

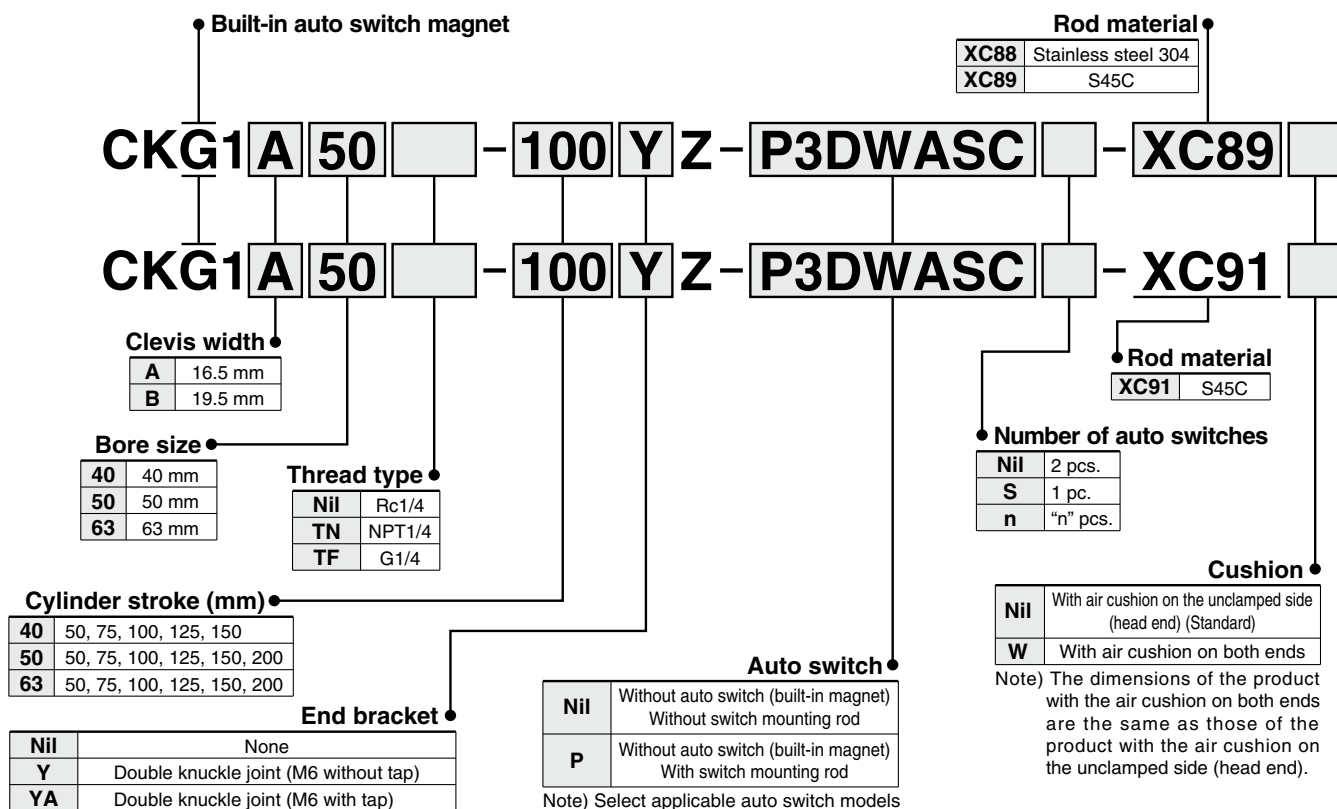
Spatter Resistant Cylinder for Arc Welding Clamp Cylinder/Magnetic Field Resistant Auto Switch (Rod Mounting Style)

CKG1-XC88/XC89 CKG1-XC91

∅40, ∅50, ∅63



How to Order



Note) A knuckle pin, cotter pins and flat washers are provided.

Note) Select applicable auto switch models from the table below.

Made to Order

Part no.	Piston rod material (Hard chrome plated)		Coil scraper	Lube-retainer	Grease for welding
	S45C	Stainless steel 304			
-XC88	—	●	●	●	●
-XC89	●	—	●	●	●
-XC91	●	—	●	—	●

Note) Use the -XC91 in a place where the distance from the welding portion is far and the spatter scattering is minimized.

Built-in Auto Switch Magnet Cylinder Part No.

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

Symbol for the auto switch type is "Nil" as shown below.
(Example) CKG1A50-50YZ-XC89

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

Symbol for the auto switch type is "P" as shown below.
(Example) CKG1A50-50YZ-P-XC89

Applicable Auto Switches/Refer to the **WEB catalog** or the Best Pneumatics No.3 for further information on auto switches.

Type	Special function	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no in use)	Load voltage	Lead wire length	Applicable load
Solid state auto switch	Magnetic field resistant (2-color indication)	D-P3DWASC	AC magnetic field (Single-phase AC welding magnetic field)	Pre-wired connector	2-color display	2-wire (3-4)	24 VDC	0.3 m	Relay, PLC (Note 1)
		D-P4DWSC							
		D-P3DWASE							
		D-P4DWSE							
		D-P3DWA		Grommet	2-wire	24 VDC	0.5 m		
		D-P3DWAL							
		D-P4DWL							
		D-P3DWAZ							
D-P4DWZ	5 m								

Note 1) PLC: Programmable Logic Controller

Note 2) Please contact SMC for auto switches, auto switch proper mounting positions and operating ranges other than the above.

Note 3) Refer to page 12 when ordering the auto switch mounting bracket assembly or switch mounting rod assembly.

Note 4) For the D-P3DWA□, the auto switch and auto switch mounting bracket are packed together, (but not assembled).

