

Special

GLC

Guideless cylinder

ø40/ø50/ø63/ø80/ø100

Overview

The guideless cylinder is a compact/lightweight actuator integrated with a rotation-stop lateral load resistant structure. It contributes to FA/FMS and other automation and to labor reduction.

Features

High lateral load intensity

Large diameter piston rod is used. This enables withstanding a large lateral load.

Detecting switch available

Two types of switches can be installed: the proximity switch R type and the strong magnetic field proof switch H type. Piston position confirmation is easy.

Compact design

Rotation-stop structure integrated. A compact body is achieved.

Lightweight

Except for strength components, aluminum material is used throughout. Light weight is achieved.



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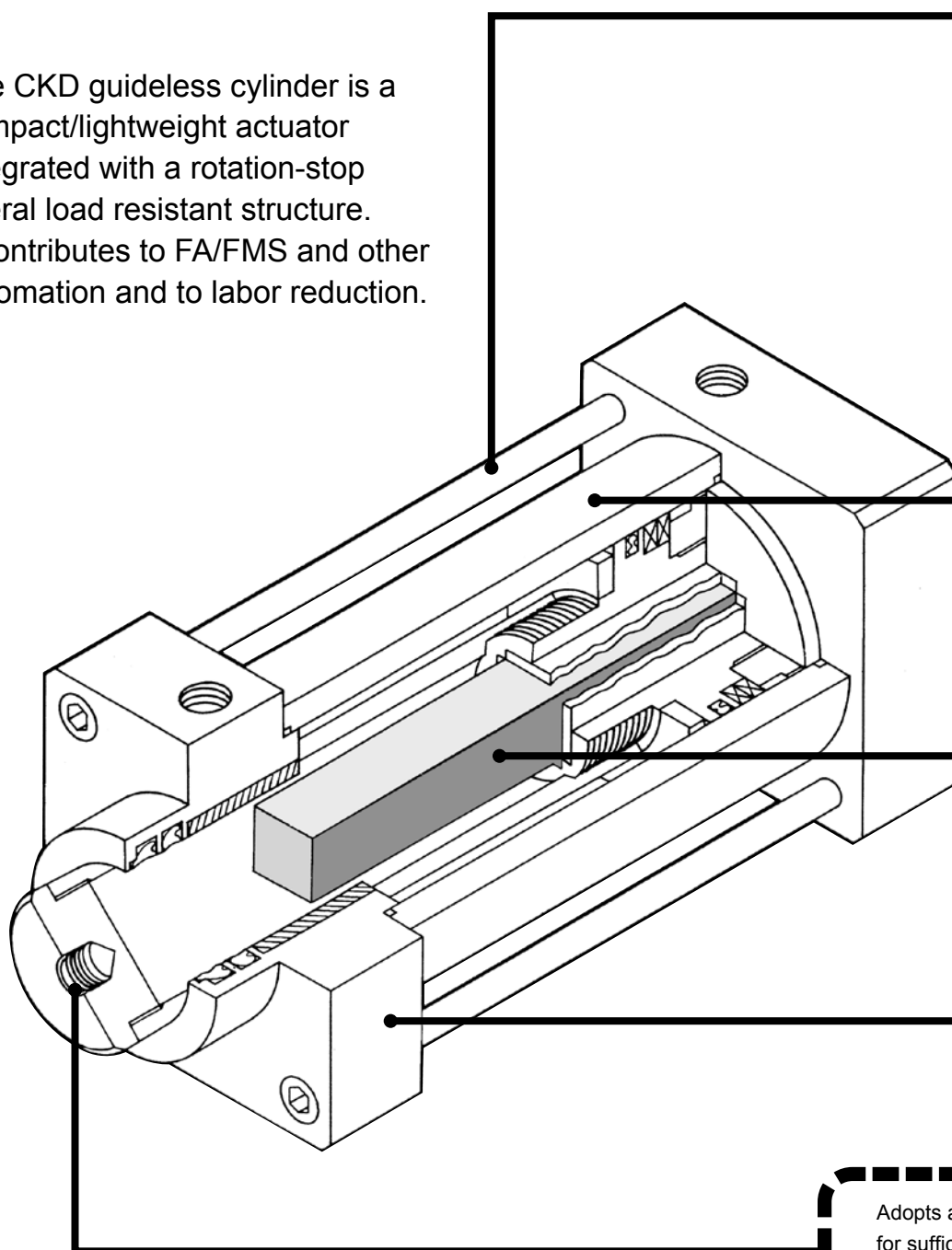
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LCW
LCX
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STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
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JSB3
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HCM
HCA
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CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
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LN
Hand
Chuk
MechHnd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

LCM
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Ending

A leader with lateral loads.

A guide-less high-functioning cylinder with a rotation-stop mechanism and lateral load resistant structure. ($\phi 40/\phi 50/\phi 63/\phi 80/\phi 100$)

The CKD guideless cylinder is a compact/lightweight actuator integrated with a rotation-stop lateral load resistant structure. It contributes to FA/FMS and other automation and to labor reduction.

