



Compact cross roller parallel hand Double acting/single acting

BHA Series

● Operating stroke length: 5, 9, 11, 15 mm

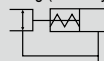
Double acting



Single acting (normally open)



Single acting (normally closed)



Specifications

Descriptions		BHA			
Size		01CS1	03CS1	04CS1	05CS1
Bore size	mm	φ12	φ16	φ20	φ25
Actuation		Double acting/single acting			
Working fluid		Compressed air			
Max. working pressure		0.7 (≈100 psi, 7 bar)			
Min. working pressure	Double acting	0.1 (≈15 psi, 1 bar)			
	Normally open	0.3 (≈44 psi, 3 bar)			
	Normally closed				
Ambient temperature		5 (41°F) to 60 (140°F)			
Port size		M3	M5		
Operating stroke length	mm	5	9	11	15
Rod diameter	mm	φ6	φ8	φ10	φ12
Volumetric capacity (reciprocating)	cm ³	0.32	1.58	2.89	6.32
Repeatability	mm	±0.01			
Weight	kg	0.100	0.145	0.253	0.420
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)			

Switch specifications

Descriptions	Proximity 2-wire	Proximity 3-wire
	T2H/V	T3H/V
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 or less, 100 mA or less
Indicator lamp	LED (Lit when ON)	
Leakage current	1 mA or less	10 μA or less
Weight	1 m:18 g 3 m:49 g 5 m:80 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 : Refer to Ending Page 1 for other switch specifications.

* The BHA-LN Series with length measuring function (length measuring sensor) is also available. Refer to page 1431 for details.

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

How to order

Without switch (built-in magnet for switch)

BHA - 01CS1 - O

With switch (built-in magnet for switch)

BHA - 01CS1 - O - T2H - R

A Size

B Option
*1

C Switch model No.
* indicates the lead wire length.

D Switch quantity

Code	Content				
A Size					
01CS1					
03CS1					
04CS1					
05CS1					
B Option					
Blank	Standard (double acting)				
O	Single acting (normally open)				
C	Single acting (normally closed)				
Y1	With small jaw (Material S50C)				
Y2	With small jaw (Material MC nylon)				
C Switch model No.					
Axial lead wire	Radial lead wire	Contact	Voltage	Display	Lead wire
			AC	DC	
T2H*	T2V*	Proximity		●	1-color display
T3H*	T3V*			●	3-wire
* Lead wire length					
Blank	1 m (standard)				
3	3 m (option)				
5	5 m (option)				
D Switch quantity					
R	1 on open side				
H	1 on closed side				
D	2				

⚠ Precautions for model No. selection

*1: Refer to pages 1634 to 1635 for the dimensions and compatible model of the small jaw. When ordered as an option, two are attached at shipment.

[Example of model No.]

BHA-01CS1-O-T3H-R

Model: Compact cross roller parallel hand

- A** Size : 01CS1
- B** Option : Single acting, normally open type
- C** Switch model No. : Proximity T3H switch, lead wire 1 m
- D** Switch quantity : 1 on open side

How to order switch

SW - T2H

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

Specifications for rechargeable battery (Catalog No. CC-1226A)

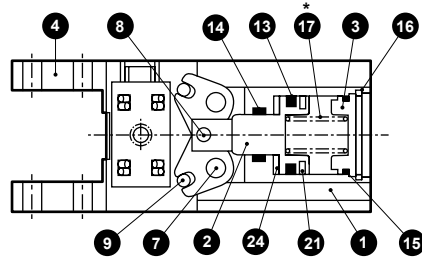
BHA - ... - P4* ● Design compatible with rechargeable battery manufacturing process.

* Contact CKD for details.

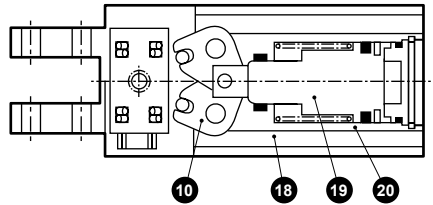
LCW
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LCX
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STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LM
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
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FH100
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LHAG
HKP
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HLAG/HLBG
HLD
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJD
HJL
BHE

Internal structure and parts list

Standard (double acting)/
O (normally open)



C (normally closed)



* Standard (double acting) does not contain a 17 spring.