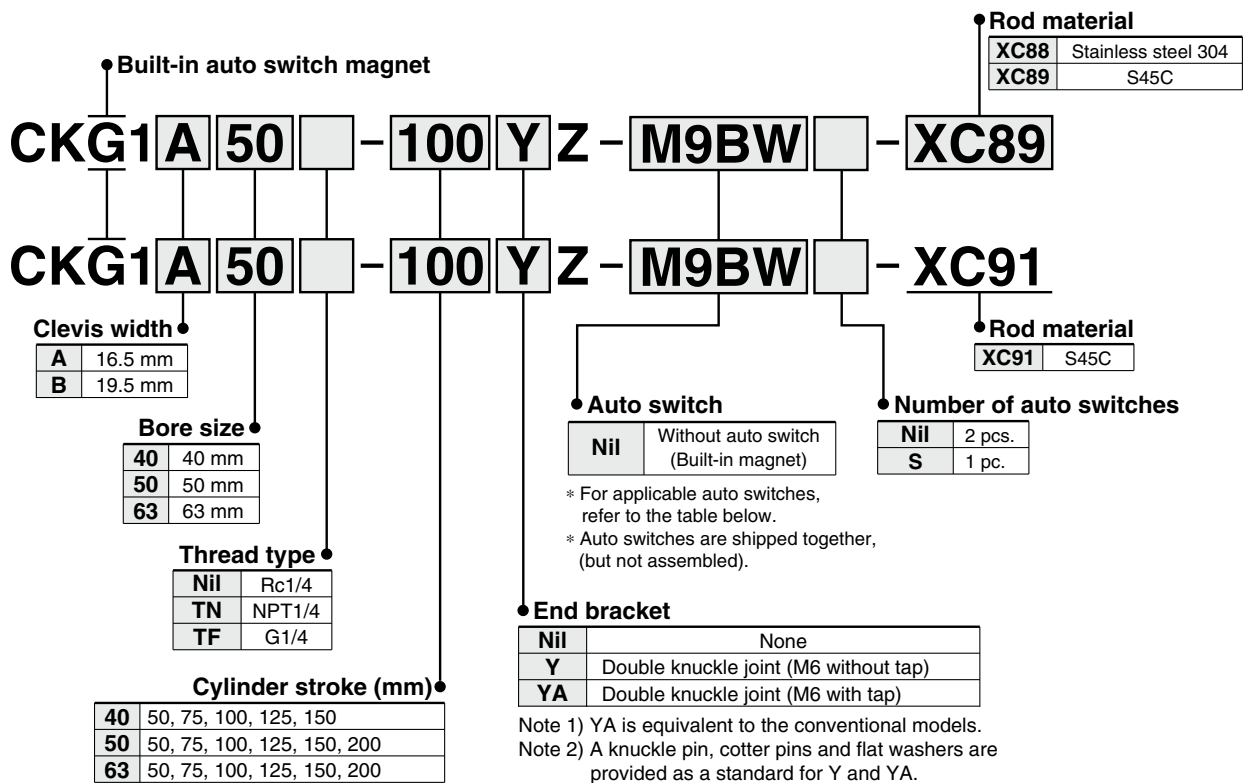
Spatter Resistant Cylinder for Arc Welding Clamp Cylinder with Standard Auto Switch (Band Mounting Style)

Series **CKG1-XC88/XC89** **XC91**

∅40, ∅50, ∅63

RoHS

How to Order



Made to Order

Part no.	Piston rod material (Hard chrome plated)		Coil scraper	Lube-retainer	Grease for welding
	S45C	Stainless steel 304			
-XC88	—	●	●	●	●
-XC89	●	—	●	●	●
-XC91	●	—	●	—	●

Note) Use the -XC91 in a place where the distance from the welding portion is far and the spatter scattering is minimized.

Caution

The standard auto switch cannot be used in a magnetic field environment. For information on our cylinders that can be fitted with a magnetic field resistant auto switch, refer to page 7.

Standard Auto Switches (Refer to the WEB catalog or the Best Pneumatics No.3 for detailed auto switch specifications.)

Applicable cylinder series	Type	Electrical entry	Indicator light	Wiring (Output)	Load voltage			Auto switch model	Lead wire length (m)				Applicable load	
					DC	AC	Band mounting		0.5(Nil)	1(M)	3(L)	5(Z)		
CKG1	Solid state auto switch	Grommet	Yes	2-wire	24 V	5 V 12 V	—	M9B	●	●	●	○	—	Relay, PLC
								M9BW	●	●	●	○		
	Reed auto switch	Grommet	Yes	2-wire	24 V	12 V	100 V	A93	●	●	●	●		
							100 V 200 V	B54	●	—	●	●		

Note 1) Lead wire length symbol: 0.5 m..... Nil
1 m..... M
3 m..... L
5 m..... Z

Note 2) Auto switches marked with "○" are produced upon receipt of order.
Note 3) Refer to page 13 when ordering the auto switch mounting bracket assembly.



Specifications

Bore size (mm)	40	50	63
Fluid	Air		
Proof pressure	1.5 MPa		
Maximum operating pressure	1.0 MPa		
Minimum operating pressure	0.05 MPa		
Ambient and fluid temperature	-10°C to +60°C (No freezing)		
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		
Stroke length tolerance	+1.0 0		
Mounting ^{Note 2)}	Double clevis		

Note 1) The model with air cushion on both ends (Symbol: W) is also available.

Note 2) A clevis pin, cotter pins, flat washers are equipped as a standard.

