

Clamp Cylinder : Basic Type / Built-in Standard Magnet Type Magnetic Field Resistant Auto Switch (Band Mounting Style)

Series **CK1/CKG1** ø40, ø50, ø63

How to Order

Basic type

Built-in standard magnet type

CK1 **A** **50** — **100** **Y**

CKG1 **A** **50** — **100** **Y**

Clevis width

A	16.5 mm
B	19.5 mm

Bore size

40	40 mm
50	50 mm
63	63 mm

Cylinder stroke (mm)

40	50, 75, 100, 125, 150
50	50, 75, 100, 125, 150
63	50, 75, 100, 125, 150

Option

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

Note 1) Clevis width B (19.5 mm) is not available with mounting base K.

Note 2) When the dog fitting is selected, choose the rod end bracket IA or YA (M6 with tap).

End bracket

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

Note 1) IA and YA are equivalent to the conventional models.

Note 2) Knuckle pin, cotter pin and flat washer are provided as a standard for Y and YA.

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

Band mounting of the magnetic field resistant auto switch (D-P4DW□□ type) to the built-in standard magnet clamp cylinder (the CKG1□ series) is possible by ordering the switch mounting bracket and the auto switch individually.

Applicable Magnetic Field Resistant Auto Switches

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
CKG1 series	Solid state 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
		D-P4DWSE				2-wire (1-4)		3 m	
		D-P4DWL		Grommet		2-wire		5 m	
		D-P4DWZ							

Note) PLC: Programmable Logic Controller

⚠ Caution

Standard type auto switch is mountable for the built-in standard magnet type. For details, please refer to "Made to Order" on page 13. Also, please note that the standard type auto switch cannot be used under the magnetic field resistant environment.

How to Order

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

Component part no.	Applicable auto switch	Applicable clamp cylinder
BA8-040	D-P4DWSC	CKG1□40
BA8-050	D-P4DWSE	CKG1□50
BA8-063	D-P4DWL/Z	CKG1□63

Ordering Example

- Example case ① Built-in standard magnet cylinder:
CKG1A50-50Y ... 1
- Example case ② Magnetic field resistant auto switch:
D-P4DWSC ... 2
- Example case ③ Switch mounting bracket:
BA8-050 ... 2

Note 1) Please order the same quantity for the switch mounting bracket and the magnetic field resistant auto switch respectively.

Note 2) Band mounting for the magnetic field resistant auto switch D-P79WS□ type, D-P74□ type is not applicable.

Series CK□1



Specifications

Clevis width	16.5 mm	CK1A/CKG1A series
	19.5 mm	CK1B/CKG1B series

Fluid	Air
Proof pressure	1.5 MPa
Maximum operating pressure	1.0 MPa
Minimum operating pressure	0.05 MPa
Ambient and fluid temperature	Without auto switch: -10C to +70C With auto switch: -10 to +60C
Piston speed	50 to 500 mm/s
Cushion ^{Note 1)}	Unclamped side (head end): With air cushion
Speed controller	Equipped on both ends
Lubrication	Non-lube
Thread tolerance	JIS Class 2
Stroke length tolerance	$\begin{matrix} +1.0 \\ 0 \end{matrix}$
Mounting ^{Note 2)}	Double clevis

Note 1) With cushion on both ends are available as Made to Order.
For details, refer to page 18, Made to Order 5.

Ordering example **CKG1A50-100Y -X1515**

↑ With cushion on both ends

Note 2) Clevis pin, Cotter pin, Flat washer are equipped as a standard.

Standard Stroke

Bore size (mm)	Standard stroke (mm)
40, 50, 63	50, 75, 100, 125, 150

End Bracket / Options

Symbol	Description	Parts no.	
		CK1A/CKG1A series	CK1B/CKG1B series
I	Single knuckle joint	M6 without tap	CKB-I04
IA		M6 with tap	CKB-IA04
Y	Double knuckle joint (Knuckle pin, Cotter pin, Flat washer are equipped as a standard.)	M6 without tap	CKA-Y04
YA		M6 with tap	CKA-YA04
B	Limit switch mounting base	CK-B04	
D	Dog fitting	CK-D04	
L	Foot	CK-L04	
K	Pedestal	For 75 stroke	CKA-K075
		For 100 stroke	CKA-K100
		For 150 stroke	CKA-K150

Theoretical Output

Unit: N

Bore size (mm)	Rod size (mm)	Operating direction	Piston area (mm ²)	Operating pressure (MPa)			
				0.3	0.4	0.5	0.6
40	20	OUT	1260	378	504	630	756
		IN	943	283	377	472	566
50	20	OUT	1960	588	784	980	1180
		IN	1650	495	660	825	990
63	20	OUT	3120	934	1250	1560	1870
		IN	2800	840	1120	1400	1680