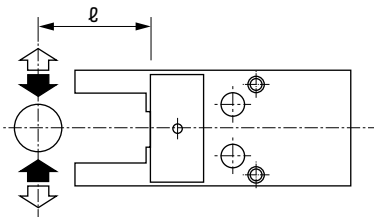
Cannot be disassembled

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Body	Aluminum alloy		13	Piston packing	Nitrile rubber	
2	Piston	Stainless steel		14	Rod packing	Nitrile rubber	
3	Cylinder guard	Acetal resin		15	Cylinder gasket	Nitrile rubber	
4	Master key	Steel		16	Snap ring		
5	Bearing guide A	Steel		17	Spring	Stainless steel	O type only
6	Bearing guide B	Steel		18	Body	Aluminum alloy	
7	Fulcrum axis	Steel		19	Piston	Stainless steel	
8	Operation shaft A	Steel		20	Spring	Stainless steel	
9	Operation shaft B	Steel		21	Magnet		
10	Arm	Steel		22	Retainer A	Stainless steel	
11	Cross roller A	Alloy steel		23	Retainer B	Stainless steel	
12	Cross roller B	Alloy steel		24	Cushion	Urethane rubber	

Gripping power performance data

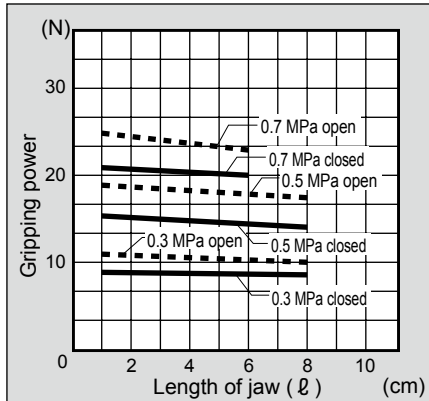
The gripping power in the opening/closing directions with jaw length L of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

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

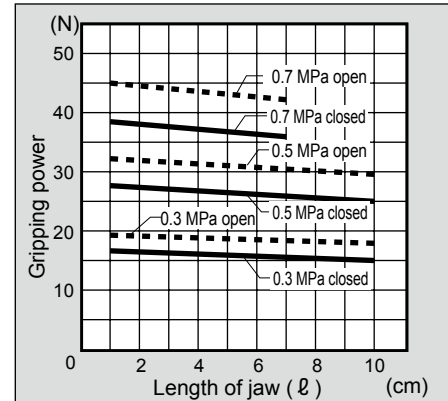


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to double acting. C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting. When making a selection, read the precautions for design and selection on page 1636.