Clevis width	16.5 mm	CKG1A
	19.5 mm	CKG1B

Standard Strokes

Bore size (mm)	Standard stroke (mm)
40	50, 75, 100, 125, 150
50, 63	50, 75, 100, 125, 150, 200

End Bracket/Options

Symbol	Description	Part no.	
		Series CKG1A	Series CKG1B
Y	Double knuckle joint (A knuckle pin, cotter pins, flat washers are equipped.)	M6 without tap CKA-Y04	M6 with tap CKB-Y04
YA		CKA-YA04	CKB-YA04

Weight (Basic weight includes the switch mounting rod. At 0 stroke)

Unit: kg

Bore size (mm)	40	50	63
Basic weight	0.76	0.98	1.18
Additional weight per 25 mm of stroke	0.11	0.12	0.14
Double knuckle joint (A knuckle pin, cotter pins, flat washers are equipped.)	0.34		

Calculation

Example) **CKG1□50-100YZ-P-XC88**

- Basic weight 1.03 (ø50)
- Additional weight 0.12/25 mm
- Cylinder stroke 100 mm
- Double knuckle joint 0.34 (Y)

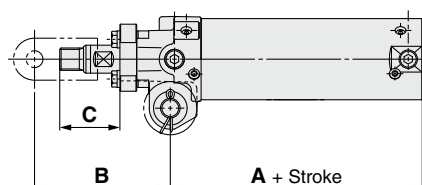
$$1.03 + 0.12 \times 100/25 + 0.34 = 1.85 \text{ kg}$$

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

Comparison of the Dimensions of Each Series



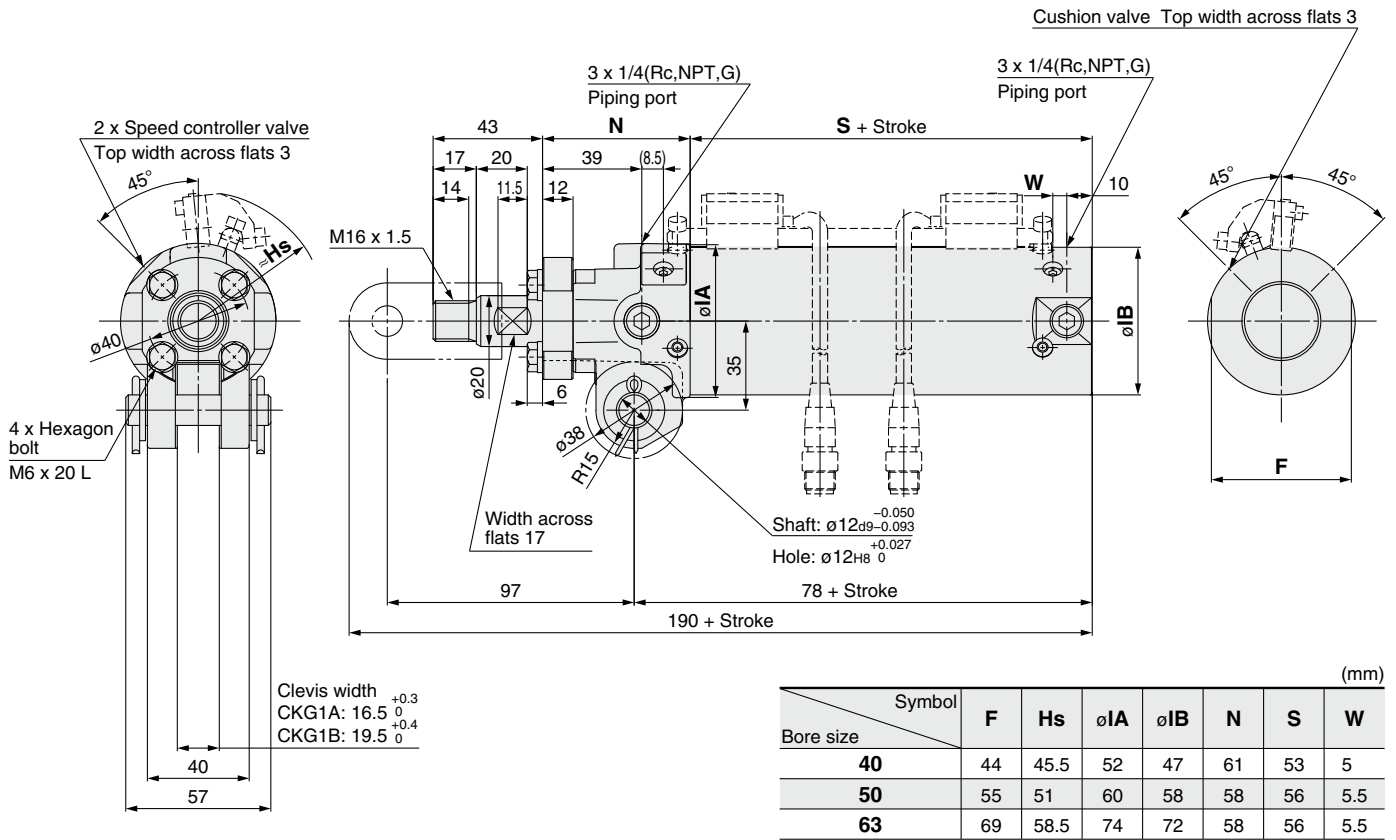
Bore size (mm)	XC88, 89			XC91			Standard		
	A	B	C	A	B	C	A	B	C
40	78	97	43	78	97	52	78	97	52
50	78	97	43	78	97	52	78	97	52
63	78	97	43	78	97	52	78	97	52

