



Miniature cross roller parallel hand Double acting/single acting

BSA2 Series

● Operational stroke length: 4 mm

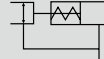
Double acting



Single acting (normally open)



Single acting (normally closed)



Specifications

Item		BSA2
Size		006C
Bore size	mm	ø6
Actuation		Double acting/single acting
Working fluid		Compressed air
Max. working pressure	MPa	0.7 (≈100 psi, 7 bar)
Min. working pressure	Double acting	0.15 (≈22 psi, 1.5 bar)
	Normally open	
	Normally closed	
MPa		0.25 (≈36 psi, 2.5 bar)
Ambient temperature	°C	5 (41°F) to 60 (140°F)
Port size		M3
Operating stroke length	mm	4
Rod diameter	mm	ø3
Volumetric capacity (reciprocating)	cm ³	0.1
Repeatability	mm	±0.01
Weight	kg	0.034
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)

Switch specifications

Item	Proximity 2-wire		Proximity 3-wire	
	F2H, F2V	F2S *3	F3H, F3V	F3S *3
Applications	Dedicated for programmable controller		For programmable controller, relay	
Output method	—	—	NPN output	
Power supply voltage	—	—	10 to 28 VDC	
Load voltage/current	10 to 30 VDC, 5 to 20 mA (*1)		30 VDC, 50 mA or less	
Indicator lamp	Yellow LED (Lit when ON)	LED (Lit when ON)	Yellow LED (Lit when ON)	LED (Lit when ON)
Leakage current	1 mA or less		10 µA or less	
Weight	1 m:10 g 3 m:29 g		1 m:10 g 3 m:29 g	

*1 : The above max. load current is 20 mA at 25°C. The current is lower than 20 mA if the operating ambient temperature around the switch is higher than 25°C. (5 to 10 mA at 60°C)

*2 : The switch uses a bend-resistant lead wire.

*3 : Refer to Ending Page 1 for detailed switch specifications and dimensions.

*4 : If mounting two switches in one groove to enable detection at both ends, mount them so that their set screws face outward.

LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH-HP
LSH
FH100
BSA2
BHA/BHG
LHA
LHAG
HAP
HKP
HCP
HGP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
HMF
HMF-G
HMF-B
HFP
FH500
HBL
HJL
HMD
HDL
HJD
BHE

How to order

Without switch (built-in magnet for switch)

BSA2 - **006C** - **O**

With switch (built-in magnet for switch)

BSA2 - **006C** - **O** - **F2V** - **D**

Model No.

Size

A Option

B Switch model No.

C Switch quantity

[Example of model No.]

BSA2-006C-O-F2V-D

Model: Miniature cross roller parallel hand

Size: 006C

- A** Option : Single acting, normally open
- B** Switch model No. : Proximity F2V switch, lead wire 1 m
- C** Switch quantity : 2

Code	Description					
A Option						
Blank	Standard (double acting)					
O	Single acting (normally open)					
C	Single acting (normally closed)					
B Switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage		Display	Lead wire
-	F2S*	Proximity	AC	DC	1-color display	2-wire
F2H*	F2V*			●		2-wire
-	F3S*			●		3-wire
F3H*	F3V*			●		3-wire
* Lead wire length						
Blank	1 m (standard)					
3	3 m (option)					
C Switch quantity						
R	1 on open side					
H	1 on closed side					
D	2					

How to order switch

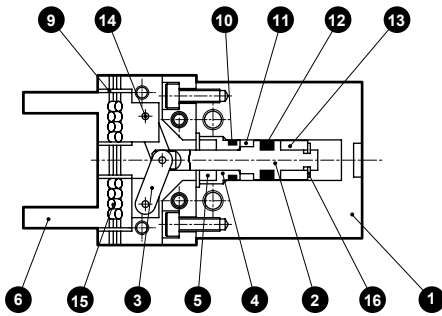
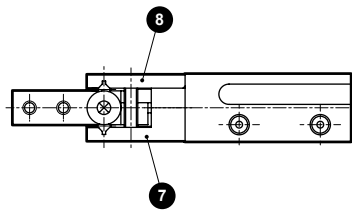
SW - **F2H**

Switch model No.
(Item **B** above)

Note) When two switches are selected, the open/close stroke length will be short. Depending on workpiece size, both switches may turn ON.