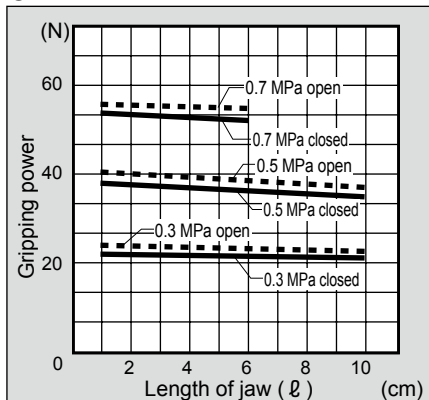
● BHA-01CS1



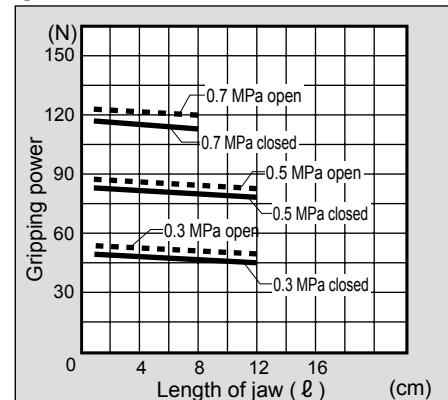
● BHA-03CS1



● BHA-04CS1



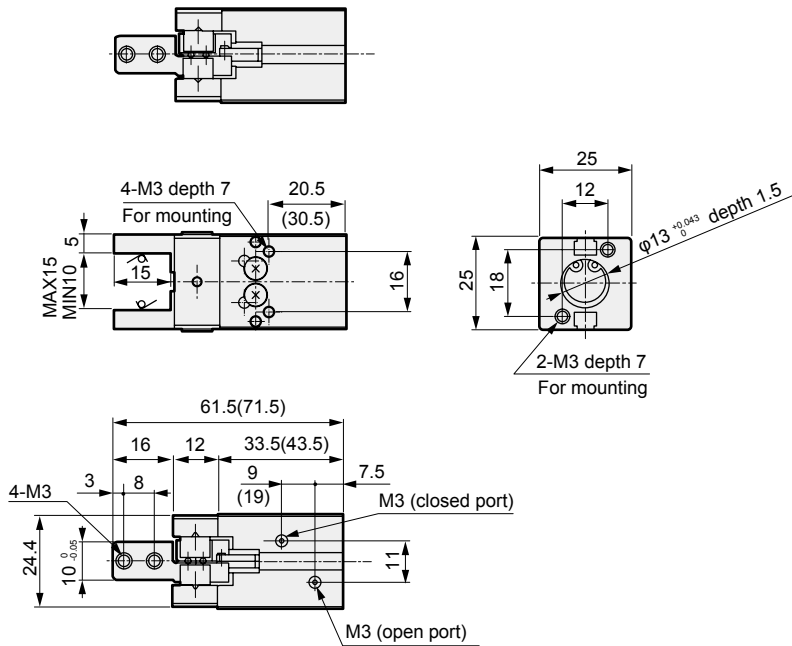
● BHA-05CS1



Dimensions

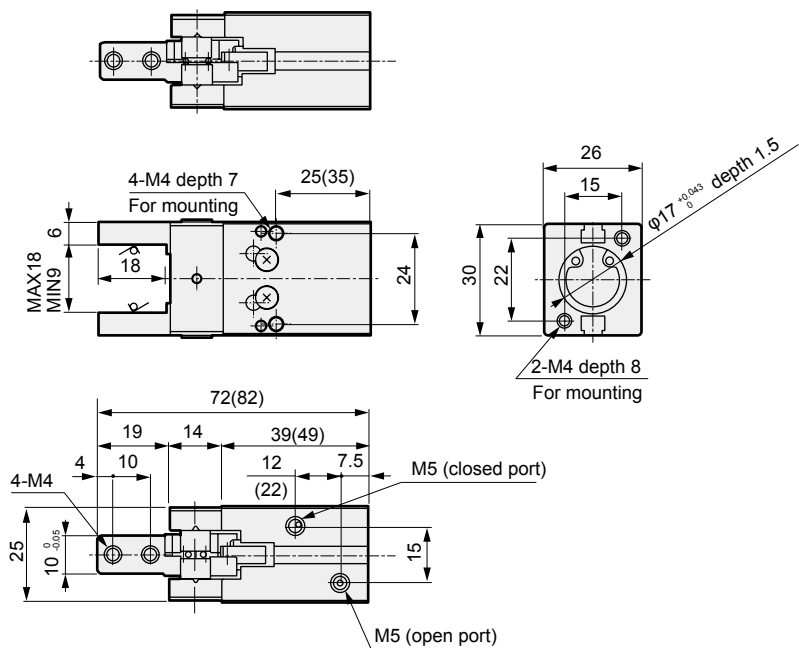
● BHA-01CS1 standard/O/C

● Dimensions in () are for C [normally closed] specifications.

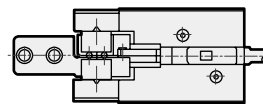
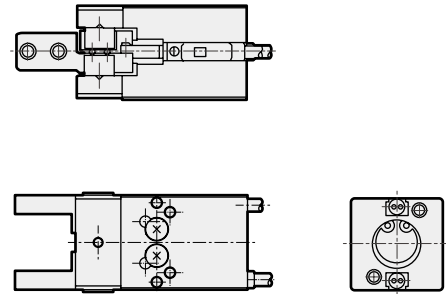


● BHA-03CS1 standard/O/C

● Dimensions in () are for C [normally closed] specifications.

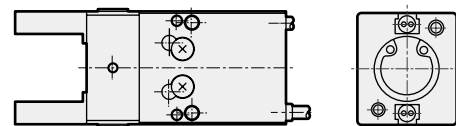
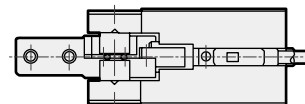


● With switch



Note: When using T□H or T□V, the switches of both project from the end face of body head side.

● With switch



Note: When using T□H or T□V, the switches of both project from the end face of body head side.

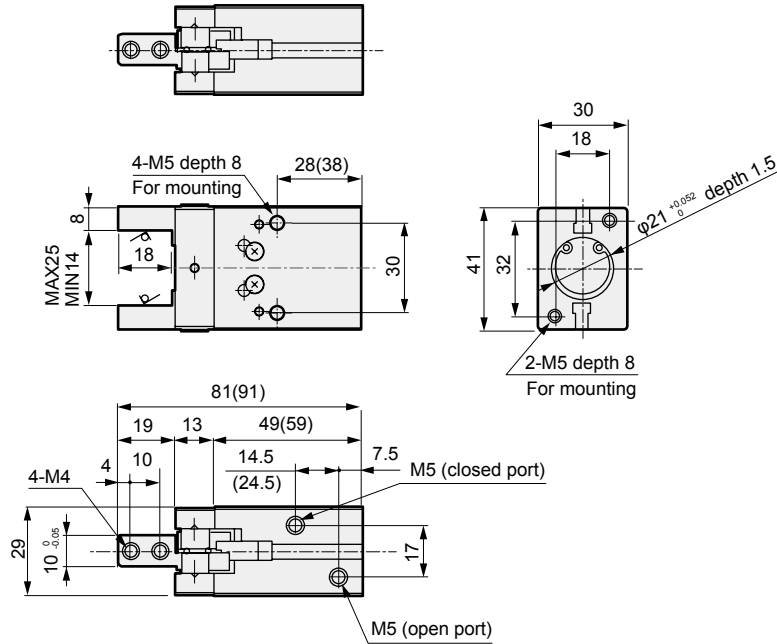
LCW
LCR
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LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
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BBS
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HMFB
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HGP
FH500
HLB
HDL
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HJL
BHE