* At 0 stroke

Bore Size

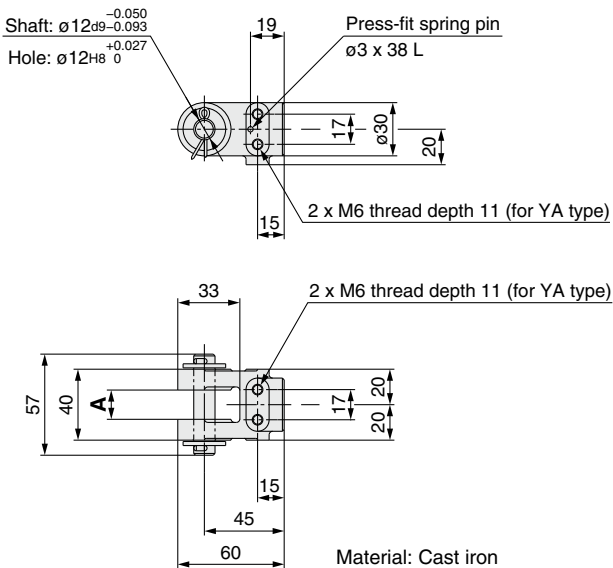
ø40 to ø63

CKG1□40, 50, 63-XC88□ With auto switch (D-P4DWS□).
CKG1□40, 50, 63-XC89□

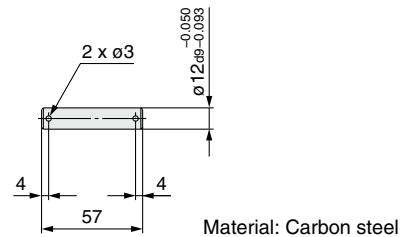


End Bracket

Double knuckle joint



Pin



Part no.	Application
CK-P04	Knuckle pin Clevis pin

Note) Cotter pins and flat washers are attached to the pin.

(mm)			
Part no.	End bracket symbol	A	Applicable clamp cylinder
CKA-Y04	Y (M6 without tap)	16.5 ^{+0.3}	Series CKG1A
CKA-YA04	YA (M6 with tap)	16.5 ^{+0.3}	Series CKG1A
CKB-Y04	Y (M6 without tap)	19.5 ^{+0.4}	Series CKG1B
CKB-YA04	YA (M6 with tap)	19.5 ^{+0.4}	Series CKG1B

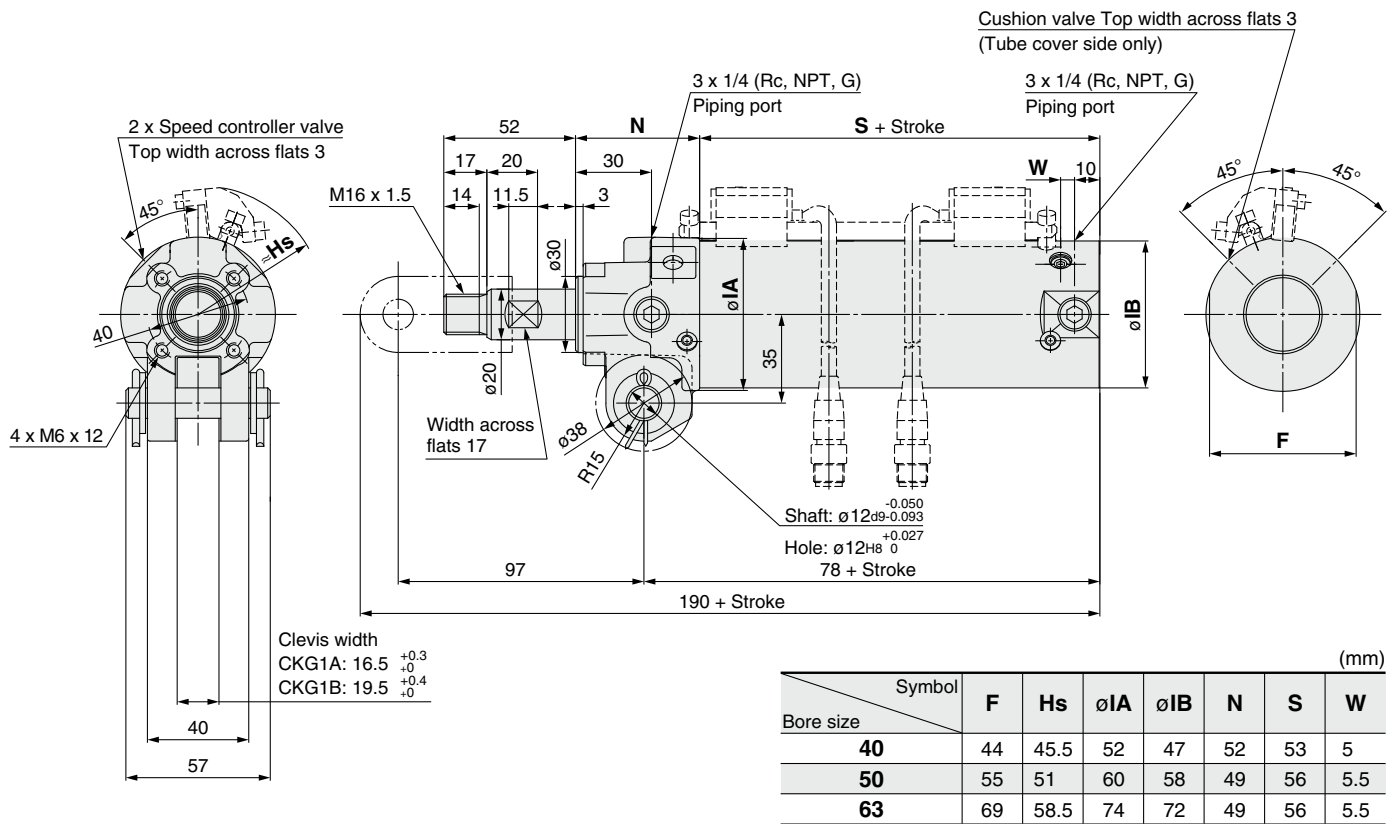
Note 1) A knuckle pin, cotter pins, flat washers and a spring pin are attached to the double knuckle joint.