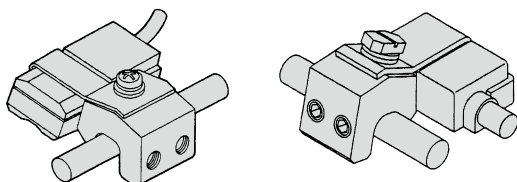


Adopts a thick piston rod for sufficient resistance to lateral loads.

R type, H type switches
mountable.
Position confirmation is easy.

● R type switch

● H type switch



Adopts an aluminum tube.
Achieves light weight.

Built-in rotation-stop
mechanism using a square
rotation-stop shaft and a
long rotation-stop plate
(bearing). Keeps equipment
more compact.

Cover and piston adopt
aluminum material.
Achieves light weight.

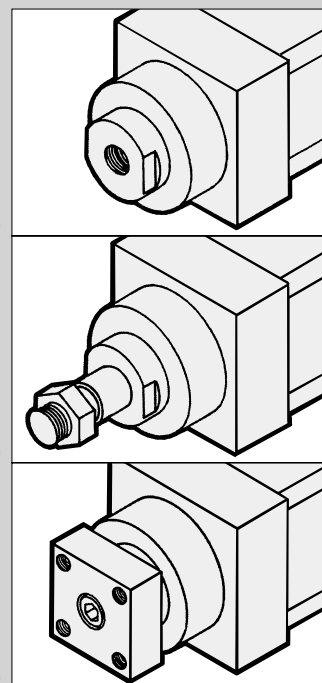
● Rod end form can be selected

The rod end form can be selected to suit the application from female thread (blank), male thread (N) and flange (F).

● Female thread (blank)

● Male thread (N)

● Flange (F)



High lateral load intensity

Large diameter piston rod is used. This enables withstanding a large lateral load.

Detecting switch available

Two types of switches can be installed: the proximity switch R type and the strong magnetic field proof switch H type. Piston position confirmation is easy.

Compact design

Rotation-stop structure integrated. A compact body is achieved.

Lightweight

Except for strength components, aluminum material is used throughout. Light weight is achieved.

⚠ Read the safety precautions before use.

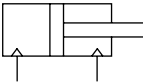
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FK
SpdContr
Ending

Series variation



High rigid guideless cylinder GLC Series

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
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 Hand
 Chuk
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 ShkAbs
 FJ
 FK
 SpdContr
 Ending

Variation	Model No.	Bore size (mm)	Standard stroke length (mm)					
			100	200	300	400	500	
Double acting 	GLC	ø40/ø50/ø63	●	●	●	●	●	
		ø80	●	●	●	●	●	
		ø100	●	●	●	●	●	

● : Standard, ◎ : Option, ■ : Not available

Stroke length (mm)				Min. stroke length (mm)	Max. stroke length (mm)	Custom stroke length (per mm)	Mounting				Rod end form			Piping port position				Switch	Page
							Basic	Axial foot	Rod side flange	Head side flange	Female thread	Male thread	Flange	Top from rod side	Right from rod side	Left from rod side	Bottom from rod side		
	600	700	800	(mm)	(mm)	(per mm)	00	LB	FA	FB	Blank	N	F	Blank	R	T	S		
	■	■	■	5	500	5													1198
	●	●	■		700		●	●	●	●	●	◎	◎	●	◎	◎	◎	◎	
	●	●	●		800														

LCM
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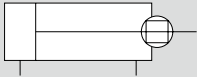


Guideless cylinder (double acting)

GLC Series

● Equivalent bore size : $\varnothing 40/\varnothing 50/\varnothing 63/\varnothing 80/\varnothing 100$

JIS symbol



Specifications

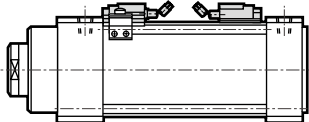
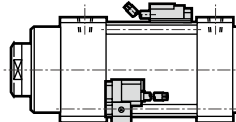
Item	GLC				
Bore size mm	ø40	ø50	ø63	ø80	ø100
Actuation	Double acting				
Working fluid	Compressed air				
Max. working pressure MPa	1.0 (≈150 psi, 10 bar)				
Min. working pressure MPa	0.15 (≈22 psi, 1.5 bar)				
Proof pressure MPa	1.6 (≈230 psi, 16 bar)				
Ambient temperature °C	-10 (14°F) to 60 (140°F) (no freezing)				
Port size Rc	1/8	1/4		3/8	
Stroke tolerance mm	+0.5 0 (Stroke length: 300 or less), +1.0 0 (Stroke length: Exceeding 300)				
Working piston speed mm/s	50 to 500 (Operate within the allowable absorbed energy.)				
Cushion	Rubber cushion				
Lubrication	Not required (use turbine oil class 1 ISO VG32 if necessary for lubrication)				
Allowable absorbed energy J	0.73	1.01	2.42	4.63	9.94