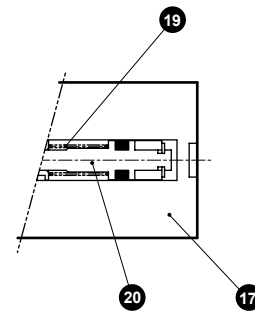
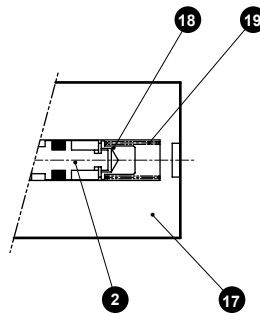
LCM
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UCA2
ULK*
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JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH-HP
LSH
FH100
BSA2
BHA/BHG
LHA
LHAG
HAP
HKP
HCP
HGP
HLF2
HLA/HLB
HLAG/HLBG
HLC
HLD
HMF
HMF-G
HMFB
HFP
FH500
HBL
HJL
HMD
HDL
HJD
BHE

Internal structure and parts list



O (normally open)

C (normally closed)



Cannot be disassembled

No.	Part name	Material	No.	Part name	Material
1	Body	Aluminum alloy	11	Cylinder gasket	Nitrile rubber
2	Piston	Stainless steel	12	Piston packing	Nitrile rubber
3	Arm	Stainless steel	13	Magnet	
4	Piston guide	Stainless steel	14	Operation shaft	Stainless steel
5	Piston guide holder	Stainless steel	15	Cross roller	Alloy steel
6	Finger	Steel	16	Snap ring	Stainless steel
7	Bearing guide A	Steel	17	O, C body	Aluminum alloy
8	Bearing guide B	Steel	18	Spring guide	Stainless steel
9	Bearing holder	Stainless steel	19	O, C spring	Stainless steel
10	Rod packing	Nitrile rubber	20	C piston	Stainless steel

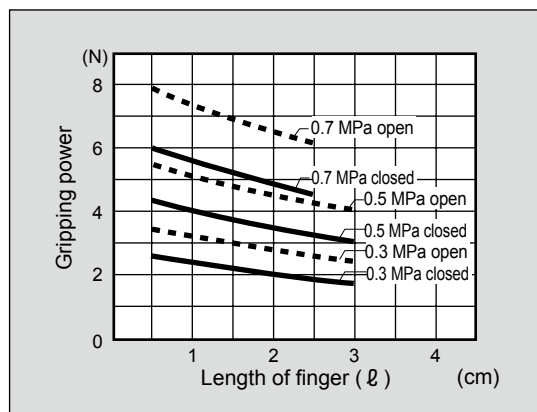
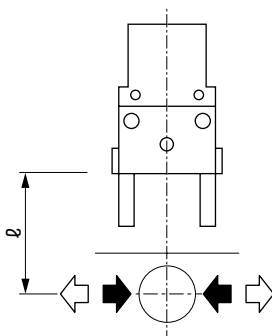
Gripping power performance data

• Gripping power represents the thrust (per one finger) in the arrow direction shown in the figure.

• At a supply pressure of 0.3, 0.5, or 0.7 MPa, the gripping power in the opening/closing directions with finger length ℓ of hand is shown.

- Open direction (←) (shown with broken line)
- Closed direction (→) —— (shown with continuous line)

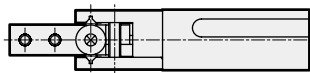
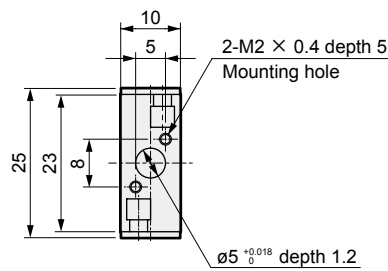
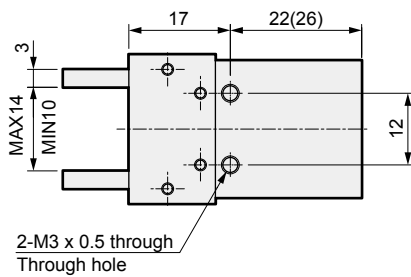
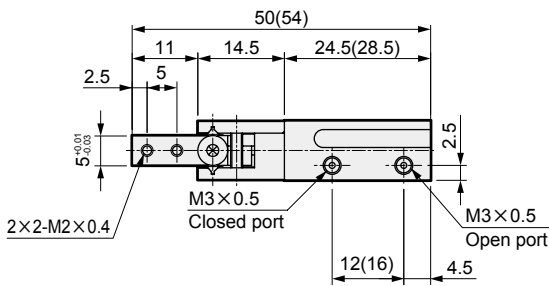
● BSA2-006C



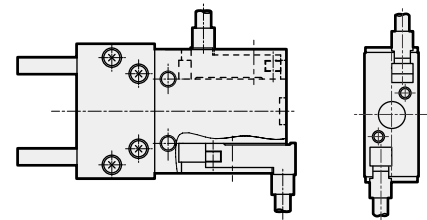
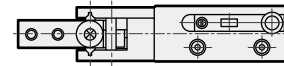
Note: O type gripping power decreases approximately 20 to 30% in the closed direction compared to double acting.
C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting.
When making a selection, read the precautions for design and selection on page 1764.

Dimensions

- Dimensions in () are for O [normally open] and C [normally closed] specifications.
- Dimensions in () are for O [normally open] specifications.



● With switch



Note: When using F□H or F□V, the switch protrudes from the end face of the body head side. If this projection is a problem, use F□S.

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RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechMod/Chuk
ShkAbs
FJ
FK
SpdContr
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