

HCA

High speed cylinder

High speed

ø20/ø25/ø32/ø40
ø50/ø63/ø80/ø100

Overview

This is a high speed (3000 mm/s) and high energy absorbing cylinder. This can be used for mold ejection of resins, etc.



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Product introduction

-
- New material capable of withstanding high speed sliding used. Superb durability.
 - Port direction is vertical with the rod shaft. Easy piping in vertical direction.
 - Easy cushion adjustment at relief pressure setting only.
 - 6 to 8 times higher absorbed energy than conventional.
Compressibility of air functions effectively, and realizes better shock absorbing than a shock absorber.
 - Switch can be mounted easily with built-in magnet.
 - Aluminum material is used to reduce weight.

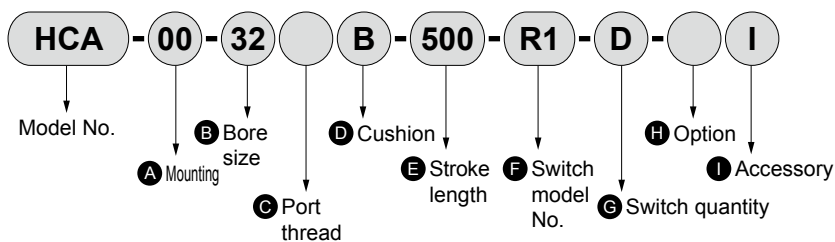
LCM
LCR
LCG
LCW
LCX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

Variation and option combination selection table

- ◎ : Option
- : Available (made-to-order product)
- △ : Available depending on conditions (Contact CKD.)
- × : Not available

Category	Code	Variation		Port thread		Option	
		Double acting basic	With cylinder switch	NPT	G	Specify piston rod end form	
	Blank	None	None	N	G	N*	
Variation	Double acting basic	Blank	◎	○	○	○	
	With cylinder switch	Blank		○	○	○	
Port thread	NPT	N			×	○	
	G	G				○	
Option	Specify piston rod end form	N*					
Accessory	Cylinder switch	Listed separately	◎	◎	○	○	○
	Rod eye	I	◎	◎	○	○	△
	Rod clevis	Y	◎	◎	○	○	△

[Example of model No.]



Model No.: High speed cylinder

- Variation : Double acting, basic with switch
- A Mounting : Basic
- B Bore size : $\phi 32$ mm
- C Port thread : Rc thread
- D Cushion : Both sides cushioned
- E Stroke length : 500 mm
- F Switch model No.: Proximity R1 switch, lead wire 1 m
- G Switch quantity : 2
- H Option : None
- I Accessory : Rod eye

MEMO

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
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Ending

LCM
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STR2
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JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
UFCD
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JSB3
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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



High speed cylinder/double acting/single rod

HCA Series

● Bore size: $\phi 20/\phi 25/\phi 32/\phi 40/\phi 50/\phi 63/\phi 80/\phi 100$

JIS symbol



Specifications

Item		HCA (Standard/with switch)							
Bore size	mm	$\phi 20$	$\phi 25$	$\phi 32$	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$
Actuation		Double acting							
Working fluid		Compressed air							
Max. working pressure	MPa	1.0 (≈ 150 psi, 10 bar)							
Min. working pressure	MPa	0.1 (≈ 15 psi, 1 bar)							
Proof pressure	MPa	1.6 (≈ 230 psi, 16 bar)							
Ambient temperature	$^{\circ}\text{C}$	-10 (14°F) to 60 (140°F) (no freezing)							
Port size		Rc1/8		Rc1/4		Rc3/8		Rc1/2	
Stroke tolerance	mm	$+2.4$ 0	$+3.6$ 0	$+4.3$ 0			$+5.0$ 0		
Working piston speed	mm/s	50 to 3000							
Cushion		Air cushion							
Lubrication		Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)							
Allowable absorbed energy J	Cushioned	7.54	11.8	18.6	29.4	46.1	73.5	118	184
	Without cushion	Cannot absorb high energy generated by external load. We recommend using an external shock absorber.							
Effective air cushion length	mm	85	75	70	70	70	70	70	70

*1 : Refer to page 990 for absorbed energy.

Stroke length

Bore size (mm)	Stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\phi 20/\phi 25/\phi 32$	400 to 700	700	1
$\phi 40/\phi 50/\phi 63/\phi 80/\phi 100$	400 to 1000	1000	

*1 : The custom stroke length is available in 1 mm increments.

*2 : Stroke length exceeding the max. stroke length is available depending on the working conditions. Contact CKD.

*3 : For types with switch, minimum stroke length varies depending on the mounting method. Refer to the table below for details.

*4 : The stroke is available from 1 mm. However, this product's cushion area is longer than a typical cylinder, allowing high absorbed energy. Therefore, at the stroke length below or less, the cushion is usually applied, and the effects of high-speed use cannot be obtained.

Model No.	Stroke at which high-speed effects cannot be obtained	Recommended stroke length
HCA	200 mm stroke length or less	400 mm stroke length or more

Min. stroke length with switch

Sketch	Different surface mounting		Same surface mounting	
Item	Grommet	Terminal box	Grommet	Terminal box
$\phi 20$ to $\phi 100$	15(10) mm	15(10) mm	30 mm	32 mm (Mounting A) 80 mm (Mounting B)

● *1 : The value in () is for types with one switch.

Switch specifications

Item	Proximity switch				
	R1	R2	R2Y (2-color display)	R3	R3Y (2-color display)
Applications	Programmable controller, relay, compact solenoid valve		Dedicated for programmable controller		For programmable controller, relay, IC circuit, solenoid valve
Output method	NPN output				
Power supply voltage	4.5 VDC to 28 VDC				
Load voltage	85 VAC to 265 VAC		10 to 30 VDC		30 VDC or less
Load current	5 to 100 mA		5 to 30 mA		200 mA or less 100 mA or less
Indicator lamp	LED (Lit when ON)			Red/green LED (Lit when ON)	LED (Lit when ON) Red/green LED (Lit when ON)
Leakage current	1 mA or less with 100 VAC, 2 mA or less with 200 VAC		1 mA or less 1.2 mA or less		10 µA or less
Weight g	Grommet lead		1 m:42 3 m:100 5 m:158		1 m:56 3 m:114 5 m:172
	With terminal box		68		82 68 82

Item	Reed switch										
	R0			R4		R5			R6		
Applications	For relay, programmable controller			For high capacity relay, solenoid valve		For programmable controller, relay, IC circuit (without indicator lamp), serial connection			Dedicated for programmable controller (with DC self-hold)		
Load voltage	12/24 VDC	110 VAC	220 VAC	110 VAC	220 VAC	12/24 VDC	110 VAC	220 VAC	24 VDC		
Load current	5 to 50 mA	7 to 20 mA	7 to 10 mA	20 to 200 mA	10 to 200 mA	50 mA or less	20 mA or less	10 mA or less	5 to 50 mA		
Indicator lamp	LED lit when ON			Lit when the indicator lamp is OFF		None			LED lit when ON		
Leakage current	0 mA			1 mA or less		0 mA			0.1 mA or less		
Weight g	Grommet lead		1 m:42 3 m:100 5 m:158								
	With terminal box		68								

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

Cylinder weight

(Unit: kg)

Bore size (mm)	Product weight when stroke length S = 0 mm			Weight per switch	Mounting bracket weight per switch	Additional weight per S = 100 mm
	Basic (00)	Foot (LB)	Flange (FA/FB)			
ø20	0.73	0.91	0.80	Refer to the weight in the switch specifications.	0.02	0.11
ø25	0.80	0.98	0.87		0.02	0.14
ø32	0.85	1.03	0.92		0.02	0.16
ø40	1.37	1.63	1.69		0.02	0.27
ø50	2.13	2.56	2.50		0.02	0.34
ø63	3.17	3.88	3.81		0.03	0.42
ø80	5.75	7.27	7.12		0.03	0.67
ø100	7.92	9.94	9.75		0.03	0.91