Dimensions

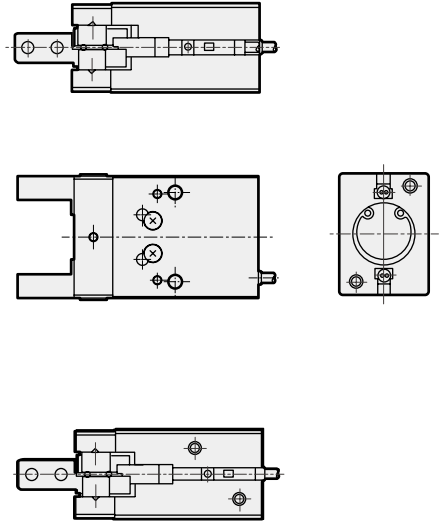


● BHA-04CS1 standard/O/C

● Dimensions in () are for C [normally closed] specifications.

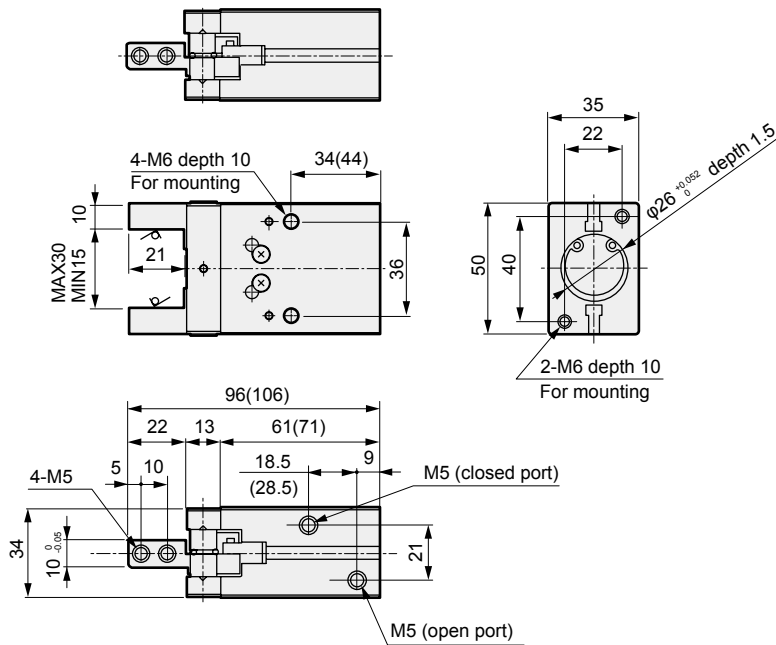


● With switch

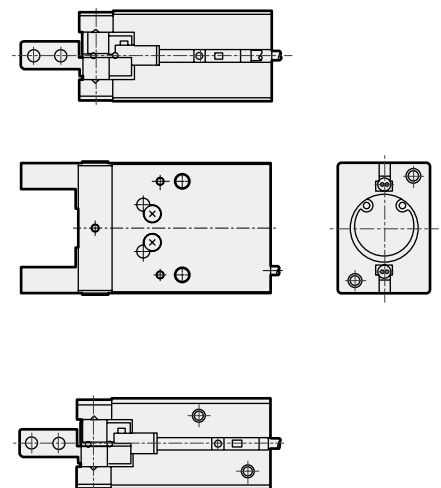


● BHA-05CS1 standard/O/C

● Dimensions in () are for C [normally closed] specifications.



● With switch



LCW
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STM
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STS/STL
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USSD
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USC
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LML
HCM
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HFP
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HGP
FH500
HBL
HDL
HMD
HJD
HJL
BHE

MEMO

LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
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FJ
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HMFB
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FH500
HBL
HDL
HMD
HJD
HJL
BHE



Compact cross roller parallel hand with rubber cover
Double acting/single acting

BHG Series

● Operating stroke length: 5, 9, 11, 15 mm

Double acting

Single acting (normally open)

Single acting (normally closed)



Specifications

Descriptions		BHG			
Size		01CS	03CS	04CS	05CS
Bore size	mm	φ12	φ16	φ20	φ25
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	0.3 (≈44 psi, 3 bar)			
	Normally closed				
Ambient temperature	°C	5 (41°F) to 60 (140°F)			
Port size		M3	M5		
Operating stroke length	mm	5	9	11	15
Rod diameter	mm	φ6	φ8	φ10	φ12
Volumetric capacity (reciprocating)	cm ³	0.32	1.58	2.89	6.32
Repeatability	mm	±0.01			
Weight	kg	0.118	0.165	0.238	0.455
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)			

Switch specifications and variations

Descriptions	Proximity 2-wire	Proximity 3-wire
	T2H/V	T3H/V
Applications	Dedicated for programmable controller	For programmable controller, relay
Output method	—	Output method
Power supply voltage	—	10 to 28 VDC
Load voltage/current	10 to 30 VDC, 5 to 20 mA (*1)	30 VDC or less, 100 mA or less
Indicator lamp	LED (Lit when ON)	
Leakage current	1 mA or less	10 μA or less
Weight	1 m:18 g 3 m:49 g 5 m:80 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 : Refer to Ending Page 1 for other switch specifications.

