	ameter	(mm)					_	_		
Model	17.5	17.7	17.8	17.9	18.0	19.5	19.7	19.8	Guide	e pin di 20.0	ameter 24.5	(mm) 24.7	24.8	24.9	25.0	29.5	29.7	29.8	29.9	30.0
Model Applicable hole diameter of workpiece	17.5	17.7 F	17.8 -or ø18	17.9	18.0	19.5	19.7	19.8 For ø20	Guide	pin di 20.0	ameter 24.5	(mm) 24.7	24.8 For ø25	24.9	25.0	29.5	29.7	29.8 For ø30	29.9)	30.0

Clamping Force

_											· · · ·		
Γ	Madal	Guide pin diameter	Operating pressure (MPa)										
	Model	(mm)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0		
	CKQG	ø12.5 to ø13.0	164.9	329.8	494.7	659.6	824.5	989.4	1154	1319	1484		
	CKQP	ø14.5 to ø30.0	164.9	329.8	494.7	659.6	824.5	989.4	-	_	_		
Г	CLKQG	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)		
	CLKQP	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.



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Be sure to read before handling. Befer to front matter 39 for Safety Instru

Refer to front matter 39 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Pneumatic Circuit

MWarning

 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 • Drop prevention circuit
 - 1) Do not use 3 position valves with circuit example 1. The lock may be released due to inflow of the unlocking pressure.
 - 2) Install speed controllers as meter-out control. (Circuit example 1) When they are not installed or they are used under meter-in control, it may cause malfunction.
 - 3) Branch off the compressed air piping for the lock unit between the cylinder and the speed controller. (Circuit example 1) Note that branching off in other sections may shorten the

service life.

- 4) Perform piping so that the unlocking port side going from the piping junction is short. (Circuit example 1) If the piping of unlocking port side is longer than that of the cylinder port from the piping junction, this may cause unlocking malfunction or shorten the service life.
- 5) Be aware of reverse exhaust pressure flow from common exhaust type valve manifolds. (Circuit example 1)

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

- 6) Be sure to release the lock before operating the cylinder. (Circuit example 2) When the lock release delays, a cylinder may eject at high speed, which is extremely dangerous. It may also damage the cylinder, greatly shorten the service life or cause locking malfunction. Even when the cylinder moves freely, be sure to release the lock and operate the cylinder.
- Be aware that the locking action may be delayed due to the piping length or the timing of exhaust. (Circuit example 2)

The locking action may be delayed due to the piping length or the timing of exhaust, which also makes the stroke movement toward the lock larger. Install the solenoid valve for locking closer to the cylinder than the cylinder drive solenoid valve.

Emergency stop circuit

1) Perform emergency stops with the pneumatic circuit. (Circuit examples 3 and 4)

This cylinder is designed for locking against inadvertent movement from a stationary condition. Do not perform intermediate stops while the cylinder is operating, as this may damage the cylinder, cause unlocking malfunction or shorten the service life. Emergency stops must be performed with the pneumatic circuit, and workpieces must be held with the locking mechanism after the cylinder fully stops.

2) When restarting the cylinder from the locked state, remove the workpiece and exhaust the residual pressure in the cylinder. (Circuit examples 3 and 4) A cylinder may eject at high speed, which is extremely dangerous. It may also damage the cylinder, greatly shorten the service life or cause locking malfunction. 3) Be sure to release the lock before operating the cylinder. (Circuit example 4)

When the lock release delays, the cylinder may eject at high speed, which is extremely dangerous. It may also damage the cylinder, greatly shorten the service life or cause locking malfunction. Even when the cylinder moves freely, be sure to release the lock and operate the cylinder.

- Drop prevention circuit, Emergency stop circuit
- 1) If installing a solenoid valve for a lock unit, be aware that repeated supply and exhaustion of air may cause condensation. (Circuit examples 2 and 4) The lock unit operating stroke is very small and so the pipe is long. If supplying and exhausting air repeatedly, condensation, which occurs by adiabatic expansion, accumulates in the lock unit. This may then cause air leakage and an unlocking malfunction due to corrosion of internal parts.

Circuit example



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.
- 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.





Be sure to read before handling.

Refer to front matter 39 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Mounting

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.



- 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.



- 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:

 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 \geq the piped tubing capacity.

- Pipe a speed exhaust controller ASV and a quick exhaust valve to a cylinder to exhaust the exhaust pressure directly to the air.
- Piping port should face downward so that the generated moisture inside tubing does not easily return to the cylinder.



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Be sure to read before handling.

Refer to front matter 39 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Lubrication

A 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

 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

- 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 1455, or move the welding cable away from the cylinder.
 - Cannot be used in an environment where welding cables surround the cylinder.
 - Consult SMC when a welding cable and welding gun electrodes (something energized with secondary current) are near multiple switches.
- 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.





Be sure to read before handling.

Refer to front matter 39 for Safety Instructions and pages 3 to 12 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















Be sure to read before handling.

Refer to front matter 39 for Safety Instructions and pages 3 to 12 for Actuator and Auto Switch Precautions.

Operation

A 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.

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