(Example) Product weight of HCA-00-40B-500-R0-D	<ul style="list-style-type: none"> ● Product weight for 0 mm stroke length.....1.37 kg ● Additional weight for 500 mm stroke length.....$0.27 \times \frac{500}{100} = 1.35$ kg ● Weight of 2 switches.....2×0.042 kg + 2×0.02 kg = 0.124 kg ● Product weight.....$1.37 + 1.35 + 0.124 = 2.844$ kg
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Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa										
		0.1	0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø20	Push	31.4	47.1	62.8	94.2	1.26×10^2	1.57×10^2	1.88×10^2	2.20×10^2	2.51×10^2	2.83×10^2	3.14×10^2
	Pull	23.6	35.3	47.1	70.7	94.2	1.18×10^2	1.41×10^2	1.65×10^2	1.88×10^2	2.12×10^2	2.36×10^2
ø25	Push	49.1	73.6	98.2	1.47×10^2	1.96×10^2	2.45×10^2	2.95×10^2	3.44×10^2	3.93×10^2	4.42×10^2	4.91×10^2
	Pull	37.8	56.7	75.6	1.13×10^2	1.51×10^2	1.89×10^2	2.27×10^2	2.64×10^2	3.02×10^2	3.40×10^2	3.78×10^2
ø32	Push	80.4	1.21×10^2	1.61×10^2	2.41×10^2	3.22×10^2	4.02×10^2	4.83×10^2	5.63×10^2	6.43×10^2	7.24×10^2	8.04×10^2
	Pull	69.1	1.04×10^2	1.38×10^2	2.07×10^2	2.76×10^2	3.46×10^2	4.15×10^2	4.84×10^2	5.53×10^2	6.22×10^2	6.91×10^2
ø40	Push	1.26×10^2	1.88×10^2	2.51×10^2	3.77×10^2	5.03×10^2	6.28×10^2	7.54×10^2	8.80×10^2	1.01×10^3	1.13×10^3	1.26×10^3
	Pull	1.06×10^2	1.58×10^2	2.11×10^2	3.17×10^2	4.22×10^2	5.28×10^2	6.33×10^2	7.39×10^2	8.44×10^2	9.50×10^2	1.06×10^3
ø50	Push	1.96×10^2	2.95×10^2	3.93×10^2	5.89×10^2	7.85×10^2	9.82×10^2	1.18×10^3	1.37×10^3	1.57×10^3	1.77×10^3	1.96×10^3
	Pull	1.65×10^2	2.47×10^2	3.30×10^2	4.95×10^2	6.60×10^2	8.25×10^2	9.90×10^2	1.15×10^3	1.32×10^3	1.48×10^3	1.65×10^3
ø63	Push	3.12×10^2	4.68×10^2	6.23×10^2	9.35×10^2	1.25×10^3	1.56×10^3	1.87×10^3	2.18×10^3	2.49×10^3	2.81×10^3	3.12×10^3
	Pull	2.80×10^2	4.20×10^2	5.61×10^2	8.41×10^2	1.12×10^3	1.40×10^3	1.68×10^3	1.96×10^3	2.24×10^3	2.52×10^3	2.80×10^3
ø80	Push	5.03×10^2	7.54×10^2	1.01×10^3	1.51×10^3	2.01×10^3	2.51×10^3	3.02×10^3	3.52×10^3	4.02×10^3	4.52×10^3	5.03×10^3
	Pull	4.54×10^2	6.80×10^2	9.07×10^2	1.36×10^3	1.81×10^3	2.27×10^3	2.72×10^3	3.17×10^3	3.63×10^3	4.08×10^3	4.54×10^3
ø100	Push	7.85×10^2	1.18×10^3	1.57×10^3	2.36×10^3	3.14×10^3	3.93×10^3	4.71×10^3	5.50×10^3	6.28×10^3	7.07×10^3	7.85×10^3
	Pull	7.15×10^2	1.07×10^3	1.43×10^3	2.14×10^3	2.86×10^3	3.57×10^3	4.29×10^3	5.00×10^3	5.72×10^3	6.43×10^3	7.15×10^3

- 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
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

LCM
LCR
LCC
LCW
LX
STM
STG
STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
UFCD
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

How to order

Without switch (built-in magnet for switch)



With switch (built-in magnet for switch)



A Mounting
*1

B Bore size

C Port thread

D Cushion

E Stroke length

F Switch model No.

G Switch quantity

H Accessory

⚠ Precautions for model No. selection

*1: Mounting bracket, nut, and toothed washer are attached with product at shipment.

[Example of model No.]

HCA-00-20B-400-R0-R-I

Model: High speed cylinder Double acting/single rod

- A** Mounting : Basic
- B** Bore size : $\varnothing 20$ mm
- C** Port thread : Rc thread
- D** Cushion : Both sides cushioned
- E** Stroke length : 400 mm
- F** Switch model No.: Reed R0 switch, lead wire 1 m
- G** Switch quantity : 1 on rod side
- H** Accessory : Rod eye

Code	Description
A Mounting	
00	Basic
LB	Axial foot
FA	Rod side flange
FB	Head side flange

B Bore size (mm)	
20	$\varnothing 20$
25	$\varnothing 25$
32	$\varnothing 32$
40	$\varnothing 40$
50	$\varnothing 50$
63	$\varnothing 63$
80	$\varnothing 80$
100	$\varnothing 100$

C Port thread	
Blank	Rc thread
N	NPT thread (made-to-order product)
G	G thread (made-to-order product)

D Cushion	
B	Both sides cushioned
R	Rod side cushioned
H	Head side cushioned
N	Without cushion

E Stroke length (mm)		
Bore size	Stroke length	Custom stroke length
$\varnothing 20$ to $\varnothing 32$	1 to 700	In 1 mm increments
$\varnothing 40$ to $\varnothing 100$	1 to 1000	

F Switch model No.						
Grommet	Terminal box	Contact	Voltage		Display	Lead wire
			AC	DC		
R1*	R1B	Proximity	●	□	1-color display	2-wire
R2*	R2B		□	●		
R2Y*	R2YB		□	●	2-color display	3-wire
R3Y*	R3YB		□	●		
R3*	R3B	Reed	●	●	1-color display	2-wire
R4*	R4B		●	□		
R5*	R5B		●	●	Without indicator lamp	
R6*	R6B		□	●		

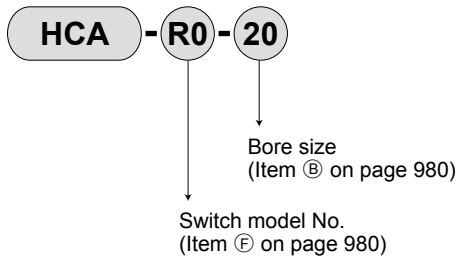
* Lead wire length	
Blank	1 m (standard)
3	3 m (option)
5	5 m (option)

G Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3

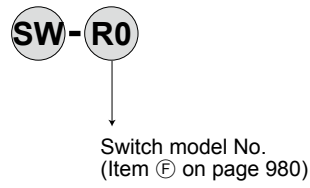
H Accessory	
I	Rod eye
Y	Rod clevis (pin and snap ring attached)

How to order switch

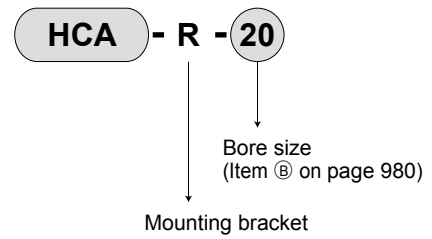
● Switch body + mounting bracket set



● Switch body only



● Mounting bracket set



● Terminal box only

·For R□B



How to order mounting bracket

Bore size (mm)	20	25	32	40	50	63	80	100
Mounting bracket								
Foot (LB)	HCA-LB-20	HCA-LB-25	HCA-LB-32	HCA-LB-40	HCA-LB-50	HCA-LB-63	HCA-LB-80	HCA-LB-100
Flange (FA/FB)	HCA-FA-20	HCA-FA-25	HCA-FA-32	HCA-FA-40	HCA-FA-50	HCA-FA-63	HCA-FA-80	HCA-FA-100

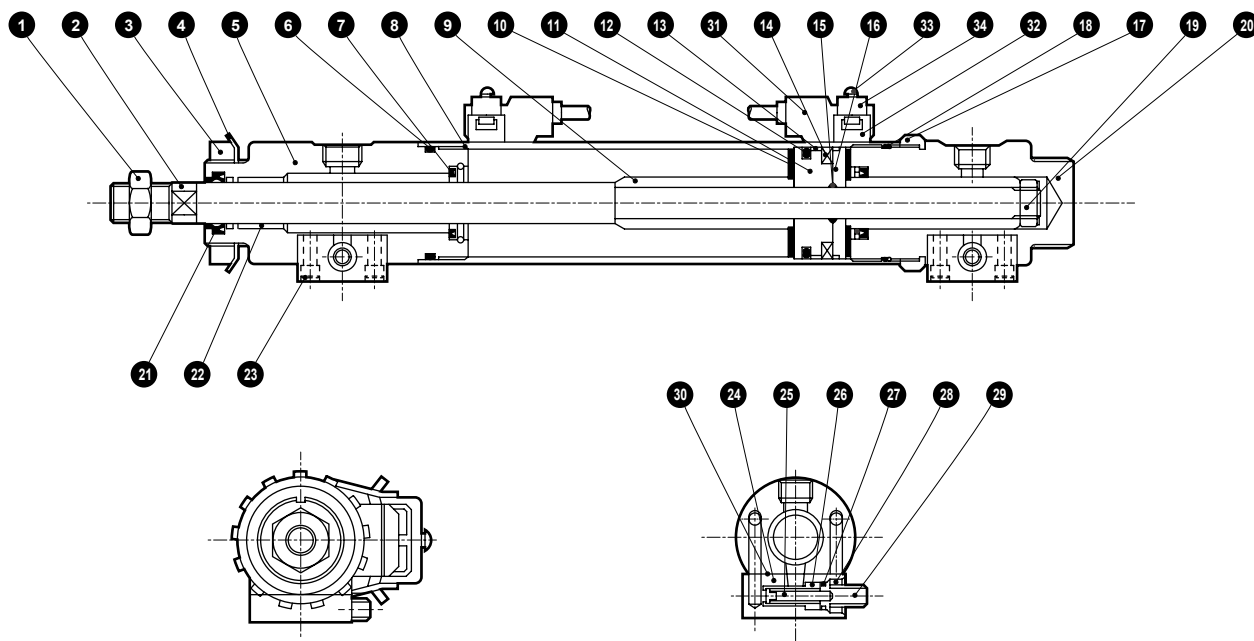
*1 : The foot mounting bracket is provided as 2 pcs./set.