Stroke length

Bore size (mm)	Standard stroke length (mm)	Max. stroke length (mm)	Min. stroke length (mm)
$\varnothing 40$	100, 200, 300, 400, 500	500	5
$\varnothing 50$			
$\varnothing 63$			
$\varnothing 80$	100, 200, 300, 400, 500, 600, 700	700	5
$\varnothing 100$	100, 200, 300, 400, 500, 600, 700, 800	800	

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

Min. stroke length with switch

Sketch	When mounted on the same surface		When mounted on different surfaces		
					
Bore size	R type switch	H type switch	R type switch	H type switch	
ø40	34	34	20	25	
ø50					
ø63	20	25			
ø80					
ø100					

Switch specifications

● R type switch

Item	Proximity 2-wire		Proximity 3-wire
	R1	R2	R3
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
Indicator lamp	LED (Lit when ON)		
Leakage current	1 mA or less at 100 VAC 2 mA or less at 200 VAC	1 mA or less	10 µA or less
Weight g	Grommet	1 m:42 3 m:100 5 m:158	
	Terminal box	68	

Item		Reed 2-wire								
		R0			R4		R5			R6
Applications		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	5/12/24 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)			Neon lamp (Lit when OFF)		None			LED (Lit when ON)
Leakage current		0 mA			1 mA or less		0 mA			0.1 mA or less
Weight g	Grommet	1 m:42 3 m:100 5 m:158								
	Terminal box	68								

● H type switch

Item	Reed 2-wire	
	H0	
Applications	For relay, programmable controller	
Load voltage	12/24 VDC	110 VAC
Load current	5 to 50 mA	7 to 20 mA
Indicator lamp	Green LED (Lit when ON)	
Leakage current	10 µA or less	
Weight g	1 m:76 3 m:181 5 m:289	

*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			Switch weight	Mounting bracket weight		Additional weight per S = 50 mm	Additional weight of N type	Additional weight of F type
	Basic (00)	Axial foot (LB)	Flange (FA/FB)		T type	H type			
ø40	1.15	1.3	1.4	Refer to the weight in the switch specifications.	0.023	0.028	0.3	0.07	0.17
ø50	1.68	1.8	2.24		0.021	0.026	0.48	0.09	0.3
ø63	2.4	2.7	3.0		0.019	0.024	0.6	0.13	0.35
ø80	4.4	4.8	5.5		0.025	0.029	0.97	0.24	1.0
ø100	6.93	7.8	9.0		0.023	0.028	1.02	0.46	1.4

(Example) Product weight of GLC-00-40-200-R0-D-R

- Product weight for 0 mm stroke length 1.15 kg
- Additional weight for 200 mm stroke length $0.3 \times \frac{200}{50} = 1.2$ kg
- Weight of 2 R0 switches $0.042 \times 2 = 0.084$ kg
- Weight of 2 mounting bracket $0.023 \times 2 = 0.046$ kg
- Product weight $1.15 + 1.2 + 0.084 + 0.046 = 2.480$ kg

How to order

- Without switch (built-in magnet for switch)

GLC - **LB** - **40** - **100** - **N** - **R**

- R type with switch (built-in magnet for switch)

GLC - **LB** - **40** - **100** - **R0** - **R** - **N** - **R**

- With H type (strong magnetic field) switch (built-in magnet for switch)

GLC-L2 - **LB** - **40** - **100** - **H0** - **R** - **N** - **R**

A Mounting *1

B Bore size

C Stroke length

D Switch model No.

* indicates the lead wire length.

E Switch quantity

F Rod end form

G Piping port position

⚠ Precautions for model No. selection

*1 : Mounting bracket will be shipped assembled with the product.

[Example of model No.]

GLC-LB-40-100-R0-R-N-R

Model No. : High rigid guideless cylinder (double acting)

- A** Mounting : Axial foot
- B** Bore size : ø40 mm
- C** Stroke length : 100 mm
- D** Switch model No. : Reed R0 switch, lead wire 1 m
- E** Switch quantity : 1 on rod side
- F** Rod end form : Male thread
- G** Piping port position : Right from rod side

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

B Bore size (mm)	
40	ø40
50	ø50
63	ø63
80	ø80
100	ø100

C Stroke length (mm)		
Bore size	Stroke length	Custom stroke length
ø40	5 to 500	In 5 mm increments
ø50	5 to 500	
ø63	5 to 500	
ø80	5 to 700	
ø100	5 to 800	

D Switch model No.					
Grommet	Terminal box	Contact	Voltage		Lead wire
			AC	DC	
R1*	R1B	Proximity	●		1-color display
R2*	R2B		●		
R3*	R3B		●		3-wire
R0*	R0B	Reed	●	●	1-color display
R4*	R4B		●		
R5*	R5B		●	●	no indicator lamp
R6*	R6B		●		
H0*	-		●	●	Strong magn field proof SW

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

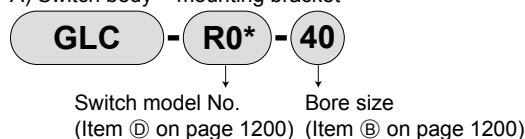
E Switch quantity	
R	1 on rod side
H	1 on head side
D	2
T	3
4	4 (when there are more than 4 switches, indicate switch quantity.)