Weight

Unit: kg

Bore size (mm)		40	50	63
		Cylinder	Basic weight	0.73
	Additional weight per 25 mm stroke	0.10	0.11	0.13
	Single knuckle joint	0.20		
	Double knuckle joint (Knuckle pin, Cotter pin, Flat washer are equipped as a standard.)	0.34		
	Limit switch mounting base	0.22		
	Dog fitting	0.12		
	Foot	0.24		
	Pedestal	2.2		

Calculation

Example) **CK1G□50-100Y**

• Basic weight 0.95 (ø50)

• Additional weight ... 0.11/25 mm

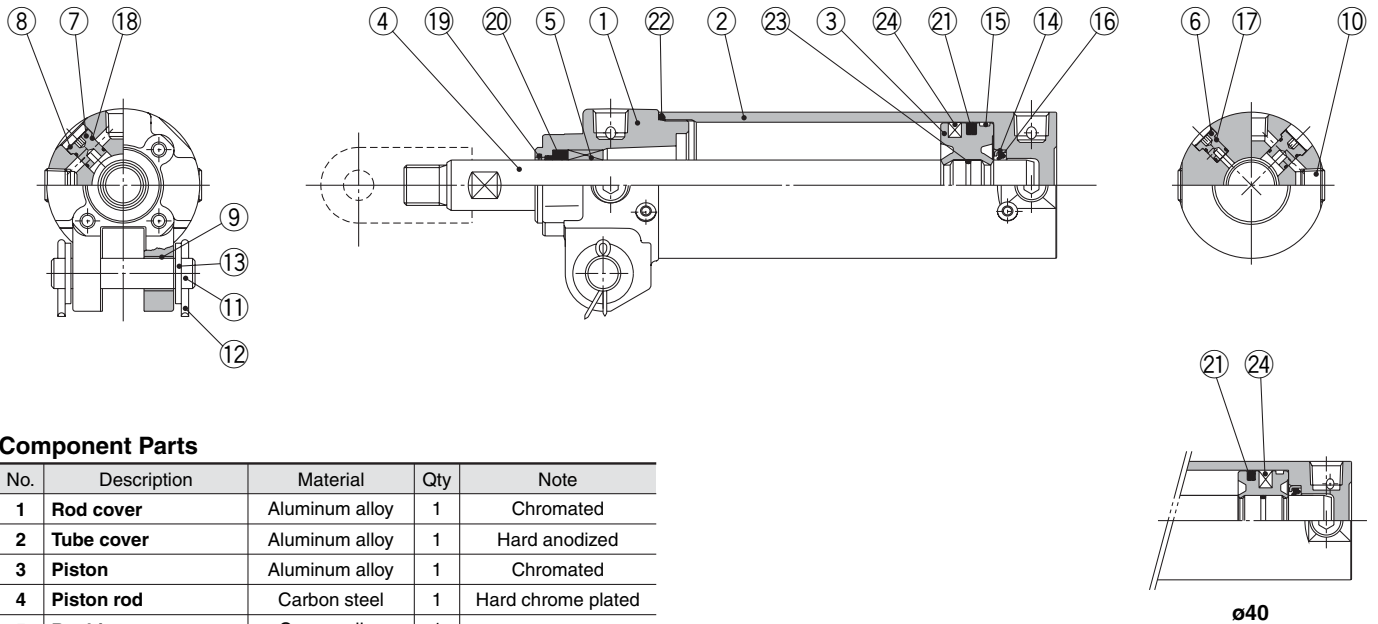
• Cylinder stroke 100 mm

• Double knuckle joint...0.34 (Y)

0.95 + 0.11 x 100/25 + 0.34 = 1.73 kg

Construction

CK1□40, 50, 63 Basic type / CKG1□40, 50, 63 Built-in standard magnet type



Component Parts

No.	Description	Material	Qty	Note
1	Rod cover	Aluminum alloy	1	Chromated
2	Tube cover	Aluminum alloy	1	Hard anodized
3	Piston	Aluminum alloy	1	Chromated
4	Piston rod	Carbon steel	1	Hard chrome plated
5	Bushing	Copper alloy	1	
6	Cushion valve	Aluminum alloy	1	
7	Speed controller valve	Aluminum alloy	2	
8	Snap ring	Spring steel	3	
9	Clevis bushing	Oil-impregnated sintered alloy	2	
10	Hexagon socket head plug	Carbon steel	4	Rc 1/4
11	Pin	Carbon steel	1	
12	Cotter pin	Low carbon steel wire rod	2	
13	Flat washer	Rolled steel	2	
14	Cushion seal retainer	Rolled steel	1	Zinc chromated
15	Wear ring	Resin	1	
16	Cushion seal	Urethane	1	
17	Cushion valve seal	NBR	2	
18	Speed controller valve seal	NBR	4	
19	Coil scraper	Phosphor bronze	1	
20	Rod seal	NBR	1	
21	Piston seal	NBR	1	
22	Tube gasket	NBR	1	
23	Piston gasket	NBR	1	
24	Magnet	Magnet material	—	For CKG1