CKG1-XC91

Bore Size

Ø40 to Ø63

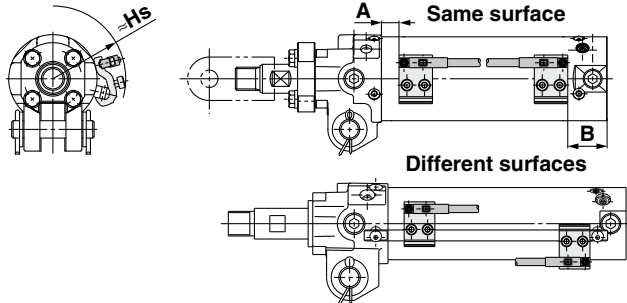
CKG1□40, 50, 63-XC91□ With auto switch (D-P4DWS□).



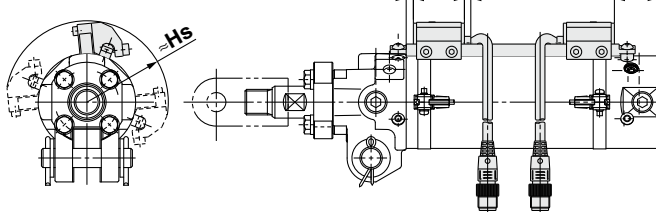
Magnetic Field Resistant Auto Switch Mounting

Auto Switch Proper Mounting Position (Detection at Stroke End) and Its Mounting Height

Rod mounting D-P3DWA□



D-P4DW□



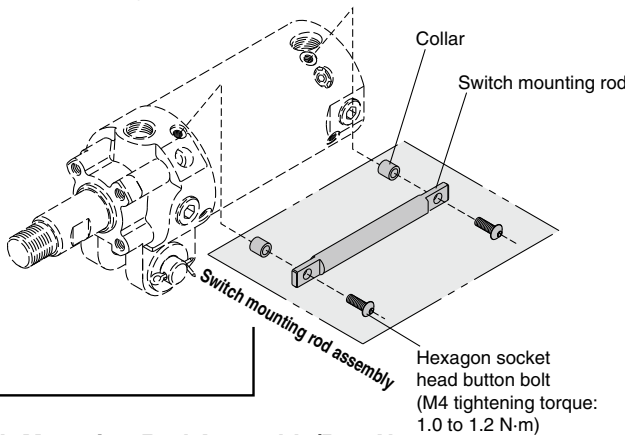
Minimum Stroke for Auto Switch Mounting

Auto switch model	With 1 pc.	With 2 pcs.	
		Different surfaces	Same surface
D-P3DWA□	50	50	50
D-P4DW□			

Note) When two D-P3DWA□ are mounted to the cylinder with stroke 50 mm, mount them on different surfaces.

Auto Switch Mounting Bracket/Part No.

Switch mounting rod assembly/Auto switch mounting bracket assembly



Switch Mounting Rod Assembly/Part No.

Applicable series	Applicable clamp cylinder	Part no.
Series CKG1□40/50/ 63	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
	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

Auto Switch Mounting Position and Its Height Unit: mm

Auto switch model	Symbol	Auto switch set value and its height		
		ø40	ø50	ø63
D-P3DWA□	A	9.5	7	7
	B	24.5	30	30
	Hs	46.5	52	59
D-P4DW□	A	8	4.5	4.5
	B	20.5	27.5	27.5
	Hs	45.5	51	58.5

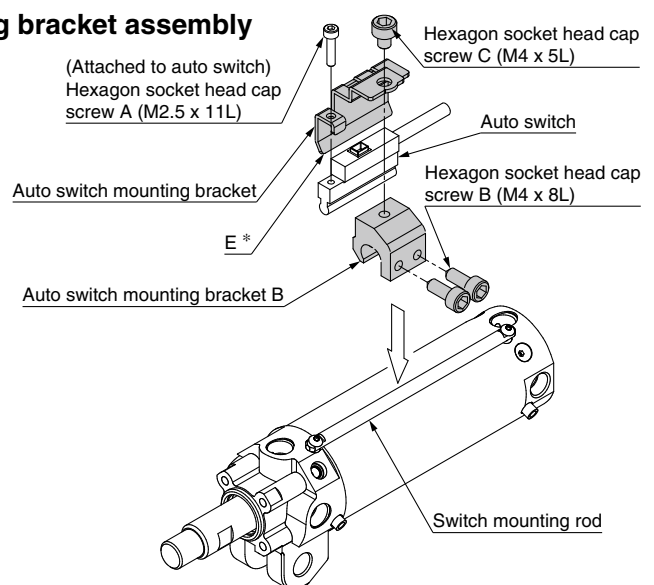
Note 1) The mounting position should be referred for reference only for the auto switch mounting position at the stroke end detection. Adjust the auto switch after confirming the operation to set actually.

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.

Operating Range

Auto switch model	Bore size		
	40	50	63
D-P3DWA□	5.5	5.5	5.5
D-P4DW□	4	4	4.5



* Mount the part E of the auto switch mounting bracket so that it is in contact with the cylinder tube.