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
MechHnd/Chuk
ShkAbs
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Ending

LCM
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LCW
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UCA2
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JSG
JSC3/JSC4
USSD
UFCD
UFCD
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
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ShkAbs
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Ending

Internal structure and parts list

● HCA



Note : The shape differs slightly for the $\phi 20$ type only.

No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Rod nut	Steel	Zinc chromate	19	Piston nut	Steel	Zinc chromate
2	Piston rod	Steel	Industrial chrome plating	20	Head cover	Aluminum alloy	Alumite
3	Nut	Steel	Zinc plated	21	Rod packing	Nitrile rubber	
4	Toothed washer	Steel	Zinc plated	22	Bush	Oil impregnated bearing alloy	
5	Rod cover	Aluminum alloy	Alumite	23	Hexagon socket head cap screw	Alloy steel	Black finish
6	Cylinder gasket	Nitrile rubber		24	Adjuster case	Aluminum alloy	Alumite
7	Cushion packing	Urethane, steel		25	Check valve	Copper alloy	
8	Cylinder tube	Aluminum alloy	Hard alumite	26	Spring	Stainless steel	
9	Cushion ring	Steel	Industrial chrome plating	27	Adjusting gasket	Nitrile rubber	
10	Cushion rubber	Urethane rubber		28	U nut	Steel	Zinc chromate
11	Piston	Aluminum alloy	Chromate	29	Adjusting bolt	Steel	Nickeling
12	Piston packing	Nitrile rubber		30	Case gasket	Special fiber cloth	Special fabric + nitrile rubber
13	Wear ring	Acetal resin		With switch			
14	Magnet	Plastic		31	Switch body		
15	Piston gasket	Nitrile rubber		32	Band	Stainless steel	
16	Piston holder	Aluminum alloy	Chromate	33	Pan head machine screw	Steel	
17	Lock nut	Steel	Black chrome plating	34	Mounting bracket	Stainless steel	
18	Back up ring	Steel	Zinc chromate				

Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
$\phi 20$	HCA-20K	
$\phi 25$	HCA-25K	
$\phi 32$	HCA-32K	
$\phi 40$	HCA-40K	6 7 10 12 13
$\phi 50$	HCA-50K	21 30
$\phi 63$	HCA-63K	
$\phi 80$	HCA-80K	
$\phi 100$	HCA-100K	

Note : Specify the kit No. when placing an order.

Material of mounting bracket

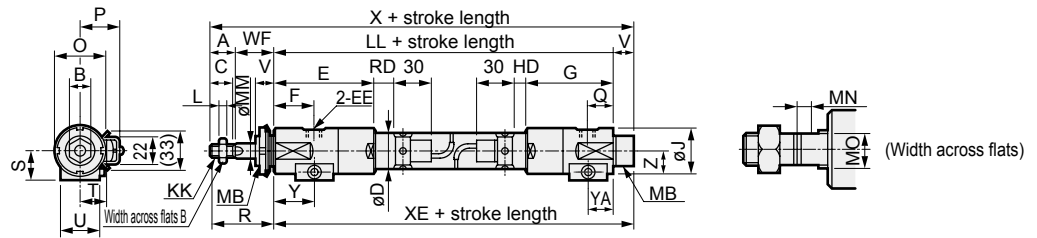
Mounting	Material	Remarks
LB	Steel	Zinc plated
FA/FB	Steel	Zinc plated

Dimensions

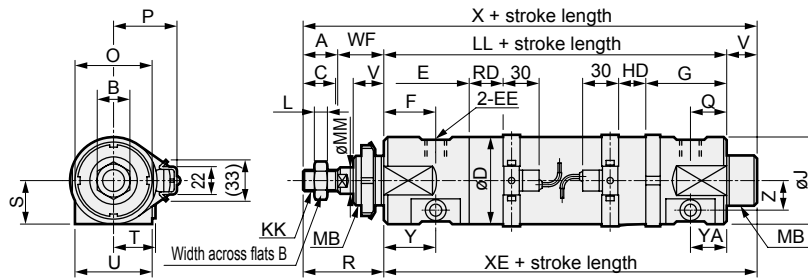
- Basic (00) R type with switch



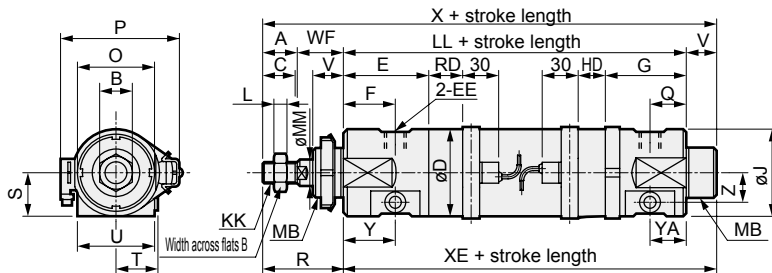
ø20, ø25



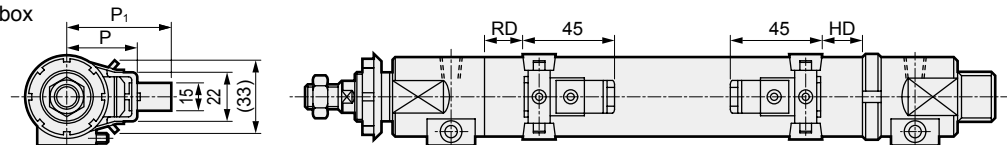
ø32 to ø63



ø80, ø100



- R type with switch terminal box



*1 : For the dimensions of the accessories, refer to page 987.

Code	Basic (00) basic dimensions																	
Bore size (mm)	A	B	C	D	E	EE	F	G	J	KK	L	LL	MB	MM	MN	MO	O	Q
ø 20	20	13	18	25	86	Rc1/8	34	74	33	M8×1	5	223	M25×1.5	10	4	8	42	22
ø 25	20	17	18	30	82	Rc1/8	32.5	71	37	M10×1.25	6	213	M25×1.5	12	5	10	42	21.5
ø 32	22	17	20	37	67	Rc1/4	42	57	37	M10×1.25	6	197	M25×1.5	12	5	10	42	25
ø 40	22	22	20	46	73	Rc1/4	45.5	57	46	M14×1.5	8	203	M35×1.5	16	6	14	57	25
ø 50	28	27	26	56.4	77	Rc3/8	47.5	60	56	M18×1.5	11	211	M40×1.5	20	7	17	62	24.5
ø 63	28	27	26	69.4	69	Rc3/8	42	65	69.4	M18×1.5	11	214	M40×1.5	20	7	17	62	29
ø 80	36	32	34	88	73	Rc1/2	45	70	88	M22×1.5	13	232	M60×2	25	10	22	86	31.5
ø100	45	41	43	108	72	Rc1/2	42	72	108	M26×1.5	16	235	M60×2	30	11	27	86	30
Code	Basic (00) basic dimensions											With switch						
Bore size (mm)	R	S	T	U	V	WF	X	XE	Y	YA	Z	HD	P	P ₁	RD			
ø 20	44	21.5	17 to 20	29	16	24	283	239	34	22	15	15.5	28	48	17.5			
ø 25	52	23.5	18.5 to 22	32	16	32	281	229	32.5	21.5	17	13	34	54	14.5			
ø 32	52	23.5	18.5 to 22	32	20	30	269	217	42	25	17	22	35	55	21			
ø 40	54	28.5	22 to 27	38	20	32	277	223	45.5	25	21	22	39	59	21			
ø 50	61	35.5	27 to 34.5	48	20	33	292	231	47.5	24.5	25.5	19	44	64	25			
ø 63	66	35.7	34 to 43	62	25	38	305	239	42	29	25.7	21	52	72	28			
ø 80	78	46.5	41 to 51	76	25	42	335	257	45	31.5	34.5	24.5	114	134	33.5			
ø100	93	55.5	48 to 60	90	30	48	358	265	42	30	43.5	25	134	154	35			