Replacement Parts: Seal Kit

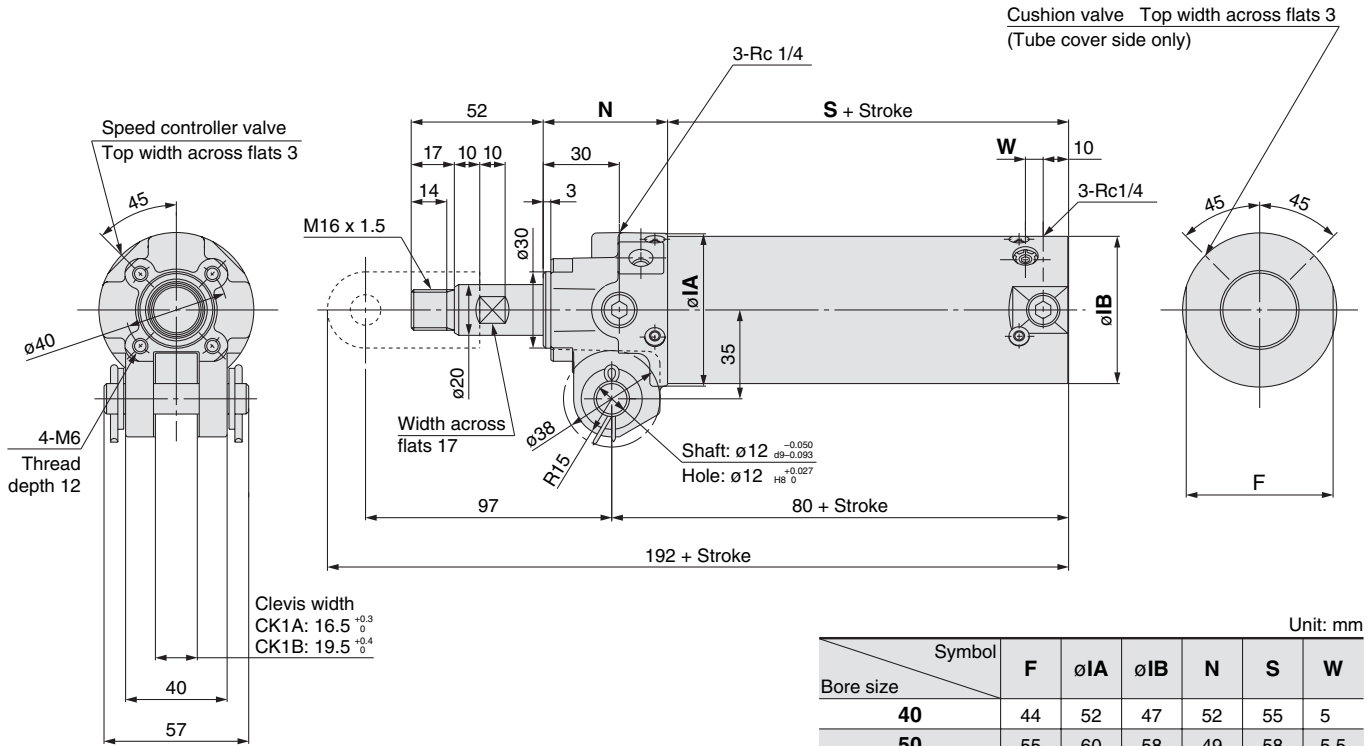
Bore size (mm)	Order no.	Contents
40	CK1A40-PS	
50	CK1A50-PS	Set of nos. above
63	CK1A63-PS	20, 21, 22.