F Rod end form	
Blank	Female thread
N	Male thread
F	Flange

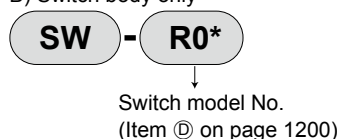
G Piping port position	
Blank	Top from rod side
R	Right from rod side
T	Left from rod side
S	Bottom from rod side

How to order R type switch

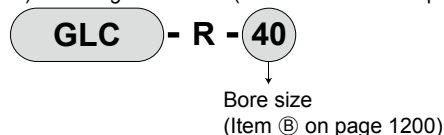
A) Switch body + mounting bracket



B) Switch body only



C) Mounting bracket set (ø50 to ø100: rubber plate included)



D) Terminal box only



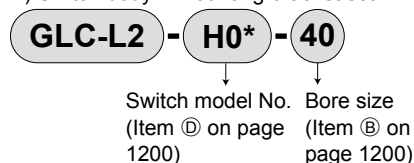
Note : When using cylinder switch R1*, R2* or R3*, place the attached rubber plate under the switch base when mounting.

No. of pcs. attached

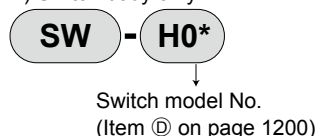
ø40	: 0)
ø50	: 4
ø63	: 3
ø80	: 5
ø100	: 3

How to order H type switch

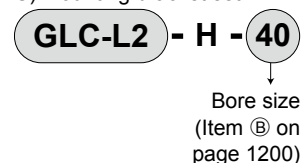
A) Switch body + mounting bracket set



B) Switch body only



C) Mounting bracket set



How to order mounting bracket

Bore size (mm)		ø40	ø50	ø63	ø80	ø100
Mounting bracket						
Foot (LB)	*1	GLC-40-LB	GLC-50-LB	GLC-63-LB	GLC-80-LB	GLC-100-LB
Flange (FA/FB)		GLC-40-FA	GLC-50-FA	GLC-63-FA	GLC-80-FA	GLC-100-FA

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

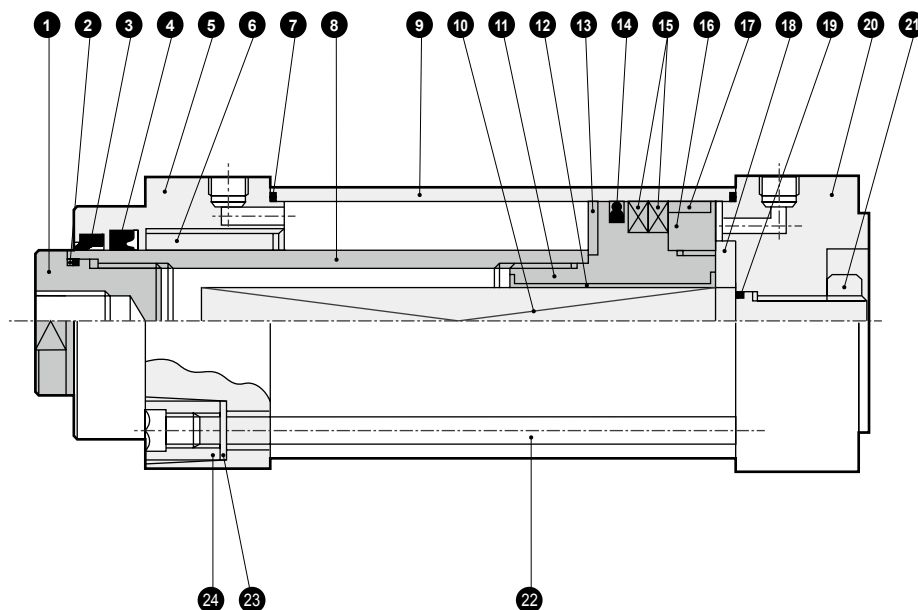
Theoretical thrust table

(Unit: N)

Bore size (mm)	Operating direction	Working pressure MPa									
		0.15	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
ø40	Push	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	1.14×10^2	1.53×10^2	2.30×10^2	3.06×10^2	3.83×10^2	4.59×10^2	5.36×10^2	6.13×10^2	6.89×10^2	7.66×10^2
ø50	Push	2.94×10^2	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	1.50×10^2	2.00×10^2	3.00×10^2	4.01×10^2	5.01×10^2	6.01×10^2	7.01×10^2	8.01×10^2	9.01×10^2	1.00×10^3
ø63	Push	4.67×10^2	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	2.79×10^2	3.72×10^2	5.58×10^2	7.44×10^2	9.30×10^2	1.12×10^3	1.30×10^3	1.49×10^3	1.67×10^3	1.86×10^3
ø80	Push	7.53×10^2	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	4.59×10^2	6.13×10^2	9.19×10^2	1.23×10^3	1.53×10^3	1.84×10^3	2.14×10^3	2.45×10^3	2.76×10^3	3.06×10^3
ø100	Push	1.17×10^2	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	7.53×10^2	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