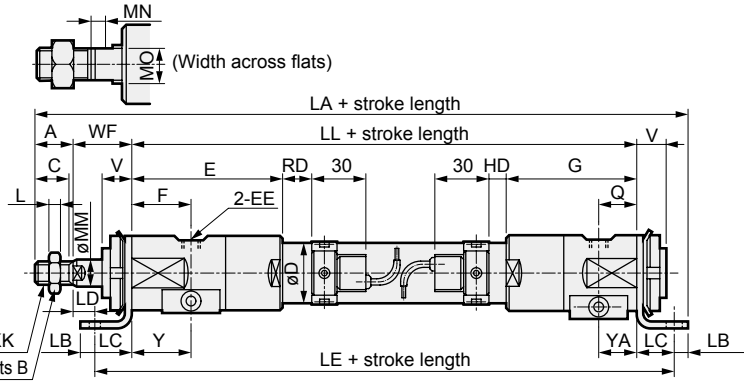
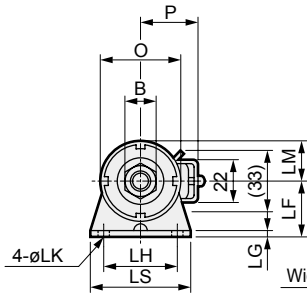
- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- USC
- UB
- JSB3
- LMB
- LML
- HCM
- HCA**
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3*
- NHS
- HRL
- LN
- Hand
- Chuk
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

Dimensions

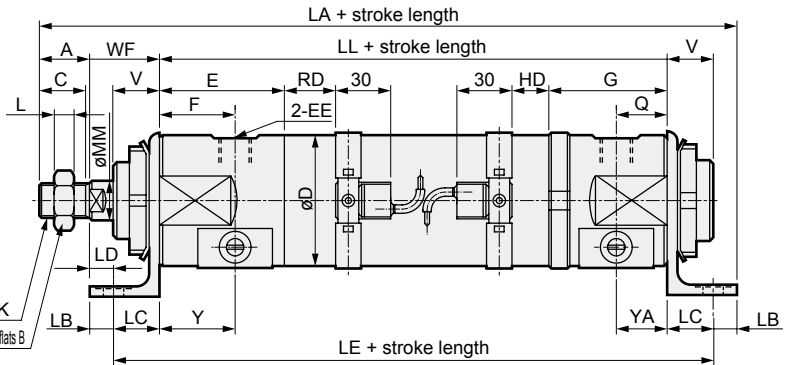
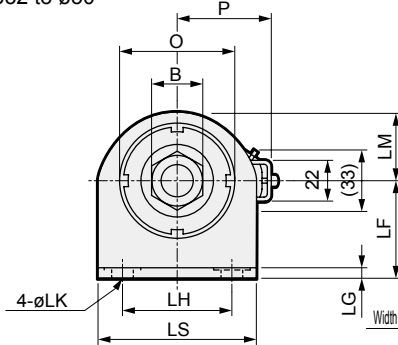


● Axial foot (LB)

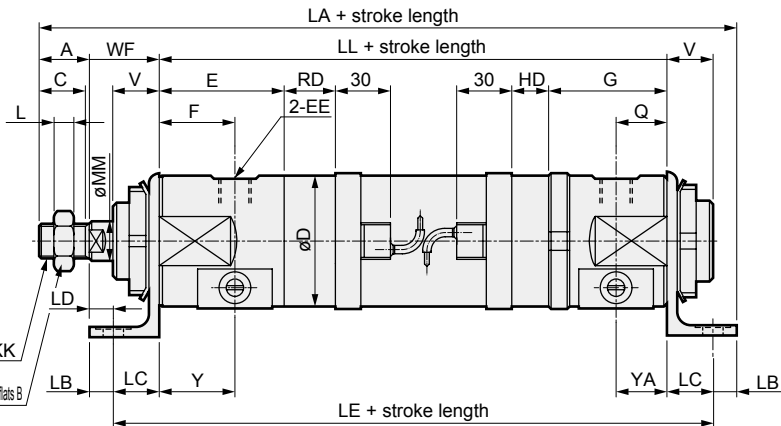
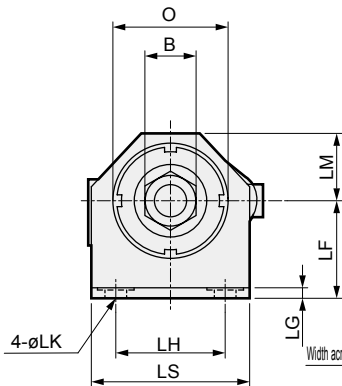
ø20, ø25



ø32 to ø50



ø63 to ø100



*1 : For the dimensions of the accessories, refer to page 987.

Code	Axial foot (LB) basic dimensions																	
Bore size (mm)	A	B	C	D	E	EE	F	G	KK	L	LL	MM	MN	MO	O	Q	V	WF
ø 20	20	13	18	25	86	Rc1/8	34	74	M8×1	5	223	10	4	8	42	22	16	24
ø 25	20	17	18	30	82	Rc1/8	32.5	71	M10×1.25	6	213	12	5	10	42	21.5	16	32
ø 32	22	17	20	37	67	Rc1/4	42	57	M10×1.25	6	197	12	5	10	42	25	20	30
ø 40	22	22	20	46	73	Rc1/4	45.5	57	M14×1.5	8	203	16	6	14	57	25	20	32
ø 50	28	27	26	56.4	77	Rc3/8	47.5	60	M18×1.5	11	211	20	7	17	62	24.5	20	33
ø 63	28	27	26	69.4	69	Rc3/8	42	65	M18×1.5	11	214	20	7	17	62	29	25	38
ø 80	36	32	34	88	73	Rc1/2	45	70	M22×1.5	13	232	25	10	22	86	31.5	25	42
ø100	45	41	43	108	72	Rc1/2	42	72	M26×1.5	16	235	30	11	27	86	30	30	48

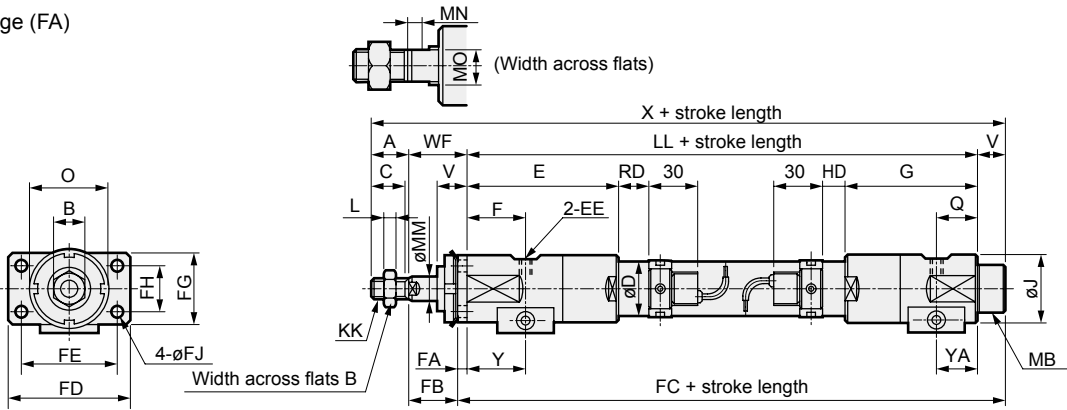
Code	Mounting method												With switch			
Bore size (mm)	Y	YA	LA	LB	LC	LD	LE	LF	LG	LH	LK	LM	LS	HD	P	RD
ø 20	34	22	295	8	20	4	263	30	3.2	40	6.6	19	54	15.5	28	17.5
ø 25	32.5	21.5	293	8	20	12	253	30	3.2	40	6.6	19	54	13	34	14.5
ø 32	42	25	277	8	20	10	237	30	3.2	40	6.6	19	54	22	35	21
ø 40	45.5	25	289	10	22	10	247	40	3.2	40	9	24	58	22	39	21
ø 50	47.5	24.5	307	10	25	8	261	45	4.5	45	9	29	63	19	44	25
ø 63	42	29	318	13	25	13	264	53	5.5	60	11	36.5	86	21	52	28
ø 80	45	31.5	355	15	30	12	292	63	8	71	14	45	102	24.5	114	33.5
ø100	42	30	373	15	30	18	295	75	8	85	14	54	118	25	134	35

Dimensions

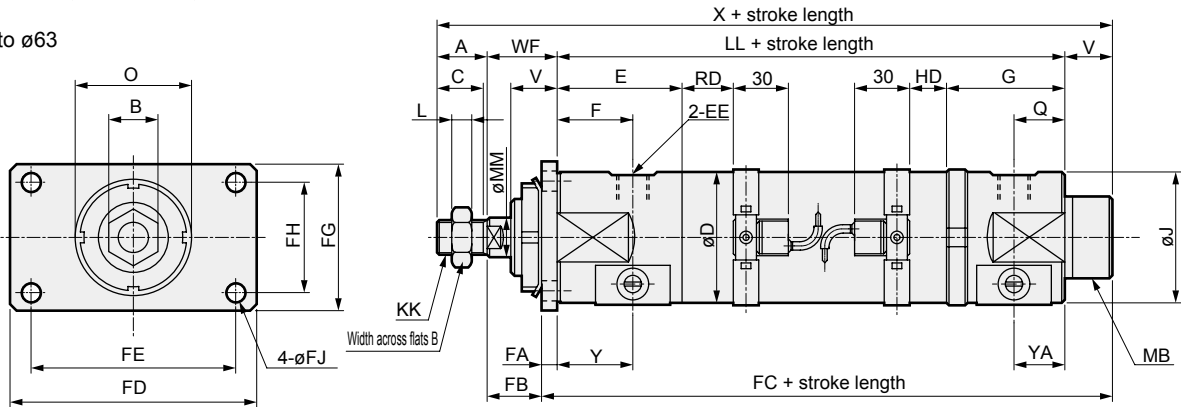


● Rod side flange (FA)