Series CK□1

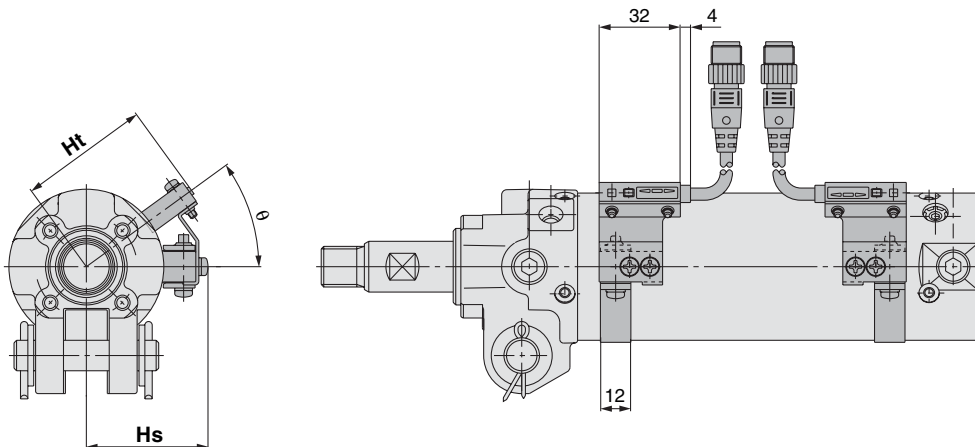
Dimensions

CK1□40, 50, 63 / Basic type

CKG1□40, 50, 63 / Built-in standard magnet type



CKG1□40, 50, 63 / Example: Built-in standard magnet type + Magnetic field resistant auto switch
D-P4DW□□ type (Band mounting)

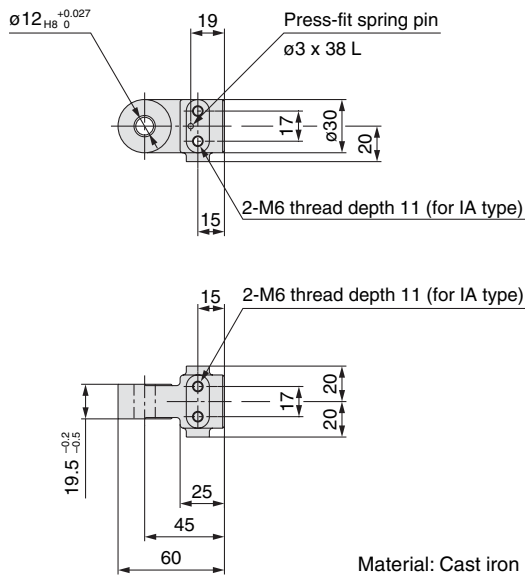


Unit: mm

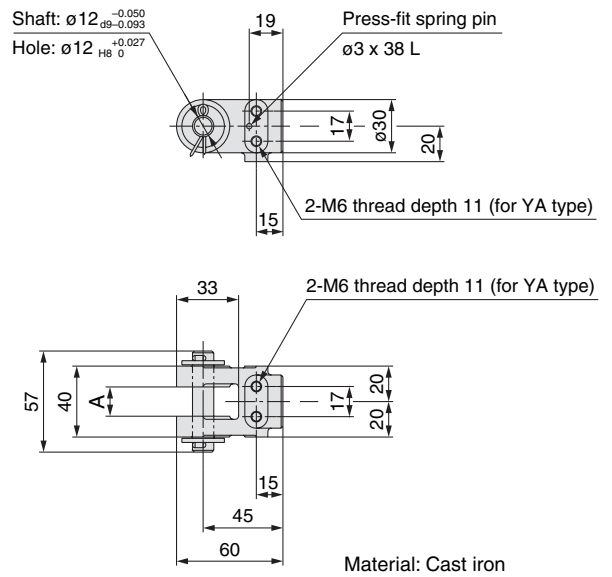
Symbol	Hs	Ht	θ
Bore size 40	43	46	45
50	48	51.5	36
63	55	58.5	33

End Bracket

Single knuckle joint



Double knuckle joint



Part no.	Rod end bracket symbol	Applicable clamp cylinder
CKB-I04	I (M6 without tap)	CK□1A series CK□1B series
CKB-IA04	IA (M6 with tap)	

Note) The conventional model is equivalent to the component part no CKB-IA04 (rod end bracket symbol IA).

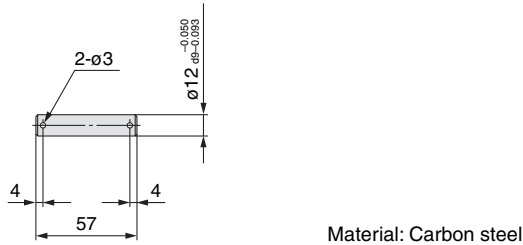
Unit: mm

Part no.	Rod end bracket symbol	A	Applicable clamp cylinder
CKA-Y04	Y (M6 without tap)	$16.5_{0}^{+0.3}$	CK□1A series
CKA-YA04	YA (M6 with tap)		
CKB-Y04	Y (M6 without tap)	$19.5_{0}^{+0.4}$	CK□1B series
CKB-YA04	YA (M6 with tap)		

Note 1) Knuckle pin, cotter pin and flat washer are attached to the double knuckle joint as a standard.

Note 2) The conventional model is equivalent to the component part no CKA-YA04, CKB-YA04 (rod end bracket symbol YA).