LCM
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LCW
LCX
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STG
STS/STL
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UCA2
ULK*
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MechHnd/Chuk
ShkAbs
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Ending

Internal structure and parts list



No.	Part name	Material	Remarks	No.	Part name	Material	Remarks
1	Cap	Steel	Manganese phosphate	13	Cushion rubber	Urethane rubber	
2	Gasket	Nitrile rubber		14	Piston packing	Nitrile rubber	
3	Dust wiper	Nitrile rubber		15	Magnet	Plastic	
4	Rod packing	Nitrile rubber		16	Piston (B)	Aluminum alloy	
5	Rod cover	Aluminum alloy	Black alumite	17	Wear ring	Polyacetal	
6	Bush	Copper alloy casting		18	Cushion rubber	Urethane rubber	
7	Cylinder gasket	Nitrile rubber		19	Gasket	Nitrile rubber	
8	Piston rod	Steel	Industrial chrome plating	20	Head cover	Aluminum alloy	Black alumite
9	Cylinder tube	Aluminum alloy	Hard alumite	21	Fixing nut	Steel	Zinc chromate
10	Rotation-stop shaft	Steel	Industrial chrome plating	22	Tie rod	Steel	Zinc chromate
11	Piston (A)	Aluminum alloy		23	Conical spring washer	Steel	
12	Rotation-stop plate	Oil impregnated bearing alloy		24	Round nut	Steel	Zinc chromate

Repair parts list

Bore size (mm)	Kit No.	Repair parts No.
ø40	GLC-40K	3 4 7 12 14 17
ø50	GLC-50K	
ø63	GLC-63K	
ø80	GLC-80K	
ø100	GLC-100K	

*1 : Specify the kit No. when ordering repair parts.

*2 : Steps for replacing repair parts are different from that for standard.

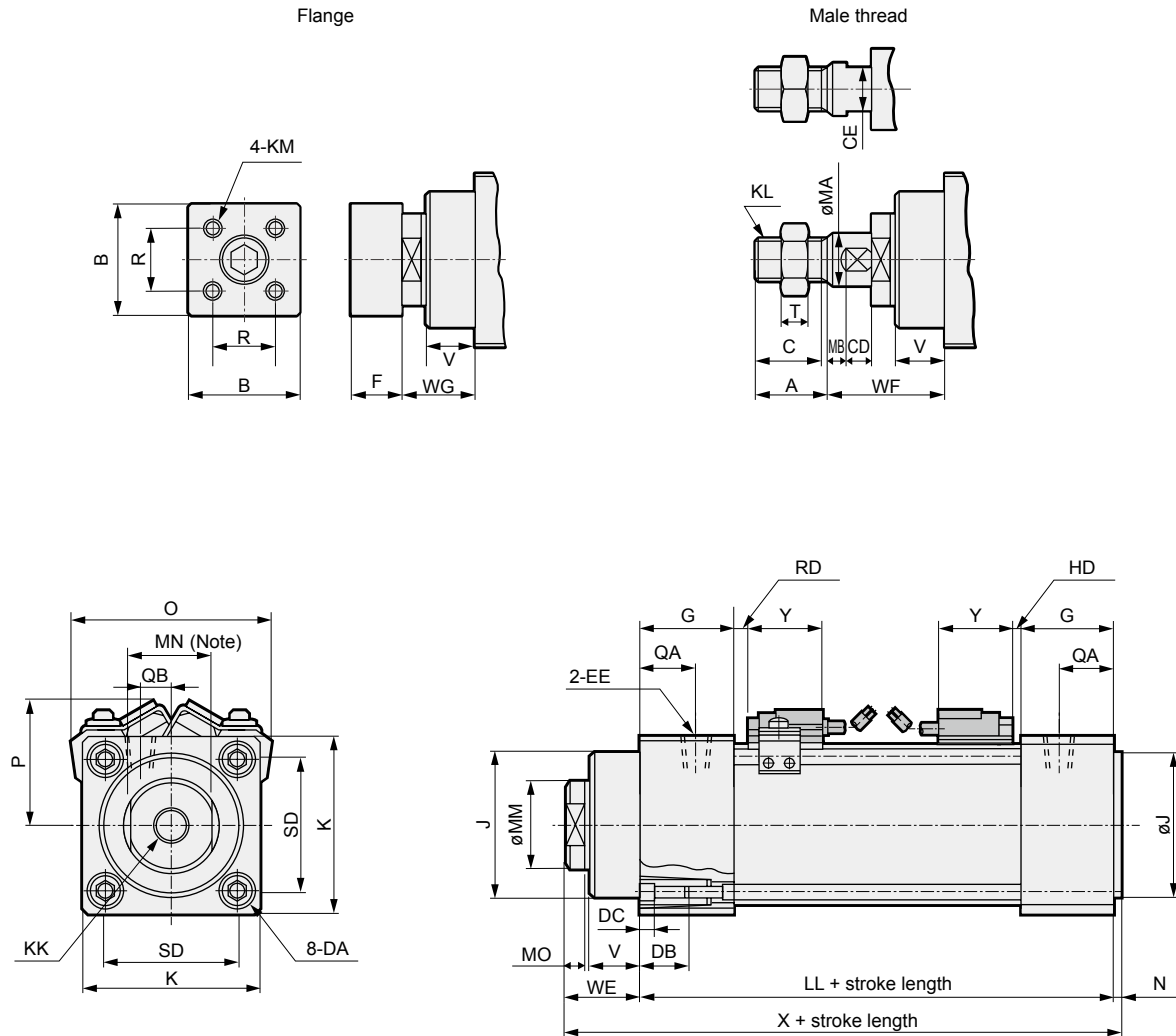
Refer to the guideless cylinder "Disassembly and Assembly Procedures" (SM-323965).