Note 1) The tightening torque for a hexagon socket head cap screw (M2.5) is 0.2 to 0.3 N·m. Hold the shorter side of a hexagon wrench, and turn it to tighten. (Too much tightening may break the switch)

Note 2) Tighten the hexagon socket head cap screws B and C (M4) with a tightening torque of 1 to 1.2 N·m.

Auto Switch Mounting Bracket Assembly/Part No.

Applicable cylinder series	Applicable auto switch model	Auto switch mounting bracket part no.		
		40	50	63
Series CKG1	D-P3DWA□	BK7-040S		
	D-P4DW□	BK1T-040		

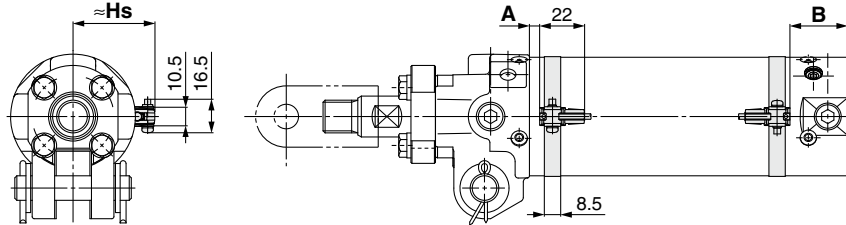
Standard Auto Switch Mounting



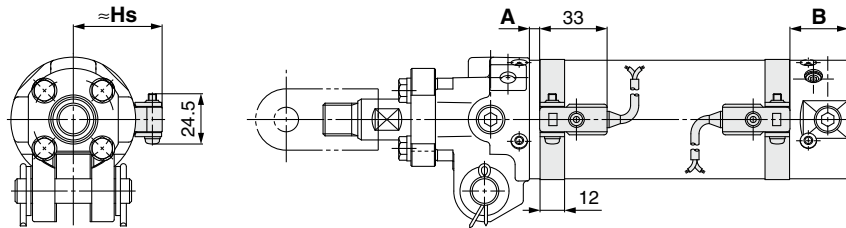
Please contact SMC for detailed dimensions, specifications and lead times.

Auto Switch Mounting Position (Detection at Stroke End) and Its Mounting Height

D-M9B/A93(W)



D-B54



Caution

As for the precautions on the auto switches, product specifications, refer to the WEB catalog or Best Pneumatics No.3.

Auto Switch Mounting Bracket Assembly/Part No.

Auto switch model	Bore size (mm)		
	ø40	ø50	ø63
D-M9B D-M9BW D-A93	Note) BMA3-040	Note) BMA3-050	Note) BMA3-063
D-B54	BA-04	BA-05	BA-06

Note) This is the set part number for the auto switch mounting band (BMA2-□□□A) and holder set (BJ5-1/switch bracket: transparent). The switch bracket (nylon) cannot be used in environments exposed to alcohol, chloroform, methylamines, hydrochloric acid and sulfuric acid, as this part will deteriorate.
Please consult with SMC regarding other chemicals.

Minimum Stroke for Auto Switch Mounting (mm)

Auto switch model	With 1 pc.	With 2 pcs. (Different surfaces)	With 2 pcs. (Same surface)
D-M9B D-M9BW D-A93	50	50	50
D-B54	50	50	75

Auto Switch Mounting Position and Its Height (mm)

Auto switch model	Symbol	Auto switch set value and its height		
		ø40	ø50	ø63
D-M9B D-M9BW	A	15	11.5	11.5
	B	27.5	34.5	34.5
	Hs	35.5	41	48
D-A93	A	11	7.5	7.5
	B	23.5	30.5	30.5
	Hs	35.5	41	48
D-B54	A	5.5	2	2
	B	18	25	25
	Hs	38	43.5	50.5

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.

Operating Range

Auto switch model	Bore size (mm)		
	40	50	63
D-M9B	3.5	4	4
D-M9BW	5.5	6.5	7
D-A93	8	8	9
D-B54	10	10	11

* Values which include hysteresis are for guideline purpose only, they are not a guarantee (assuming approximately ±30% dispersion) and may change substantially depending on the ambient environment.

Spatter Resistant Cylinder for Arc Welding Clamp Cylinder (Rod Mounting Style)

CKGA-XC88/XC89 CKGA-XC91

∅80, ∅100

RoHS

Spatter Resistant Cylinders
for Arc Welding

Clamp Cylinders

Gas/Air Switching Valve

Detection Switches

Tubing

Fittings

Flow Control Equipment

How to Order

Bore size

80	80 mm
100	100 mm

Cylinder stroke (mm)

80	50, 75, 100, 125, 150, 175, 200
100	50, 75, 100, 125, 150, 175, 200

Rod material

XC88	Stainless steel 304
XC89	S45C

CKGA 80 - 100 Y - P3DWASC - XC89

CKGA 80 - 100 Y - P4DWSC - XC91

Built-in auto switch magnet

Clevis width: 28 mm

End bracket

Nil	None
Y	Double knuckle joint (with tap)

Auto switch

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

Rod material

XC91	S45C
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Number of auto switches

Nil	2 pcs.
S	1 pc.

Note) Select applicable auto switch models from the table below.

Note) A knuckle pin, cotter pins and flat washers are provided for Y.

Made to Order

Part no.	Piston rod material (Hard chrome plated)		Coil scraper	Lube- retainer	Grease for welding
	S45C	Stainless steel 304			
-XC88	—	●	●	●	●
-XC89	●	—	●	●	●
-XC91	●	—	●	—	●

Note) Use the -XC91 in a place where the distance from the welding portion is far and the spatter scattering is minimized.