Pin

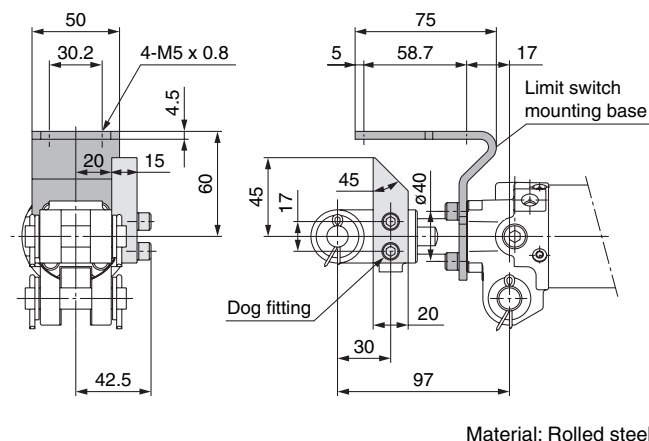


Part no.	Application
CK-P04	Knuckle pin Clevis pin

Note) Cotter pin and flat washer are provided as a standard.

Option

Limit switch mounting base/Dog fitting



Part no.	Option symbol	Name	Applicable clamp cylinder
CK-B04	B	Limit switch mounting base	CK□1A series CK□1B series
CK-D04	D	Dog fitting	

Note 1) Limit switch mounting base and dog fitting can be repositioned by removing the hexagon socket head cap screw.

Note 2) When ordering the limit switch base and the dog bracket individually, a spring washer for the mounting bolt (hexagon socket head cap screw) will be attached as a standard.

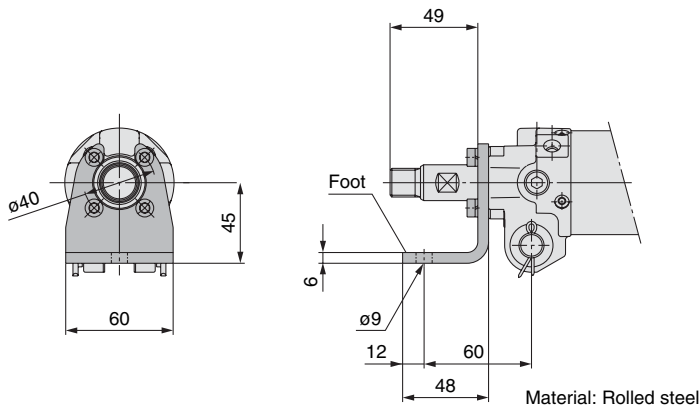


When you attach a dog fitting, be sure to use a knuckle joint, M6 with tap (rod end bracket symbol IA or YA). The dog fitting cannot be attached to the knuckle joint, M6 without tap (rod end bracket symbol I or Y).

Series CK□1

Option

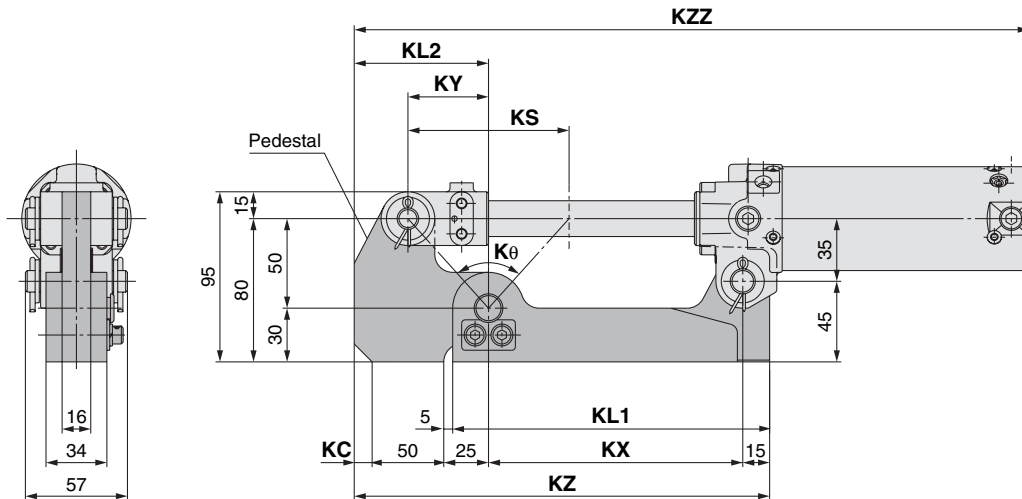
Foot



Part no.	Option symbol	Applicable clamp cylinder
CK-L04	L	CK□1A series CK□1B series

Note) A spring washer for the mounting bolt (hexagon socket head cap screw) will be attached as a standard for the foot bracket.