Dimensions



● Basic (00)

Note: The position (vertical in the diagram below) of the width across flats of the female thread (MN dimension) is not fixed, as the end cap screws into the piston rod.



Bore size (mm)	Basic (00) basic dimensions																			
	A	B	C	CD	CE	DA	DB	DC	EE	F	G	J	K	KK	KL	KM	LL	MA	MB	MM
ø40	21.5	35	20	6.5	14	M8	12	4	Rc1/8	18	30	40	57	M10 depth 15	M14×1.5	M6	97	17	11.5	25
ø50	23.5	45	22	9	17	M8	12	4	Rc1/4	20	34	52	66	M12 depth 18	M16×1.5	M8	107	19	11.5	35
ø63	26.5	50	25	10	17	M8	12	4	Rc1/4	20	34	64	80	M14 depth 20	M18×1.5	M8	110.5	21	11.5	40
ø80	30	70	29	14	22	M12	16	5	Rc3/8	27	41	75	98	M18 depth 25	M22×1.5	M10	134.5	26	12	50
ø100	34.5	80	34	13.5	27	M12	16	5	Rc3/8	30	46	95	118	M20 depth 30	M27×2	M10	151.5	34	13.5	60

Bore size (mm)											R type switch						H type switch				
	QA	QB	R	SD	T	V	WE	WF	WG	X	O	P	Reed R0, R4, R5, R6		Proximity R1, R2, R3		Y	O	P	HD	RD
													HD	RD	HD	RD					
ø40	18	7.5	24	40.5	8	20	35	54.5	33.5	134	66	39.5	3	0	4	0	31.5	66	39.5	4	0
ø50	20	9	32	48	10	20	35	56.5	33.5	144	74	44.5	5.5	2.5	6	3	31.5	74	44.5	6	3
ø63	22	10	36	59	11	24	39	62.5	37.5	151.5	90	51	7	4.5	7.5	5	31.5	90	51	7.5	5
ø80	25	10	50	74	13	27	44	72	42.5	180.5	114	59.5	14.5	7	15	7.5	31.5	114	59.5	15	7.5
ø100	25	10	60	90	16	27	47	77.5	45.5	200.5	128	67	18.5	8.5	19.5	10	31.5	128	67	19.5	10