* The BHG-LN Series with length measuring function (length measuring sensor) is also available. Refer to page 1431 for details.

LCW
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HMF
HMFb
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJD
HJL
BHE

How to order

Without switch (built-in magnet for switch)

BHG - **01CS** - **O**

With switch (built-in magnet for switch)

BHG - **01CS** - **O** - **T2H** - **R**

A Size

B Option
*1

C Switch model No.

D Switch quantity

Code	Content					
A Size						
01CS						
03CS						
04CS						
05CS						
B Option						
Blank	Standard (double acting)					
O	Single acting (normally open)					
C	Single acting (normally closed)					
Y1	With small jaw (Material S50C)					
Y2	With small jaw (Material MC nylon)					
C Switch model No.						
Axial lead wire	Radial lead wire	Contact	Voltage	Display	Lead wire	
			AC	DC		
T2H*	T2V*	Proximity		●	1-color display	2-wire
T3H*	T3V*			●		3-wire
* Lead wire length 3-wire						
Blank	1 m (standard)					
3	3 m (option)					
5	5 m (option)					
D Switch quantity						
R	1 on open side					
H	1 on closed side					
D	2					

⚠ Precautions for model No. selection

*1: Refer to pages 1634 to 1635 for the dimensions and compatible model of the small jaw. When ordered as an option, two are attached at shipment.

[Example of model No.]

BHG-01CS-O-T3H-R

Model: Compact cross roller parallel hand with rubber cover

- A** Size : 01CS
- B** Option : Single acting, normally open
- C** Switch model No.: Proximity T3H switch, lead wire 1 m
- D** Switch quantity : 1 on open side

How to order switch

SW - **T2H**

↓
Switch model No.
(Item **C** above)

Specifications for rechargeable battery (Catalog No. CC-1226A)

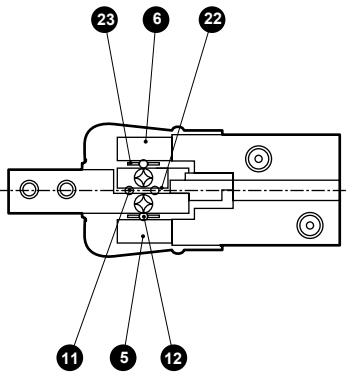
BHG - ... - **P4*** ● Design compatible with rechargeable battery manufacturing process.

* Contact CKD for details.

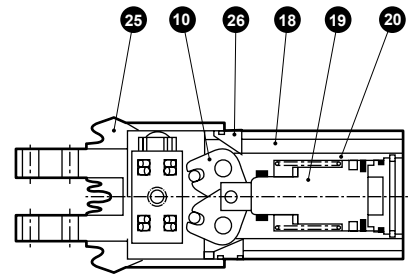
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ULK*
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USC
JSB3
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HCA
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CAC4
UCAC2
CAC-N
UCAC-N
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HLD
HCP
HMF
HMFB
HFP
HLC
HGP
FH500
HBL
HDL
HMD
HJD
HJL
BHE

Internal structure and parts list

● Standard (double acting)/O (normally open)



● C (normally closed)



* Standard (double acting) does not contain a 17 spring.

Cannot be disassembled

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Body	Aluminum alloy		14	Rod packing	Nitrile rubber	
2	Piston	Stainless steel		15	Cylinder gasket	Nitrile rubber	
3	Cylinder guard	Acetal resin		16	Snap ring	Stainless steel	
4	Master key	Steel		17	Spring	Stainless steel	O type only
5	Bearing guide A	Steel		18	Body	Aluminum alloy	
6	Bearing guide B	Steel		19	Piston	Stainless steel	
7	Fulcrum axis	Steel		20	Spring	Stainless steel	
8	Operation shaft A	Steel		21	Magnet		
9	Operation shaft B	Steel		22	Retainer A	Stainless steel	
10	Arm	Steel		23	Retainer B	Stainless steel	
11	Cross roller A	Alloy steel		24	Cushion	Urethane rubber	
12	Cross roller B	Alloy steel		25	Rubber cover	Nitrile rubber	
13	Piston packing	Nitrile rubber		26	Bracket	Aluminum alloy	

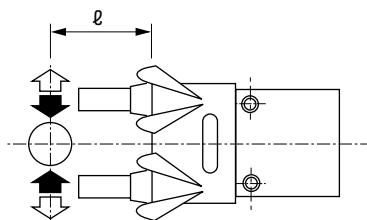
Rubber cover part model No.