Pedestal



Material: Rolled steel

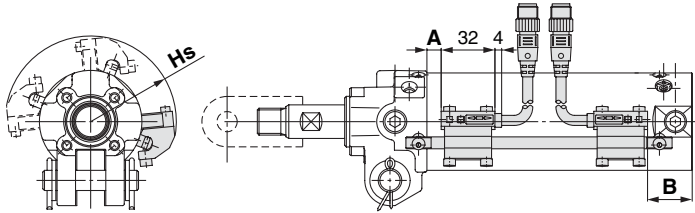
Unit: mm

Part no.	Option symbol	KL1	KL2	KS	KX	KY	KZ	Kθ	KC	KZZ			Applicable clamp cylinder
										40	50	63	
CKA-K075	K	167	75	70	132	35	222	69 59'	0	362			CK□1A40-75Y CK□1A50-75Y CK□1A63-75Y
CKA-K100		177	75	90	142	45	232	83 58'	0	397			CK□1A40-100Y CK□1A50-100Y CK□1A63-100Y
CKA-K150		202	85	140	167	70	267	108 55'	10	482			CK□1A40-150Y CK□1A50-150Y CK□1A63-150Y

Note) The CK□1B series (clevis width 19.5 mm) is not available with pedestal.

Auto Switch Proper Mounting Position and Its Mounting Height for Stroke End Detection

Rod mounting D-P4DW□□ type



Note) The above drawing is the mounting example for the D-P4DWS□ type.

Auto Switch Mounting Position and Its Height: Rod Mounting Style

Unit: mm

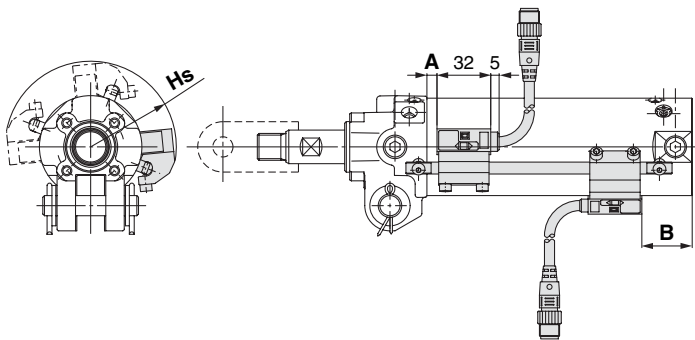
Auto switch model	Symbol	Auto switch set value and its height		
		40	50	63
D-P4DW□□	A	8	4.5	4.5
	B	21	27.5	27.5
	Hs	45.5	51	58.5
D-P79WSE D-P74□	A	5.5	0	0
	B	27.5	26	26
	Hs	44.5	50.5	57.5

Note 1) The mounting position should be referred for reference only for the auto switch mounting position at the stroke end detection. Adjust the auto switch after confirming the operation to set actually.

Note 2) A/B dimensions are the distance from the standard position (above drawing) to the end surface of the auto switch.

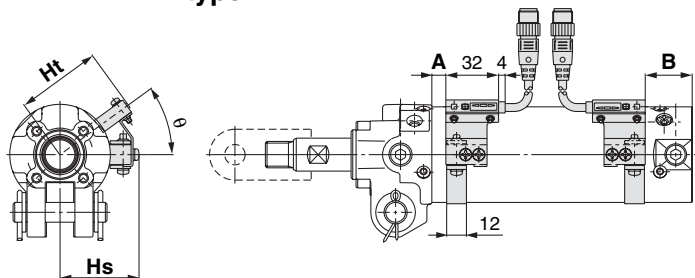
Note 3) The auto switch mounting position is temporarily set at the time of shipping from our factory. Change it to the desired position in accordance to your facility.

D-P7□□□□ type



Note) The above drawing is the mounting example for the D-P79WSE type.

Band mounting D-P4DW□□ type



Note) The above drawing is the switch band mounting example for the D-P4DWS□ type.

Auto Switch Mounting Position and Its Height: Band Mounting Style / D-P4DW□□ Type

Unit: mm

Auto switch model	Symbol	Auto switch set value and its height		
		ø40	ø50	ø63
D-P4DW□□	A	8	4.5	4.5
	B	21	27.5	27.5
	Hs	43	48	55
	Ht	46	51.5	58.5
	θ	45	36	33

Note 1) The mounting position should be referred for reference only for the auto switch mounting position at the stroke end detection. Adjust the auto switch after confirming the operation to set actually.

Note 2) A/B dimensions are the distance from the standard position (above drawing) to the end surface of the auto switch.

Note 3) As for D-P4DW□□ type, band mounting style, the switch mounting bracket and the auto switch have to be ordered separately. For details, refer to page 5.