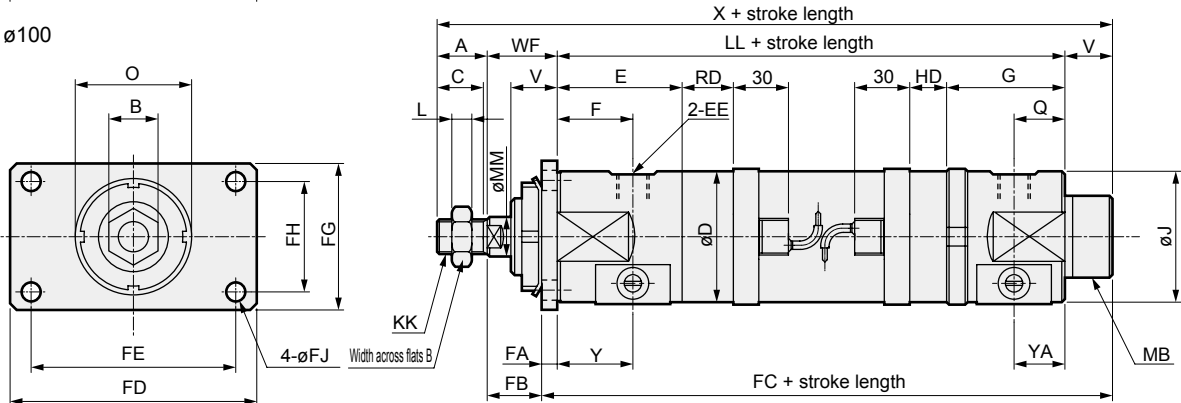
ø20, ø25



ø32 to ø63



ø80, ø100



*1 : For the dimensions of the accessories, refer to page 987.

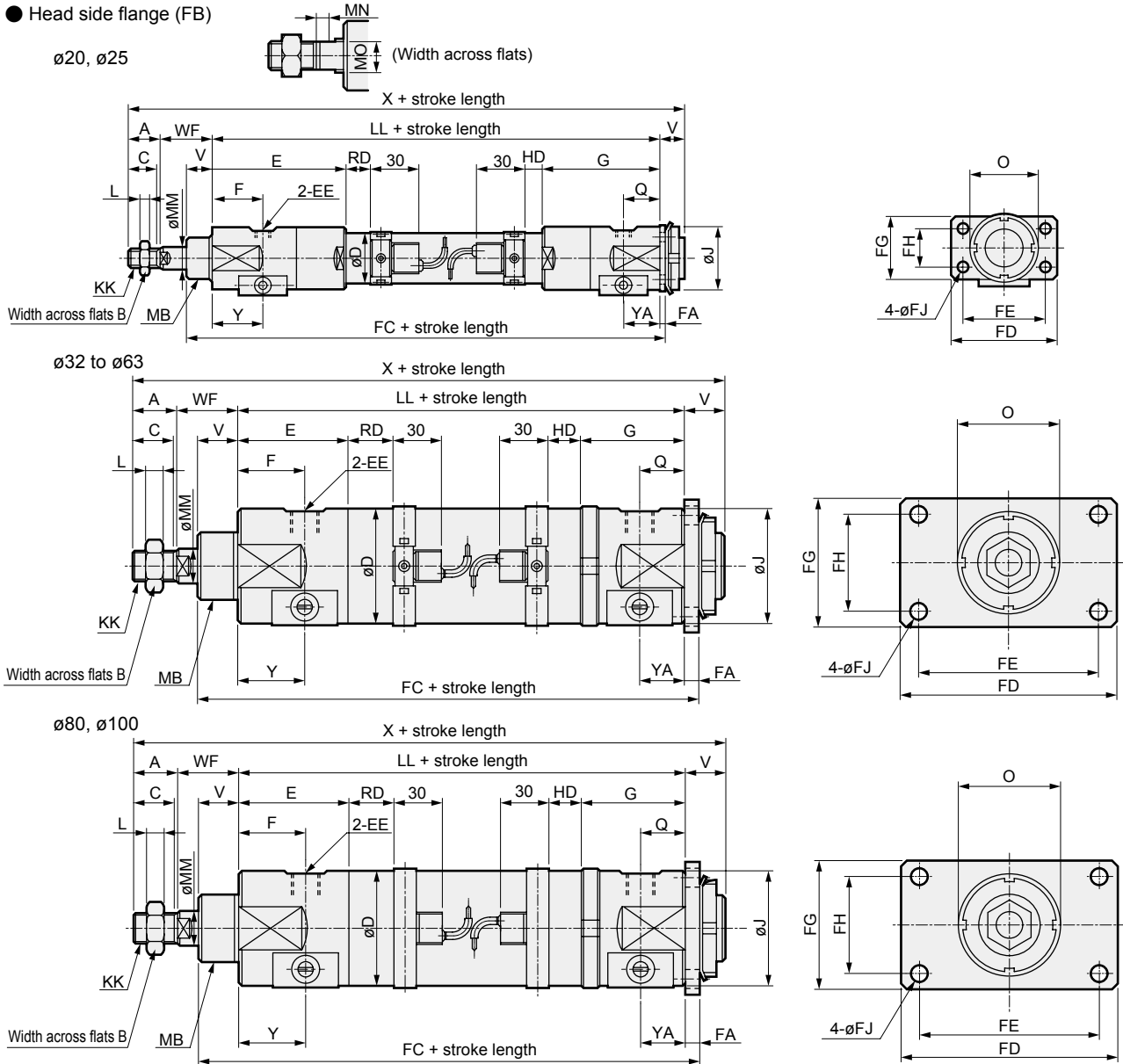
Code		Rod side flange (FA) basic dimensions																	
Bore size (mm)		A	B	C	D	E	EE	F	G	J	KK	L	LL	MB	MM	MN	MO	O	Q
ø 20		20	13	18	25	86	Rc1/8	34	74	33	M8×1	5	223	M25×1.5	10	4	8	42	22
ø 25		20	17	18	30	82	Rc1/8	32.5	71	37	M10×1.25	6	213	M25×1.5	12	5	10	42	21.5
ø 32		22	17	20	37	67	Rc1/4	42	57	37	M10×1.25	6	197	M25×1.5	12	5	10	42	25
ø 40		22	22	20	46	73	Rc1/4	45.5	57	46	M14×1.5	8	203	M35×1.5	16	6	14	57	25
ø 50		28	27	26	56.4	77	Rc3/8	47.5	60	56	M18×1.5	11	211	M40×1.5	20	7	17	62	24.9
ø 63		28	27	26	69.4	69	Rc3/8	42	65	69.4	M18×1.5	11	214	M40×1.5	20	7	17	62	29
ø 80		36	32	34	88	73	Rc1/2	45	70	88	M22×1.5	13	232	M60×2	25	10	22	86	31.5
ø100		45	41	43	108	72	Rc1/2	42	72	108	M26×1.5	16	235	M60×2	30	11	27	86	30
Code		Mounting dimensions											With switch						
Bore size (mm)		V	WF	X	Y	YA	FA	FB	FC	FD	FE	FG	FH	FJ	HD	RD			
ø 20		16	24	283	34	22	4.5	19.5	243.5	66	52	38	24	6.6	15.5	17.5			
ø 25		16	32	281	32.5	21.5	4.5	27.5	233.5	66	52	38	24	6.6	13	14.5			
ø 32		20	30	269	42	25	4.5	25.5	221.5	66	52	38	24	6.6	22	21			
ø 40		20	32	277	45.5	25	9	23	232	100	80	58	40	9	22	21			
ø 50		20	33	292	47.5	24.5	9	24	240	108	90	65	45	9	19	25			
ø 63		25	38	305	42	29	9	29	248	134	112	80	60	11	21	28			
ø 80		25	42	335	45	31.5	14	28	271	160	132	100	71	14	24.5	33.5			
ø100		30	48	358	42	30	14	34	279	178	150	114	85	14	25	35			

- 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
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

Dimensions



● Head side flange (FB)



*1 : For the dimensions of the accessories, refer to page 987.