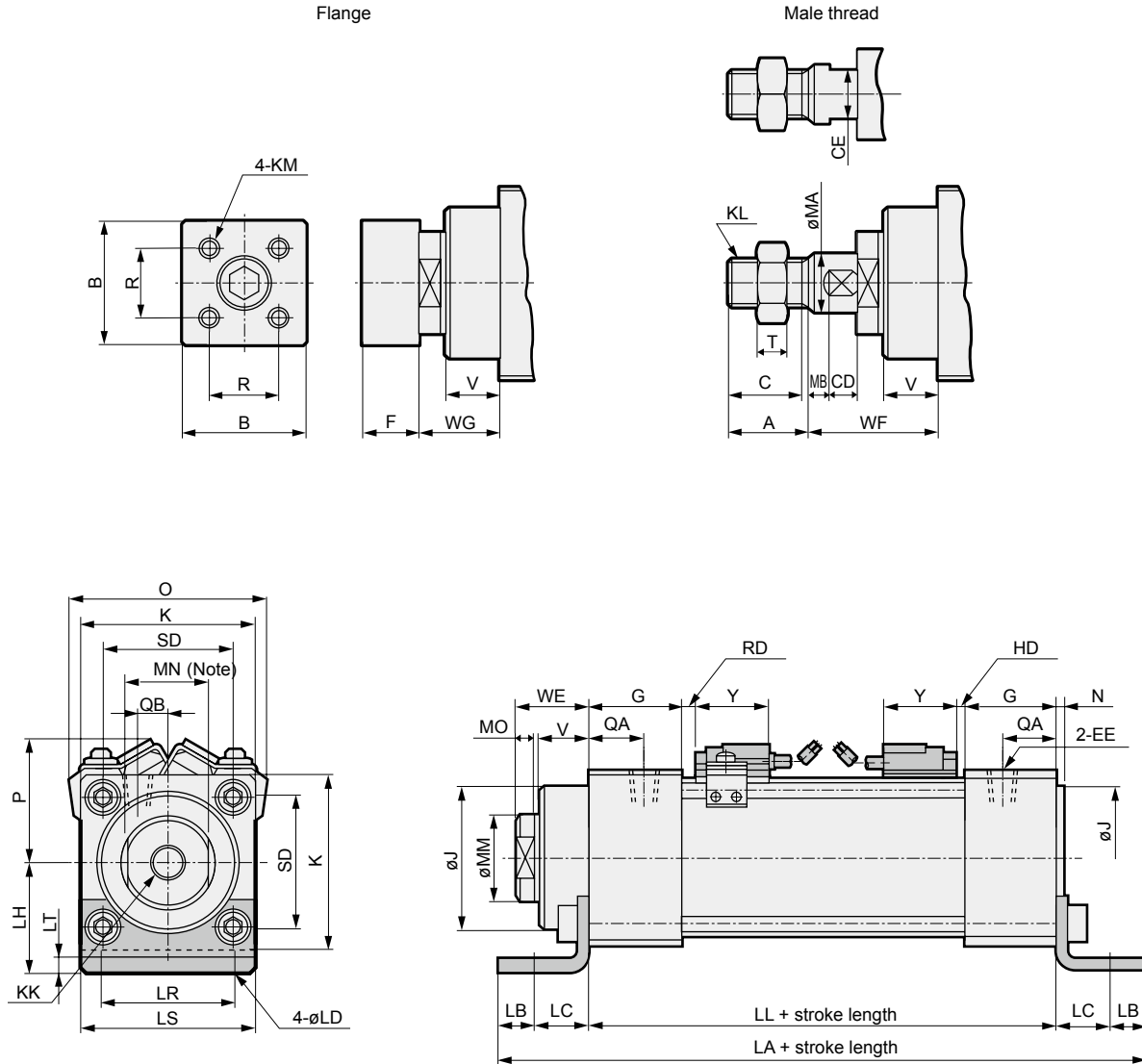
LCM
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STS/STL
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UCA2
ULK*
JSK/M2
JSG
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USSD
UFCD
USC
UB
JSB3
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HCM
HCA
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CAC4
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)

Note : The position (vertical in the diagram below) of the width across flats of the female thread (MN dimension) is not fixed, as the end cap screws into the piston rod.