Minimum Stroke for Auto Switch Mounting

Unit: mm

Auto switch model	1 pc.	2 pcs.
D-P4DW□□	50	50
D-P79WSE		
D-P74□		

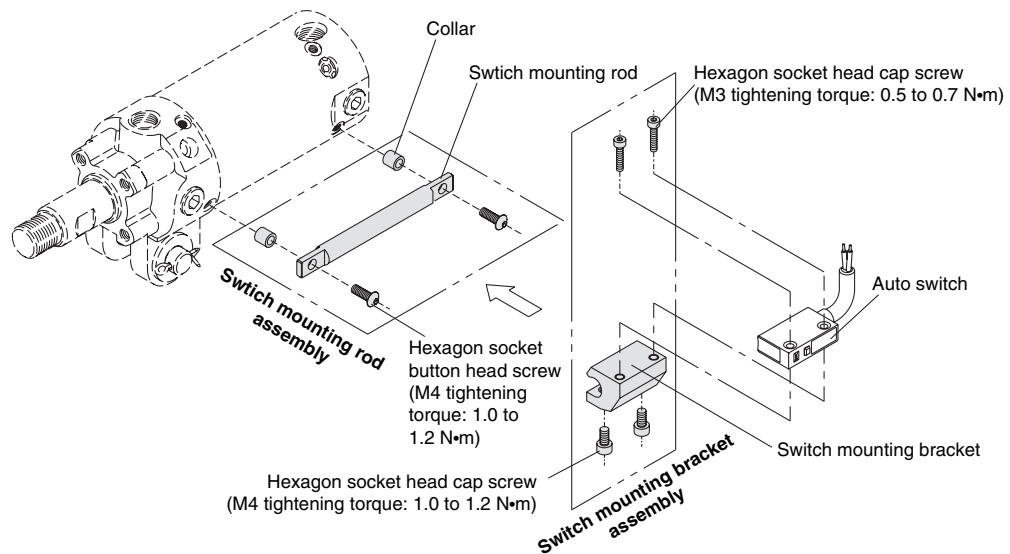
Operation Range

Unit: mm

Auto switch model		Bore size		
		40	50	63
D-P4DW□□	Rod mounting	4	4	4.5
	Band mounting	5	5	5.5
D-P79WSE	Rod mounting	8	9	9.5
D-P74□				

Auto Switch Mounting Bracket / Part No.

Switch mounting rod assembly / Switch mounting bracket assembly



Switch Mounting Rod Assembly / Part No.

Applicable series	Applicable clamp cylinder	Part no.
Dedicated to CKP1□40 series	CKP1□40-50	CKP40-R050
	CKP1□40-75	CKP40-R075
	CKP1□40-100	CKP40-R100
	CKP1□40-125	CKP40-R125
	CKP1□40-150	CKP40-R150
CKG1□40/50/63 series	CKG1□40-50 CKG1□50-50/CKP1□50-50 CKG1□63-50/CKP1□63-50	CKG40-R050
	CKG1□40-75 CKG1□50-75/CKP1□50-75 CKG1□63-75/CKP1□63-75	CKG40-R075
	CKG1□40-100 CKG1□50-100/CKP1□50-100 CKG1□63-100/CKP1□63-100	CKG40-R100
Common	CKG1□40-125 CKG1□50-125/CKP1□50-125 CKG1□63-125/CKP1□63-125	CKG40-R125
	CKG1□40-150 CKG1□50-150/CKP1□50-150 CKG1□63-150/CKP1□63-150	CKG40-R150

Switch Mounting Bracket Assembly / Part No.

Applicable cylinder series	Applicable auto switch	Mounting bracket part no.		
		40	50	63
CKG1 series	D-P4DWSC D-P4DWSE D-P4DWL/Z	BK1T-040		
CKP1 series	D-P79WSE D-P74L/Z	BAP1T-040		

Magnetic Field Resistant 2-color Indication Solid State Switch

D-P4DWSC/D-P4DWSE



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Grommet

It is possible to use in an environment which generates a magnetic field disturbance (AC magnetic field).



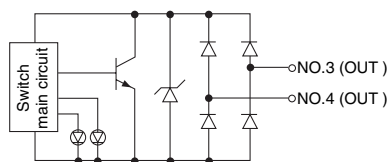
Caution

Precautions

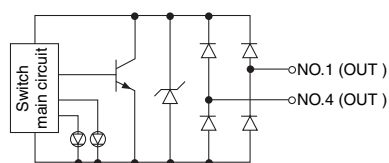
For single-phase AC welding machines
Not applicable for DC inverter welding machines (including rectifying type) and or condenser type welding

Auto Switch Internal Circuit

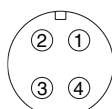
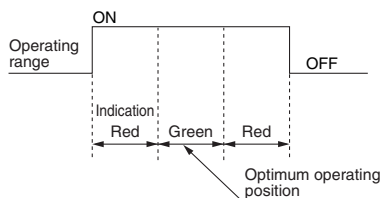
D-P4DWSC