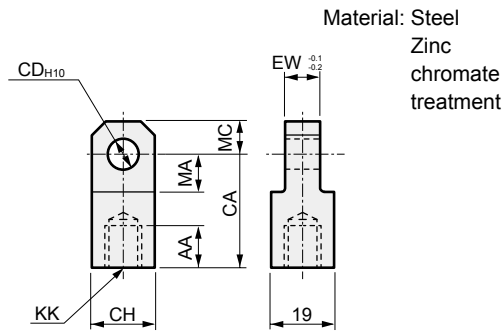
Code	Head side flange (FB) basic dimensions																	
Bore size (mm)	A	B	C	D	E	EE	F	G	J	KK	L	LL	MB	MM	MN	MO	O	Q
ø 20	20	13	18	25	86	Rc1/8	34	74	33	M8×1	5	223	M25×1.5	10	4	8	42	22
ø 25	20	17	18	30	82	Rc1/8	32.5	71	37	M10×1.25	6	213	M25×1.5	12	5	10	42	21.5
ø 32	22	17	20	37	67	Rc1/4	42	57	37	M10×1.25	6	197	M25×1.5	12	5	10	42	25
ø 40	22	22	20	46	73	Rc1/4	45.5	57	46	M14×1.5	8	203	M35×1.5	16	6	14	57	25
ø 50	28	27	26	56.4	77	Rc3/8	47.5	60	56	M18×1.5	11	211	M40×1.5	20	7	17	62	24.5
ø 63	28	27	26	69.4	69	Rc3/8	42	65	69.4	M18×1.5	11	214	M40×1.5	20	7	17	62	29
ø 80	36	32	34	88	73	Rc1/2	45	70	88	M22×1.5	13	232	M60×2	25	10	22	86	31.5
ø100	45	41	43	108	72	Rc1/2	42	72	108	M26×1.5	16	235	M60×2	30	11	27	86	30

Code	Mounting dimensions											With switch		
Bore size (mm)	V	WF	X	Y	YA	FA	FD	FE	FG	FH	FJ	FI	HD	RD
ø 20	16	24	283	34	22	4.5	66	52	38	24	6.6	251.5	15.5	17.5
ø 25	16	32	281	32.5	21.5	4.5	66	52	38	24	6.6	233.5	13	14.5
ø 32	20	30	269	42	25	4.5	66	52	38	24	6.6	231.5	22	21
ø 40	20	32	277	45.5	25	9	100	80	58	40	9	244	22	21
ø 50	20	33	292	47.5	24.5	9	108	90	65	45	9	253	19	25
ø 63	25	38	305	42	29	9	134	112	80	60	11	248	21	28
ø 80	25	42	335	45	31.5	14	160	132	100	71	14	271	24.5	33.5
ø100	30	48	358	42	30	14	178	150	114	85	14	279	25	35

Accessory dimensions

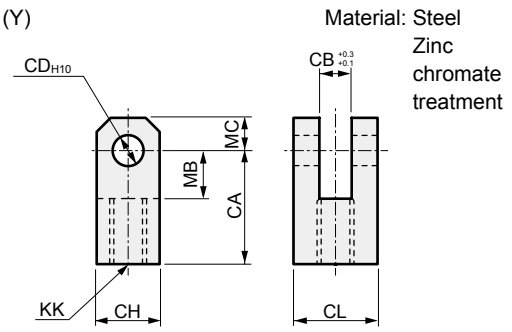
● Rod eye/clevis dimensions (ø20/25/32)

Rod eye (I)



Model No.	Applicable bore size (mm)	AA	CA	CD	CH	EW	KK	MA	MC	Weight (g)
M1-I-20	20	14	30	10	19	8	M8×1	13	10	60
M1-I-30	25/32	14	36	12	25	10	M10×1.25	16	12	110

Rod clevis (Y)

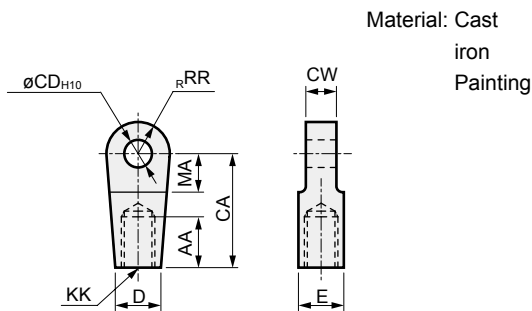


Note : A pin, a washer and a split pin are attached.

Model No.	Applicable bore size (mm)	CA	CB	CD	CH	CL	KK	MB	MC	Weight (g)
M1-Y-20	20	30	8	10	19	19	M8×1	13	10	100
M1-Y-30	25/32	36	10	12	25	25	M10×1.25	16	12	210

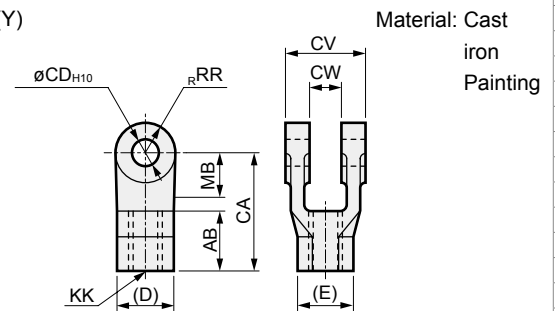
● Rod eye/clevis dimensions (ø40/50/63/80/100)

Rod eye (I)



Model No.	Bore size (mm)	AA	CA	CD	CW	D	E	KK	MA	RR	Weight (kg)
S1-I-40	40	20	50	12	18 ^{+0.1} _{-0.4}	27	27	M14×1.5	21	16	0.26
S1-I-50	50	21	50	12	18 ^{+0.1} _{-0.4}	27	27	M18×1.5	21	16	0.24
S1-I-63	63	21	50	14	20 ^{+0.1} _{-0.4}	27	27	M18×1.5	21	16	0.25
S1-I-80	80	30	70	20	28 ^{+0.1} _{-0.4}	46	41	M22×1.5	30	25	0.88
S1-I-100	100	30	70	20	22 ^{+0.1} _{-0.4}	46	41	M26×1.5	30	25	0.84

Rod clevis (Y)



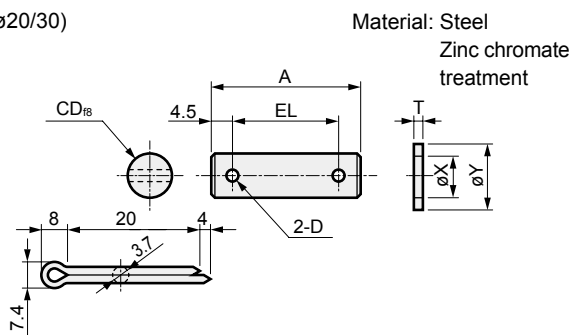
Model No.	Bore size (mm)	AB	CA	CD	CV	CW	D	E	KK	MB	RR	Weight (kg)
S1-Y-40	40	24	50	12	36	18 ^{+0.4} _{+0.1}	27	31.2	M14×1.5	19	16	0.25
S1-Y-50	50	24	50	12	36	18 ^{+0.4} _{+0.1}	27	31.2	M18×1.5	19	16	0.24
S1-Y-63	63	24	50	14	40	20 ^{+0.4} _{+0.1}	27	31.2	M18×1.5	19	16	0.26
S1-Y-80	80	35	70	20	56	28 ^{+0.4} _{+0.1}	41	47.3	M22×1.5	30	25	0.90
S1-Y-100	100	35	70	20	56	28 ^{+0.4} _{+0.1}	41	47.3	M26×1.5	30	25	0.85

*1 : Pin and snap ring are attached.

*2 : The MB dimension is the effective length of the CW dimension.

● Pin dimensions

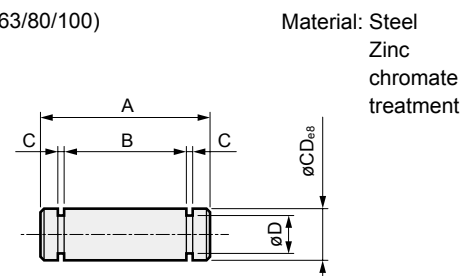
Pin (P) (ø20/30)



Model No.	Applicable bore size (mm)	A	D	CD	EL	T	X	Y	Weight (g)
M1-P-20	20	37	4	10	28	2	10.5	18	30
M1-P-30	25/32	46	4	12	37	2.5	13	21	50

Note : A pin, a washer and a split pin for rod clevis use are attached with the product.

Pin (P) (ø40/50/63/80/100)



Model No.	Applicable bore size (mm)	A	B	C	D	CD	Weight (g)	Applicable snap ring
S1-P-40	40/50	43.5	36.2	1.15	11.5	12	40	C type for shaft 12
S1-P-63	63	47.5	40.2	1.15	13.4	14	60	C type for shaft 14
S1-P-80	80/100	64	56.2	1.35	19	20	100	C type for shaft 20

Note : A pin and a snap ring for rod clevis use are attached with the product.

* Specify the model No. when placing an order.

- 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
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

Selection guide

When using a high speed cylinder, take into account the cylinder speed and kinetic energy in particular.

Step 1

High speed cylinder selection guide

For pneumatic cylinders, average speed is different from maximum speed rush into cushion because of compressibility fluid.

When operating load W with average speed V1, find the required composite effective sectional area S and the maximum speed V according to the following table.

This table is for reference only. Some values may vary depending on load direction and pipe length, etc.