Size	Part model No.	Part No.
01CS	BHG-01K	25
03CS	BHG-03K	
04CS	BHG-04K	
05CS	BHG-05K	

Gripping power performance data

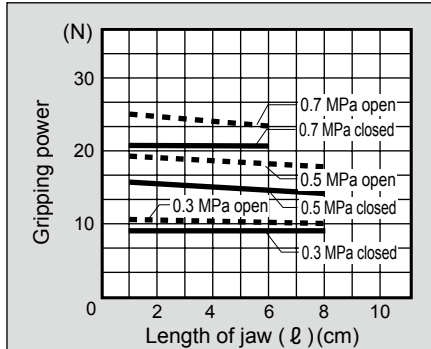
The gripping power in the opening/closing directions with jaw length L of hand with a supply pressure of 0.3, 0.5 and 0.7 MPa is shown.

- Open direction (◁) ----- (shown with broken line)
- Closed direction (▶) ————— (shown with continuous line)

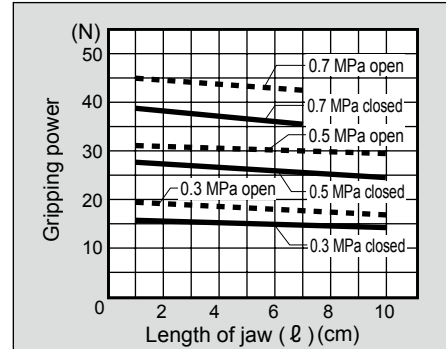


(Note) O type gripping power decreases approximately 20 to 30% in the closed direction compared to double acting. C type gripping power decreases approximately 10 to 20% in the open direction compared to the double acting. When making a selection, read the precautions for design and selection on page 1636.