D-P4DWSE



Indicator light/Display method



Connector pin

Auto Switch Specifications

PLC: Programmable Logic Controller

D-P4DWS□ (With indicator light)		
Auto switch model	D-P4DWSC	D-P4DWSE
Applicable load	24 VDC relay, PLC	
Load voltage	24 VDC (20 to 28 VDC)	
Load current	6 to 40 mA or less	
Internal voltage drop	5 V or less	
Leakage current	1 mA or less at 24 VDC	
Operating time	40 ms or less	
Indicator light	Operating position.....Red LED illuminates when turned ON. Optimum operating position.....Green LED illuminates when turned ON.	

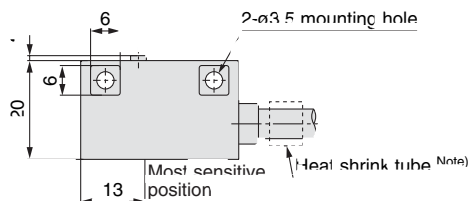
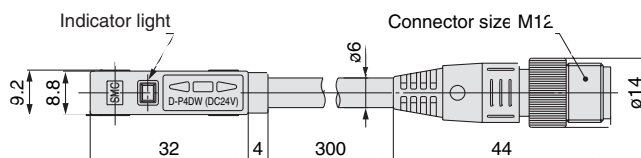
- Lead wire — Oilproof heavy-duty vinyl cable, $\phi 6$, 0.5 mm², 2 cores, 300 mm
- Impact resistance — Switch: 1000 m/s², Connector: 300 m/s²
- Insulation resistance — 50 M or more at 500 VDC Mega (between lead wire and case)
- Withstand voltage — 1000 VAC for 1 minute (between lead wire and case)
- Ambient temperature — -10 to 60°C
- Enclosure — IEC529 standard IP67 JIS 0920 waterproof structure

Magnetic Field Resistance

If the current of the AC welding machine is 16,000 A or lower, the switch can be used even if the distance between the welding conductor (gun cable) and the cylinder of switch is 0 mm. Please contact SMC when the AC welding current exceeds 16,000 A.

Dimensions

Unit: mm



Note) D-P4DWSC - "SC 3-4" D-P4DWSE - "SE -4"

Magnetic Field Resistant 2-color Indication Solid State Switch

D-P4DWL/D-P4DWZ



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Grommet

It is possible to use in an environment which generates a magnetic field disturbance (AC magnetic field).



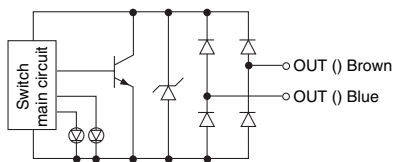
Caution

Precautions

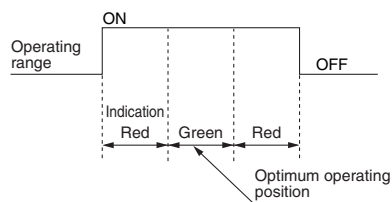
For single-phase AC welding machines
Not applicable for DC inverter welding machines (including rectifying type) and or condenser type welding

Auto Switch Internal Circuit

D-P4DWL/Z



Indicator light/Display method



Auto Switch Specifications

PLC: Programmable Logic Controller

D-P4DW□ (With indicator light)		
Auto switch model	D-P4DWL	D-P4DWZ
Applicable load	24 VDC relay, PLC	
Load voltage	24 VDC (20 to 28 VDC)	
Load current	6 to 40 mA or less	
Internal voltage drop	5 V or less	
Leakage current	1 mA or less at 24 VDC	
Operating time	40 ms or less	
Indicator light	Operating position.....Red LED illuminates when turned ON. Optimum operating position.....Green LED illuminates when turned ON.	

- Lead wire — Oilproof heavy-duty vinyl cable, $\phi 6$, 0.5 mm², 2 cores, D-P4DWL 3 m, D-P4DWZ 5 m
- Impact resistance — 1000 m/s²
- Insulation resistance — 50 M or more at 500 VDC Mega (between lead wire and case)
- Withstand voltage — 1000 VAC for 1 minute (between lead wire and case)
- Ambient temperature — -10 to 60°C
- Enclosure — IEC529 standard IP67, JIS 0920 waterproof structure

Magnetic Field Resistance

If the current of the AC welding machine is 16,000 A or lower, the switch can be used even if the distance between the welding conductor (gun cable) and the cylinder of switch is 0 mm. Please contact SMC when the AC welding current exceeds 16,000 A.

Dimensions

Unit: mm