Average speed and max. speed at load factor of high speed cylinder (when air pressure = 0.5 MPa)

Bore size (mm)	Average speed Load factor	V1=500 mm/s			V1=1,000 mm/s			V1=2,000 mm/s		
		10%	20%	30%	10%	20%	30%	10%	20%	30%
		W	S	V	W	S	V	W	S	V
ø20 (A2=2.356)	W	1.57	3.14	4.71	1.57	3.14	4.71	1.57	3.14	4.71
	S	0.80	0.89	0.98	1.60	1.78	1.96	3.19	3.56	3.93
	V	630	689	714	1,260	1,378	1,482	2,512	2,756	2,971
ø25 (A2=3.778)	W	2.45	4.91	7.36	2.45	4.91	7.36	2.45	4.91	7.36
	S	1.28	1.43	1.57	2.56	2.85	3.15	5.12	5.71	6.30
	V	628	690	740	1,257	1,376	1,485	2,514	2,757	2,970
ø32 (A2=6.912)	W	4.02	8.04	12.1	4.02	8.04	12.1	4.02	8.04	12.1
	S	2.34	2.61	2.88	4.68	5.22	5.76	9.36	12.4	11.5
	V	630	692	747	1,261	1,383	1,494	2,521	2,758	2,983
ø40 (A2=10.56)	W	6.28	12.6	18.8	6.28	12.6	18.8	6.28	12.6	18.8
	S	3.57	3.99	4.40	7.15	7.97	8.80	14.3	15.9	17.6
	V	630	693	747	1,261	1,383	1,494	2,521	2,765	2,988
ø50 (A2=16.49)	W	9.82	19.6	29.5	9.82	19.6	29.5	9.82	19.6	29.5
	S	5.58	6.23	6.87	11.2	12.5	13.7	22.3	24.9	27.5
	V	630	693	747	1,265	1,389	1,490	2,518	2,768	2,990
ø63 (A2=28.03)	W	15.6	31.2	46.8	15.6	31.2	46.8	15.6	31.2	46.8
	S	9.49	10.6	11.7	19.0	21.2	23.4	38.0	42.3	46.7
	V	632	694	749	1,266	1,389	1,498	2,531	2,771	2,989
ø80 (A2=45.36)	W	25.1	50.3	75.4	25.1	50.3	75.4	25.1	50.3	75.4
	S	15.4	17.1	18.9	30.7	34.3	37.8	61.4	68.5	75.6
	V	634	692	744	1,264	1,388	1,495	2,527	2,773	2,990
ø100 (A2=71.47)	W	39.3	78.5	118	39.3	78.5	118	39.3	78.5	118
	S	24.2	27.0	29.8	48.4	54.0	59.6	96.8	108	119
	V	632	694	748	1,264	1,387	1,496	2,529	2,774	2,987

W: Load weight (kg) S: Composite effective sectional area (mm²) V: Max. speed (mm/s) V1: Average speed (mm/s) A2: Piston rod side cross-section areas (cm²)

For example, when using HCA-40 with load 6.28 kgf (load factor 10%, 0.5 MPa) and average speed V1 = 2000 mm/s, the maximum speed is 2,521 mm/s (1.26 times higher). In this case, the required composite effective sectional area is 14.3 mm².

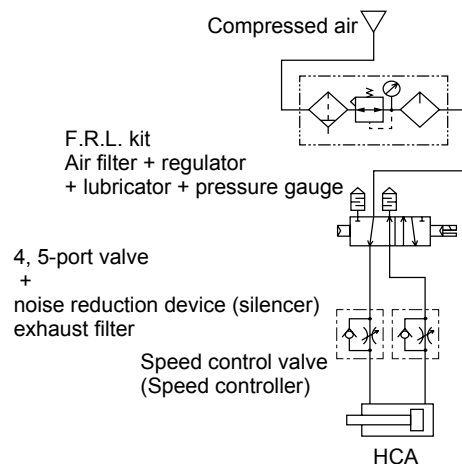
Select system components matched to composite effective sectional area from the table on the following page.

System selection guide table

Appropriate system matched to the required cylinder speed according to bore size can be selected.

Bore size	Port size	Required effective cross-sectional area (mm ²)	4.5 port valve for pneumatic control		Pneumatic auxiliary components		Piping
			Single solenoid	Double solenoid	Speed controller	Silencer	Piping (m) (between valve&cylinder)
ø20	Rc1/8	1.3	4KA110-M5/4KB110-06 4GA110R-M5/4GB110R-06	4KA120-M5/4KB120-06 4GA120R-M5/4GB120R-06	SC3W-6/SC3R-6	SLW-6A	ø4 × 2.5NT
		2.0	4KA110-M5/4KB110-06 4GA110R-M5/4GB110R-06	4KA120-M5/4KB120-06 4GA120R-M5/4GB120R-06	SC3R-6	SLW-6A	ø6 × ø4NT
		2.8	4KA210-06/4KB210-06 4GA210R-06/4GB210R-08	4KA220-06/4KB220-06 4GA220R-06/4GB220R-08	SC3R-6	SLW-6A	ø8 × ø5.7NT
		3.6	4KA210-06/4KB210-06 4GA210R-06/4GB210R-08	4KA220-06/4KB220-06 4GA220R-06/4GB220R-08	SC1-6	SLW-6A	ø6 × ø4NT
		4.3	4KA210-06/4KB210-06 4GA210R-06/4GB210R-08	4KA220-06/4KB220-06 4GA220R-06/4GB220R-08	SC1-6	SLW-6A	ø8 × ø5.7NT
ø25	Rc1/8	1.4	4KA110-M5/4KB110-06 4GA110R-M5/4GB110R-06	4KA120-M5/4KB120-06 4GA120R-M5/4GB120R-06	SC3W-6	SLW-6A	ø4 × ø2.5NT
		2.4	4KA110-M5/4KB110-06 4GA110R-M5/4GB110R-06	4KA120-M5/4KB120-06 4GA120R-M5/4GB120R-06	SC3W-6	SLW-6A	ø6 × ø4NT
		4.4	4KA210-06/4KB210-06 4GA210R-06/4GB210R-08	4KA220-06/4KB220-06 4GA220R-06/4GB220R-08	SC1-6	SLW-6A	ø6 × ø4NT
		5.8	4KA210-06/4KB210-06 4GA210R-06/4GB210R-08	4KA220-06/4KB220-06 4GA220R-06/4GB220R-08	SC1-6	SLW-6A	ø8 × ø5.7NT
		6.6	4KA210-06/4KB210-06 4GA210R-06/4GB210R-08	4KA220-06/4KB220-06 4GA220R-06/4GB220R-08	SC1-8	SLW-6A	ø10 × ø7.2NT
ø32	Rc1/4	3.6	4KB210-08/4GB210R-08	4KB220-08/4GB220R-08	SC3W-8/SC3R-8	SLW-8A	ø6 × ø4NT
		5.9	4KB210-08/4GB210R-08	4KB220-08/4GB220R-08	SC1-8	SLW-8A	ø8 × ø5.7NT
		8.4	4F210-08/4KB310-08 4GB310R-08	4F220-08/4KB320-08 4GB320R-08	SC1-8	SLW-8A	ø10 × ø7.2NT
		9.5	4KB310-08/4F310-08 4GB310R-08	4KB320-08/4F320-08 4GB320R-08	SC1-8	SLW-8A	ø10 × ø7.2NT
		11.6	4F310-08/4F410-08 4GB310R-08	4F320-08/4F420-08 4GB320R-08	SC3W-10/SC3R-10	SLW-8A	ø12 × ø8.9NT
ø40	Rc1/4	3.6	4KB210-08/4GB310R-08	4KB220-08/4GB320R-08	SC3W-8/SC3R-8	SLW-8A	ø6 × ø4NT
		8.5	4F210-08/4KB310-08 4GB310R-08	4F220-08/4KB320-08 4GB320R-08	SC1-8	SLW-8A	ø10 × ø7.2NT
		12.0	4F310-08/4F410-08 4GB310R-08	4F320-08/4F420-08 4GB320R-08	SC3W-10/SC3R-10	SLW-8A	ø12 × ø8.9NT
		15.2	4F410-08	4F420-08	SC-1-10	SLW-8A	ø12 × ø8.9NT
ø50	Rc3/8	18.4	4F510-10	4F520-10	SC-1-10	SLW-10A	ø15 × ø11.5NT
		5.5	4KB310-10/4F310-10	4KB320-10/4F320-10	SC3W-10/SC3R-10	SLW-10A	ø6 × ø4NT
		12.0	4K310-10/4F310-10	4K320-10/4F320-10	SC3W-10/SC3R-10	SLW-10A	ø12 × ø8.9NT
		18.1	4F510-10	4F520-10	SC1-10	SLW-10A	ø12 × ø8.9NT
		23.5	4F510-10	4F520-10	SC1-15	SLW-10A	ø15 × ø11.5NT
ø63	Rc3/8	26.9	4F610-15	4F620-15	SC1-15	SLW-15A	ø15 × ø11.5NT
		11.0	4K310-10/4F310-10	4K320-10/4F320-10	SC3W-10/SC3R-10	SLW-10A	ø10 × ø7.2NT
		18.0	4K410-10/4F510-10	4K420-10/4F520-10	SC1-10	SL-10A	ø10 × ø7.2NT
		26.9	4F610-15	4F620-15	SC1-15	SLW-15A	ø10 × ø8.9NT
		43.1	4F610-15	4F620-15	SC-20A	SLW-15A	ø15 × ø11.5NT
ø80	Rc1/2	62.8	4F610-20	4F620-20	SC-20A	SL-20A	Rc1/2 steel pipe
		19.5	4F610-15	4F620-15	SC3W-15/SC3R-15	SLW-15A	ø12 × ø8.9NT
		31.3	4F610-15	4F620-15	SC1-15	SLW-15A	ø15 × ø11.5NT
		67.4	4F610-20	4F620-20	SC-20A	SL-20A	Rc3/4 steel pipe
		85.9	4F710-20	4F720-20	SC-20A	SL-20A	Rc3/4 steel pipe
ø100	Rc1/2	95.9	4F710-20	4F720-20	SC-25A	SL-20A	Rc3/4 steel pipe
		31.8	4F610-15	4F620-15	SC1-15	SLW-15A	ø15 × ø11.5NT
		67.4	4F610-20	4F620-20	SC-20A	SL-20A	Rc3/4 steel pipe
		85.9	4F710-20	4F720-20	SC-20A	SL-20A	Rc3/4 steel pipe
		95.9	4F710-20	4F720-20	SC-25A	SL-20A	Rc3/4 steel pipe
		109.9	4F710-25	4F720-25	SC-25A	SL-25A	Rc3/4 steel pipe