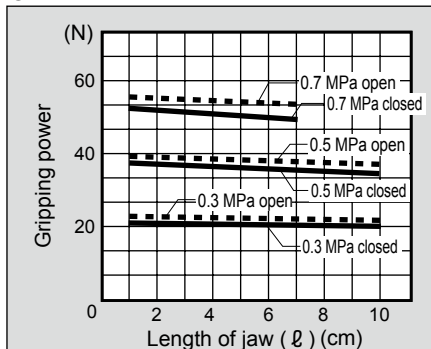
● BHG-01CS



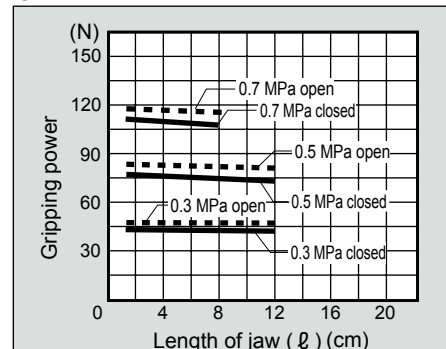
● BHG-03CS



● BHG-04CS



● BHG-05CS

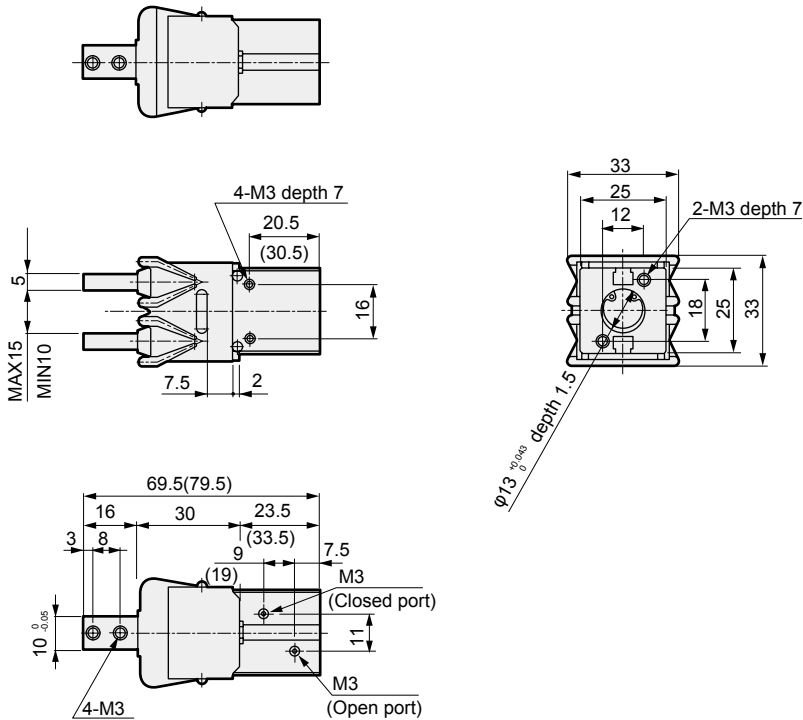


Dimensions

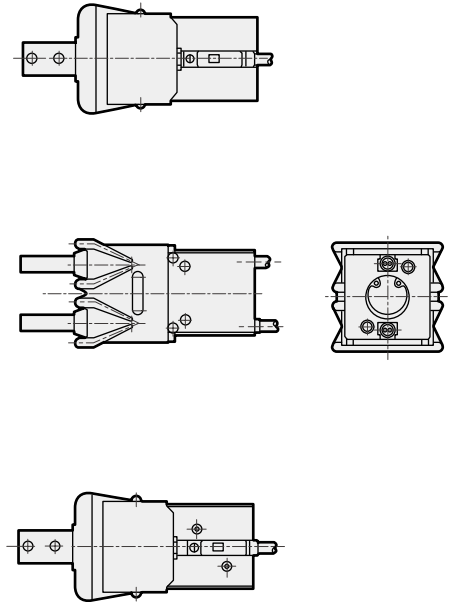


● BHG-01CS standard/O/C

● Dimensions in () are for C [normally closed] specifications.



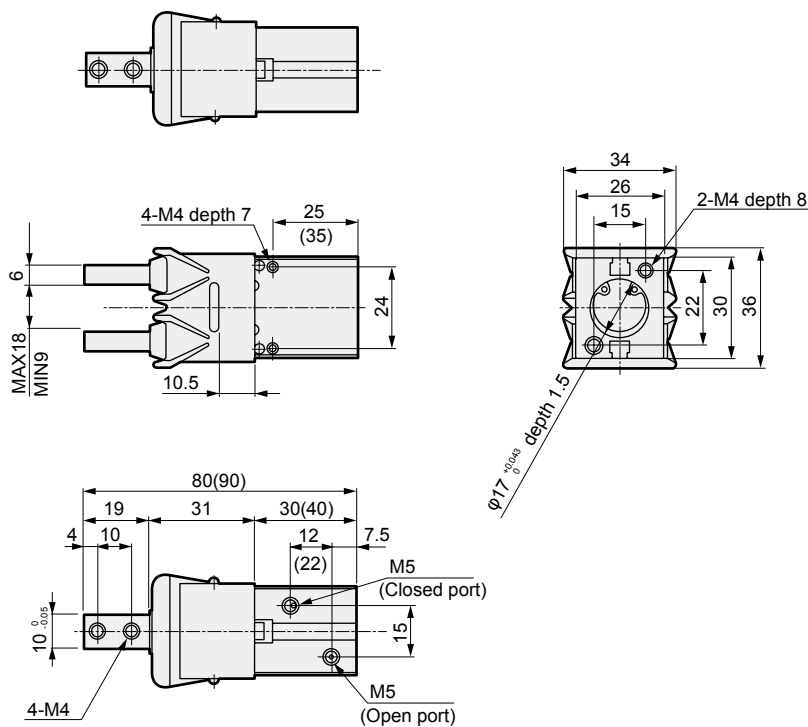
● With switch



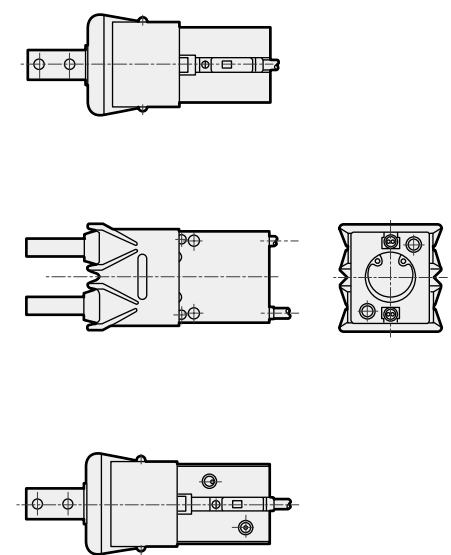
Note: When using T□H or T□V, the switches of both project from the end face of body head side.

● BHG-03CS standard/O/C

● Dimensions in () are for C [normally closed] specifications.



● With switch



Note: When using T□H or T□V, the switches of both project from the end face of body head side.