Built-in Auto Switch Magnet Cylinder Part No.

- 1) Built-in auto switch magnet type without auto switch, without switch mounting rod
Symbol for the auto switch type is "Nil" as shown below.
(Example) CKGA80-50Y-XC89
- 2) Built-in auto switch magnet type without auto switch, with switch mounting rod
Symbol for the auto switch type is "P" as shown below.
(Example) CKGA80-50Y-P-XC89

Applicable Auto Switches/Refer to the WEB catalog or the Best Pneumatics No.3 for further information on auto switches.

Type	Special function	Auto switch model	Applicable magnetic field	Electrical entry	Indicator light	Wiring (Pin no in use)	Load voltage	Lead wire length	Applicable load
Solid state auto switch	Magnetic field resistant (2-color indication)	D-P3DWASC	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 Note1)
		D-P4DWSC							
		D-P3DWASE							
		D-P4DWSE							
		D-P3DWA		Grommet	2-wire	0.5 m			
		D-P3DWAL							
		D-P4DWL							
		D-P3DWAZ							
D-P4DWZ	5 m								

Note1) PLC: Programmable Logic Controller

Note2) Please contact SMC for auto switches, auto switch proper mounting positions and operating ranges other than the above.

Note3) Refer to page 12 when ordering the auto switch mounting bracket assembly or switch mounting rod assembly.

Note4) For D-P3DWA□, the auto switch and auto switch mounting bracket are packed together (not assembled).

Specifications

Bore size (mm)	80	100
Fluid	Air	
Proof pressure	1.5 MPa	
Maximum operating pressure	1.0 MPa	
Minimum operating pressure	0.05 MPa	
Ambient and fluid temperature	-10°C to +60°C (No freezing)	
Piston speed	50 to 500 mm/s	
Cushion	With air cushion on both ends	
Speed controller	Equipped on both ends	
Lubrication	Non-lube	
Stroke length tolerance	+1.0 0	
Mounting Note)	Double clevis	

Note) A clevis pin, cotter pins and flat washers are provided.

Clevis width	28 mm	CKGA
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Comparison of the Dimensions of Each Series

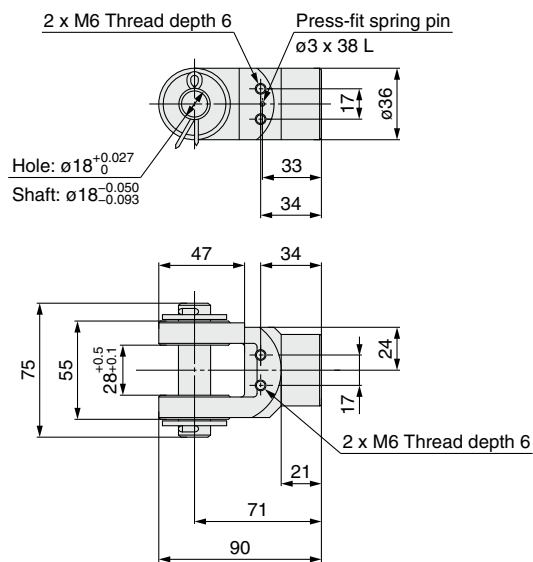
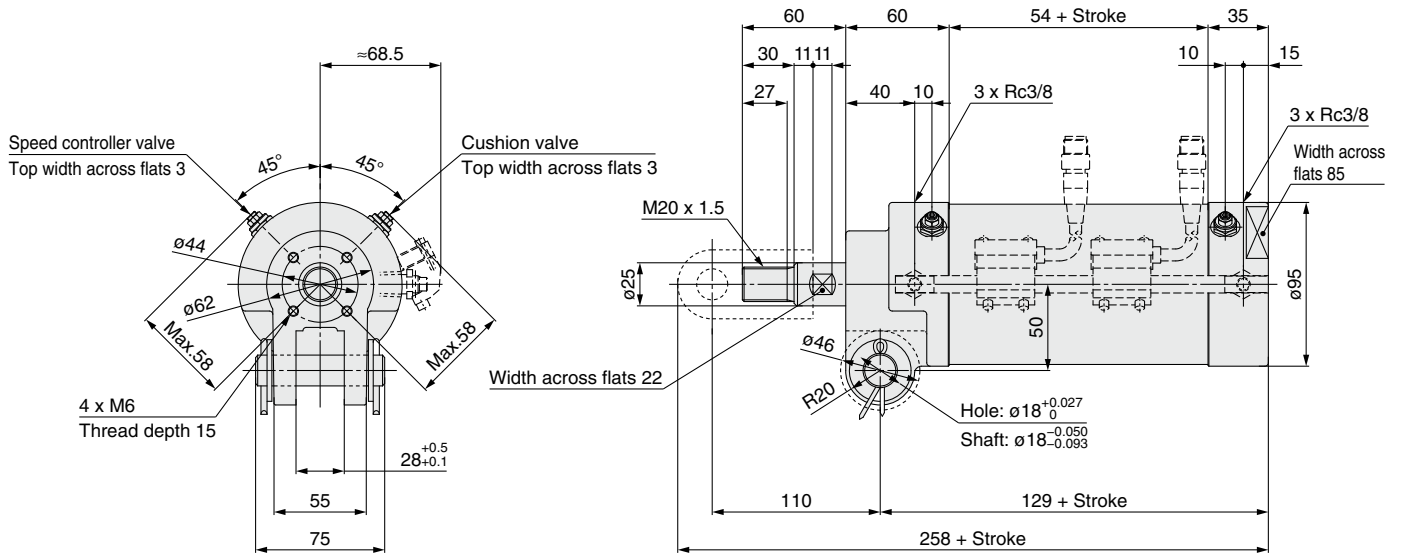
The -XC88/XC89/XC91 and standard product have the same dimensions.