● Pneumatics basic circuit diagram



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
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

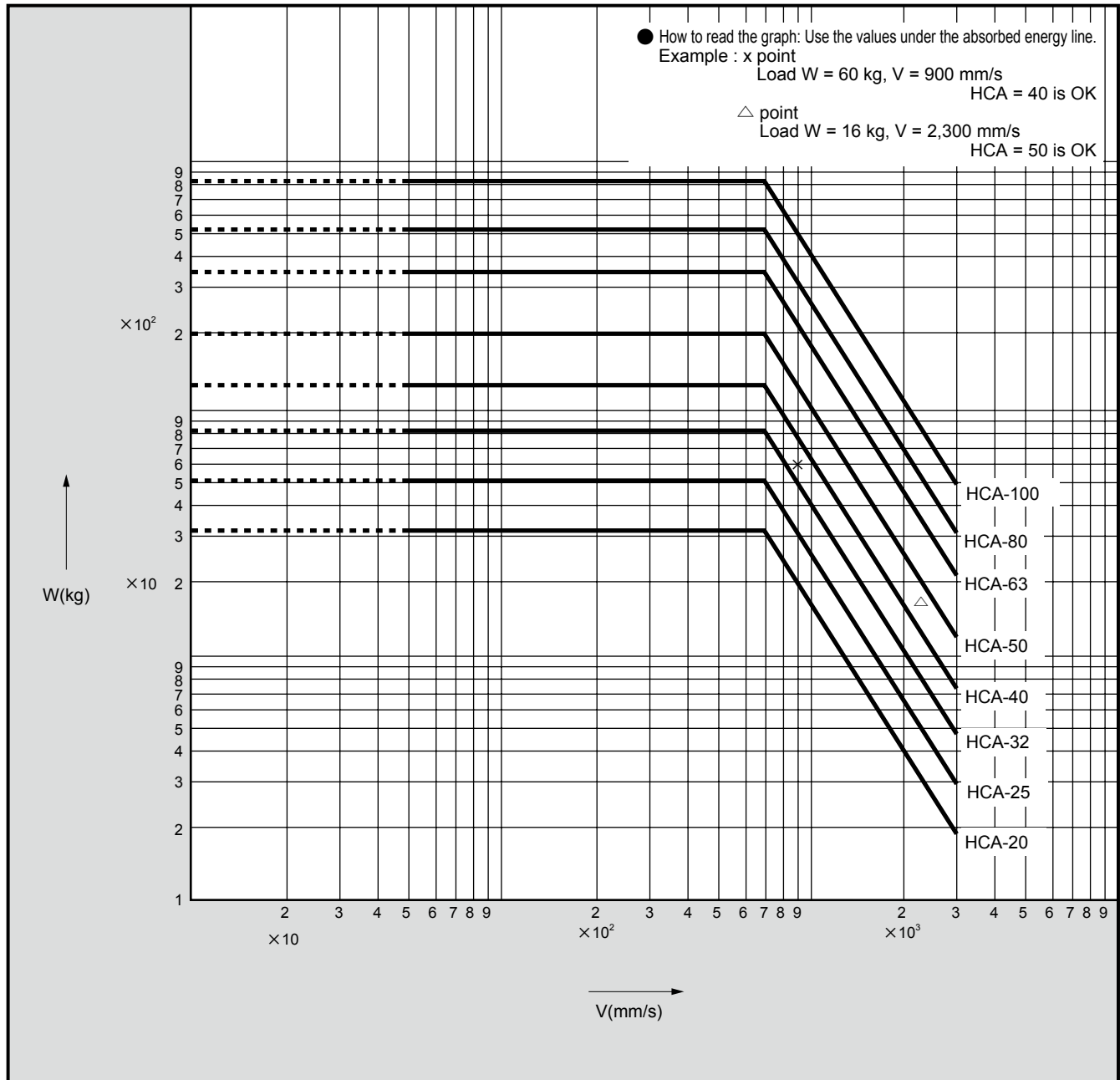
- LCM
- LCR
- LCG
- LCW
- LCX
- STM
- STG
- STS/STL
- STR2
- UCA2
- ULK*
- JSK/M2
- JSG
- JSC3/JSC4
- USSD
- UFCD
- UFCD
- UB
- JSB3
- LMB
- LML
- HCM**
- HCA**
- LBC
- CAC4
- UCAC2
- CAC-N
- UCAC-N
- RCS2
- RCC2
- PCC
- SHC
- MCP
- GLC
- MFC
- BBS
- RRC
- GRC
- RV3*
- NHS
- HRL
- LN
- Hand
- Chuk
- MecHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

Step 2

High speed cylinder selection guide

Use the following table to determine the model according to the relation between load W and maximum speed V.

High speed cylinder energy absorption graph



Note : This is a log-log graph.

For example, when load W = 16kg, and maximum speed 2,300 mm/s, △ shows that HCA-40 does not meet the conditions, but HCA-50 does.



Safety Precautions

Be sure to read this section before use.

Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

- 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
- MechHnd/Chuk
- ShkAbs
- FJ
- FK
- SpdContr
- Ending

Product-specific cautions: High speed cylinder HCA Series

Design/selection

CAUTION

- Avoid using the product so as to apply lateral load to the piston rod of the cylinder. The required speed may not be attained, bearings may wear abnormally, and performance may drop.
- Cushion
The air cushion absorbs kinetic energy that the piston generates by using air compressibility and prevents the piston and cover from colliding at the stroke end. Therefore, note that it is not a function for reducing the piston speed near the stroke end.

- Consider the system selection guide of the cylinder only as a guideline, as it may vary depending on the operating conditions (working pressure, travel method and direction of the load and piping length).
- Operating the cylinder at high speed increases the instantaneous flow rate of the air, allowing drainage to accumulate more easily. Provide an air tank to prevent drain from entering the cylinder and to prevent pressure loss when filtering oil mist.

Mounting, installation and adjustment

CAUTION

- The cylinder has been designed for high-speed use, and the JISB1554 nut (ball bearing lock nut, washer and clamp) is used to prevent loosening when mounting the body. Use the following hook spanner wrench when fixing mounting brackets on the body, and when loosening the lock nut to disassemble the body.

(1) When fixing mounting brackets on the body

Model No.	HCA-20	HCA-25	HCA-32	HCA-40
Item				
Nut used	AN05	AN05	AN05	AN07
Hook spanner wrench size	Nominal 34-38	Nominal 34-38	Nominal 34-38	Nominal 45-50
Model No.	HCA-50	HCA-63	HCA-80	HCA-100
Item				
Nut used	AN08	AN08	AN12	AN12
Hook spanner wrench size	Nominal 52-55	Nominal 58-62	Nominal 80-90	Nominal 80-90

(2) Tightening the body lock nut

Model No.	HCA-20	HCA-25	HCA-32	HCA-40
Item				
Hook spanner wrench size			Nominal 34-48	Nominal 45-50
Wrench	Nominal 30	Nominal 35		
Model No.	HCA-50	HCA-63	HCA-80	HCA-100
Item				
Hook spanner wrench size	Nominal 52-55	Nominal 68-75	Nominal 80-90	Nominal 110-115
Wrench				

- Note that the working speed of 3000 mm/s is the max. speed, not the average speed.
- The cylinder body restriction is designed for a speed of 3000 mm/s and over, and should not be constricted by piping, valves, or speed controllers.
- When adjusting speed with the speed controller, gradually open the needle from the closed state and increase speed. The piston rod may suddenly pop out and create a hazard if speed is adjusted while the needle is open.
- If operation is started while the exhaust side is at atmospheric pressure, the rod could pop out and cause a dangerous situation. Pressurize the exhaust side before starting.
- Mount the speed controller near the cylinder piping port. Otherwise, speed cannot be controlled.
- When the unit will be used where the specifications of the cushion (allowable absorbed energy) will be exceeded, provide a separate external shock absorber.