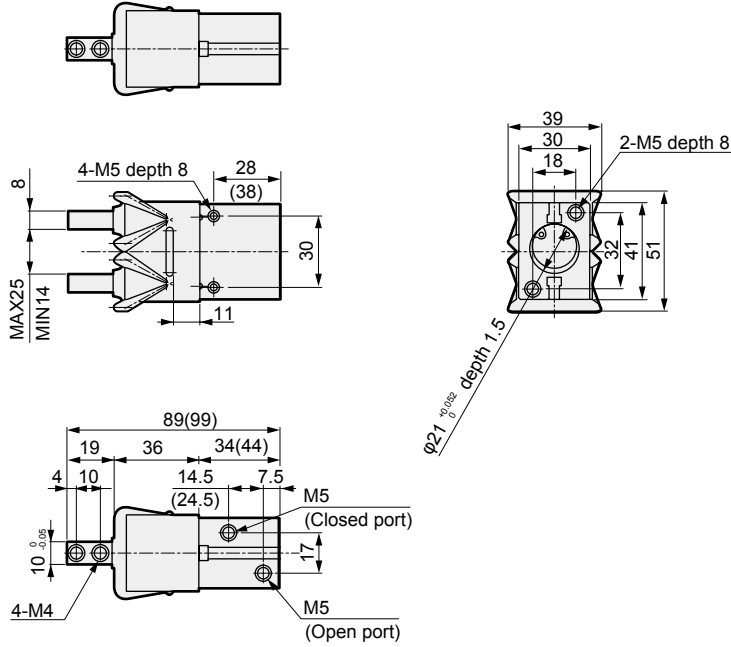
LCW
LCR
LCG
LCX
LCM
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCC2
RCS
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HR
LN
Hand
Chuk
MecHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending
LSH
FH100
HAP
BSA2
BHA/BHG
LHA
LHAG
HKP
HLA/HLB
HLAG/HLBG
HLD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

Dimensions

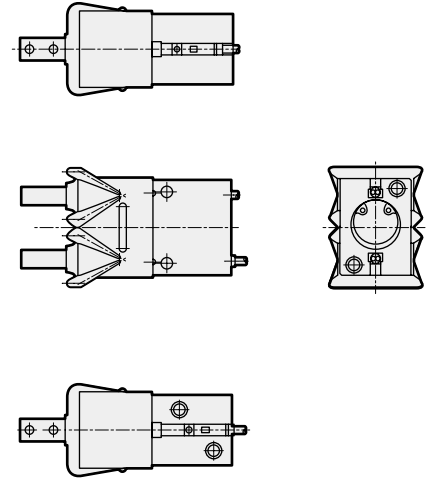


● BHG-04CS standard/O/C

● Dimensions in () are for C [normally closed] specifications.

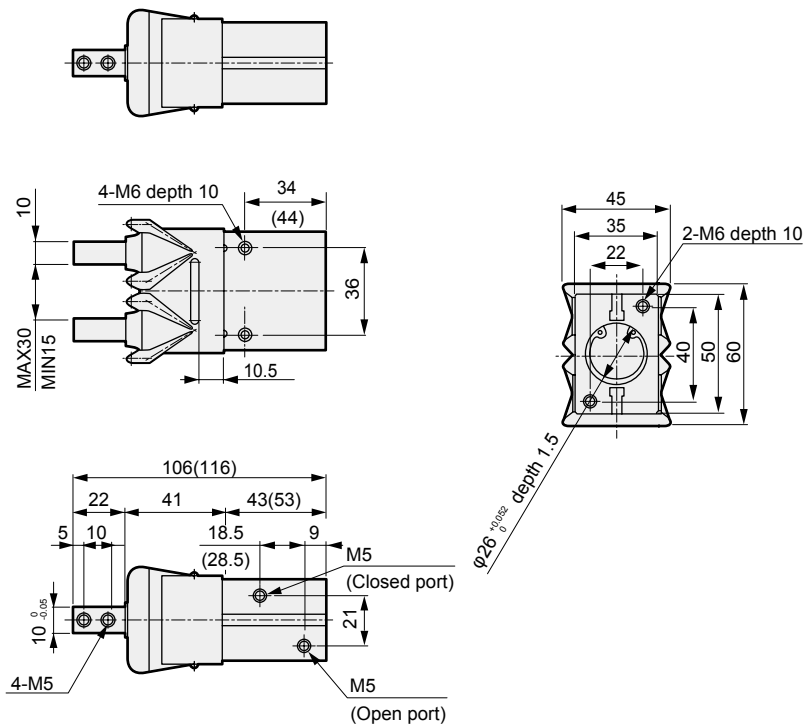


● With switch

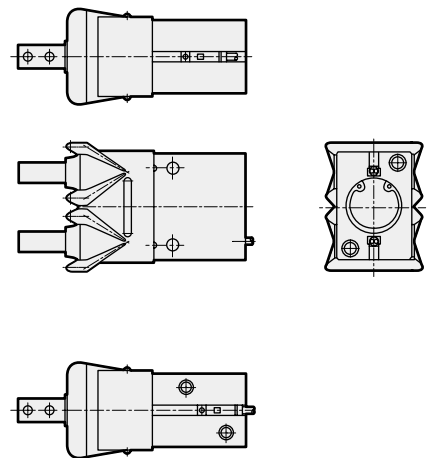


● BHG-05CS standard/O/C

● Dimensions in () are for C [normally closed] specifications.



● With switch



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