CKGA-XC88/XC89 -XC91

Bore Size

Ø80 to Ø100

CKGA80-XC88/XC89 With auto switch (D-P4DWS□).
-XC91



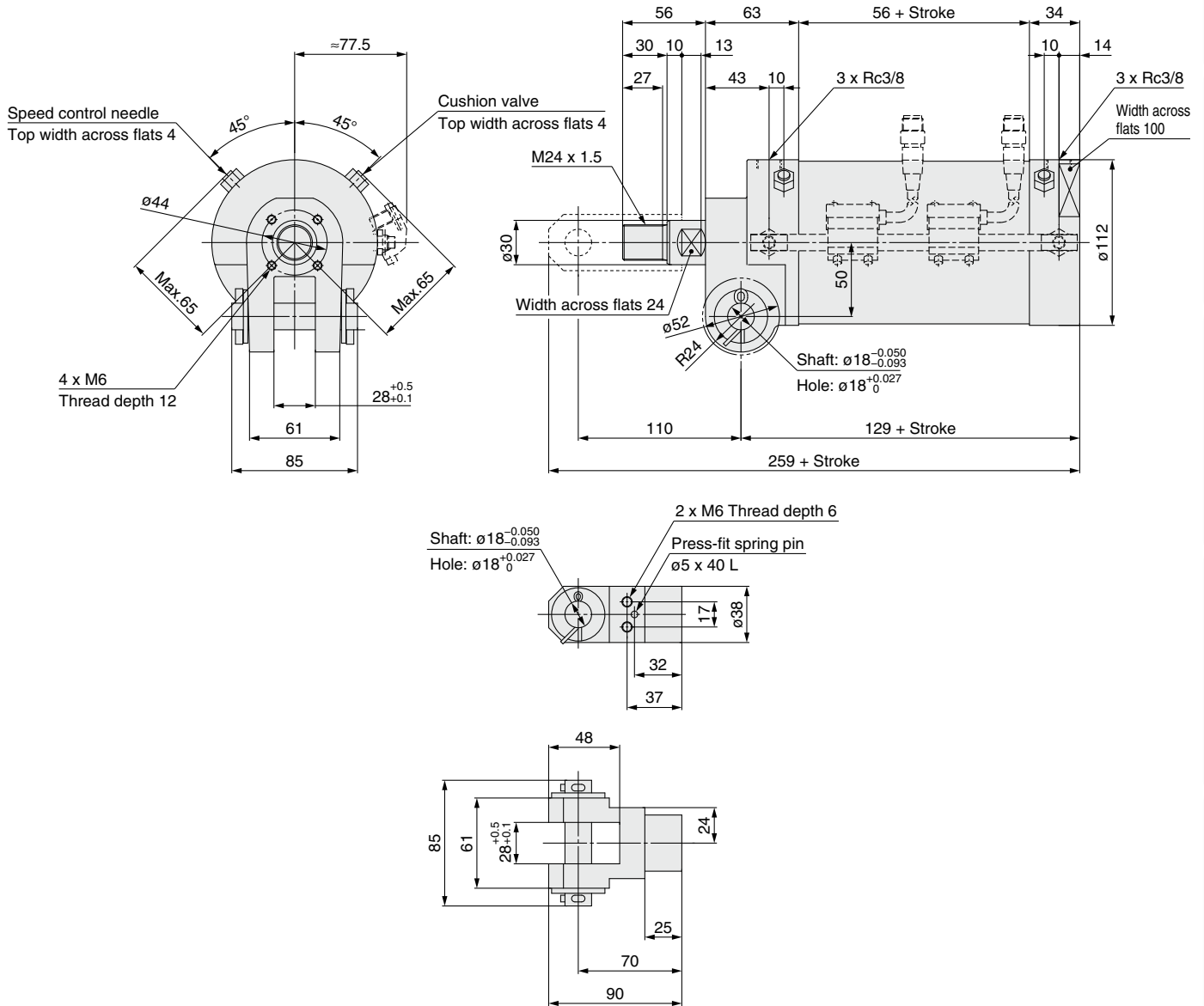
Double knuckle joint

Part No.

- **Double knuckle joint assembly part no.:**
C1K80-18-9261P-R
Pin, flat washer, cotter pin, spring pin included
- **Pin assembly part no.:**
C1K80-23-9034P-R
Pin, flat washer (2 pcs.), cotter pin (2 pcs.)
- **Tie-rod assembly part no. for auto switch mounting:**
C1K80E-B0467-050-R
Stroke
050, 075, 100, 125, 150
- **Auto switch mounting bracket (D-P4DWS□) part no.:**
BAP2-063

CKGA100-XC88/XC89
-XC91

With auto switch (D-P4DWS□).



Double knuckle joint

Part No.

- **Double knuckle joint assembly part no.:**
C1KA0-18-9262P-R
Pin, flat washer, cotter pin, spring pin included
- **Pin assembly part no.:**
C1KA0-23-9035P-R
Pin, flat washer (2 pcs.), cotter pin (2 pcs.)
- **Tie-rod assembly part no. for auto switch mounting:**
CK-A0E-B4657-050-R
Stroke
050, 075, 100, 125, 150
- **Auto switch mounting bracket (D-P4DWS□) part no.:**
BAP2-063

Spatter Resistant Cylinders
for Arc Welding

Clamp Cylinders

Gas/Air Switching Valve

Detection Switches

Tubing

Fittings

Flow Control Equipment