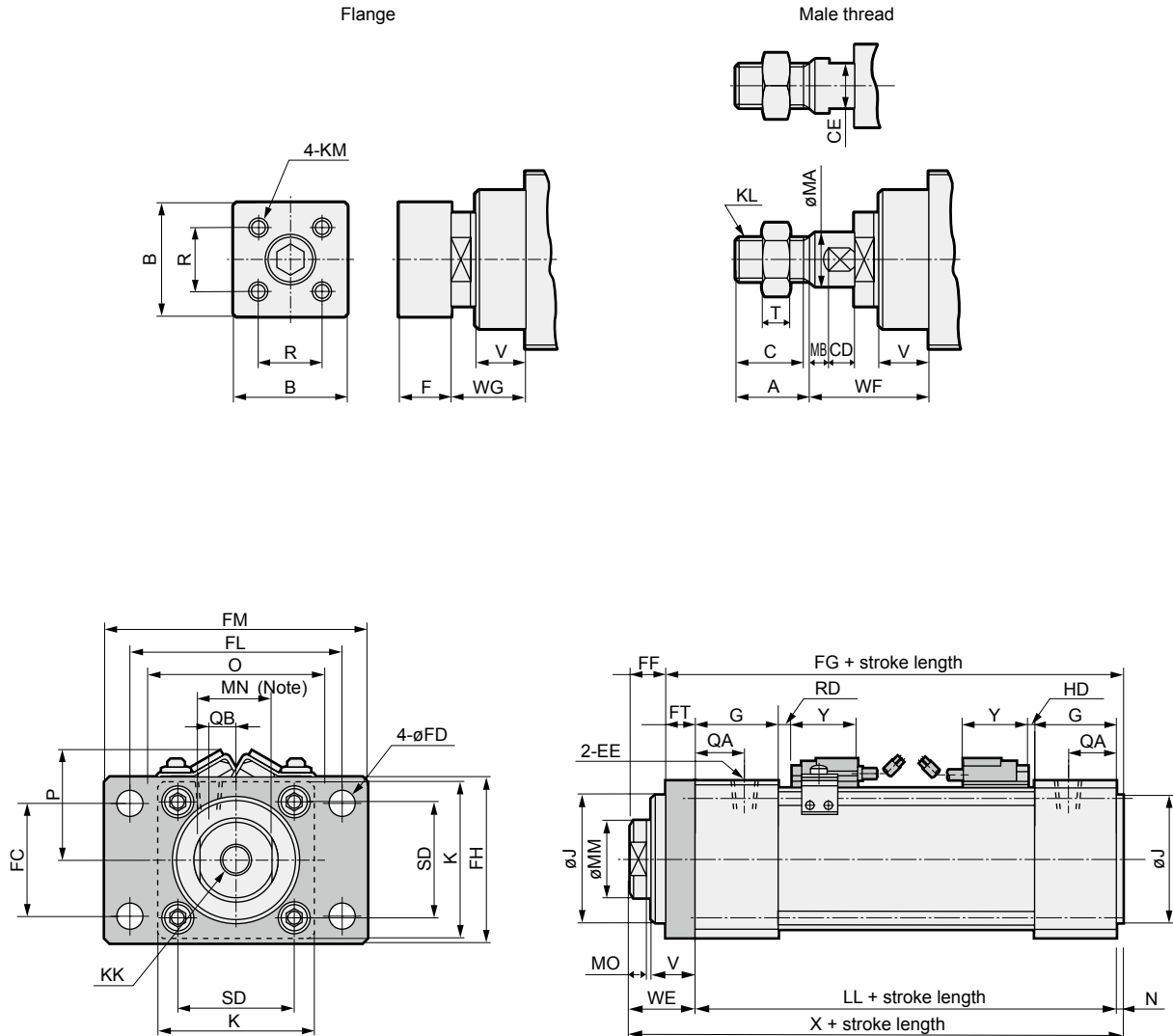
Bore size (mm)	Basic dimensions																									
	A	B	C	CD	CE	EE	F	G	J	K	KK	KL	KM	LL	MA	MB	MM	MN	MO	N	QA	QB	R			
ø40	21.5	35	20	6.5	14	Rc1/8	18	30	40	57	M10 depth 15	M14×1.5	M6	97	17	11.5	25	23	8	2	18	7.5	24			
ø50	23.5	45	22	9	17	Rc1/4	20	34	52	66	M12 depth 18	M16×1.5	M8	107	19	11.5	35	31	8	2	20	9	32			
ø63	26.5	50	25	10	17	Rc1/4	20	34	64	80	M14 depth 20	M18×1.5	M8	110.5	21	11.5	40	36	8	2	22	10	36			
ø80	30	70	29	14	22	Rc3/8	27	41	75	98	M18 depth 25	M22×1.5	M10	134.5	26	12	50	44	10	2	25	10	50			
ø100	34.5	80	34	13.5	27	Rc3/8	30	46	95	118	M20 depth 30	M27×2	M10	151.5	34	13.5	60	54	10	2	25	10	60			
Bore size (mm)														R type switch							H type switch					
	SD	T	V	WE	WF	WG	LA	LB	LC	LD	LH	LR	LS	LT	O	P	Reed R0, R4, R5, R6		Proximity R1, R2, R3		Y	O	P	HD	RD	Y
																	HD	RD	HD	RD						
ø40	40.5	8	20	35	54.5	33.5	156	10	19.5	9	40	40	57	3.2	66	39.5	3	0	4	0	31.5	66	39.5	4	0	33.5
ø50	48	10	20	35	56.5	33.5	175	12	22	9	40	46	66	4.5	74	44.5	5.5	2.5	6	3	31.5	74	44.5	6	3	33.5
ø63	59	11	24	39	62.5	37.5	194.5	12	30	11	50	60	80	4.5	90	51	7	4.5	7.5	5	31.5	90	51	7.5	5	33.5
ø80	74	13	27	44	72	42.5	236.5	14	37	14	60	74	98	6.0	114	59.5	14.5	7	15	7.5	31.5	114	59.5	15	7.5	33.5
ø100	90	16	27	47	77.5	45.5	255.5	21	31	14	67	80	118	6.0	128	67	18.5	8.5	19.5	10	31.5	128	67	19.5	10	33.5

Dimensions



● Rod side flange (FA)

Note: The position (vertical in the diagram below) of the width across flats of the female thread (MN dimension) is not fixed, as the end cap screws into the piston rod.



Bore size (mm)	Basic dimensions																									
	A	B	C	CD	CE	EE	F	G	J	K	KK	KL	KM	LL	MA	MB	MM	MN	MO	N	QA	QB	R	SD		
ø40	21.5	35	20	6.5	14	Rc1/8	18	30	40	57	M10 depth 15	M14×1.5	M6	97	17	11.5	25	23	8	2	18	7.5	24	40.5		
ø50	23.5	45	22	9	17	Rc1/4	20	34	52	66	M12 depth 18	M16×1.5	M8	107	19	11.5	35	31	8	2	20	9	32	48		
ø63	26.5	50	25	10	17	Rc1/4	20	34	64	80	M14 depth 20	M18×1.5	M8	110.5	21	11.5	40	36	8	2	22	10	36	59		
ø80	30	70	29	14	22	Rc3/8	27	41	75	98	M18 depth 25	M22×1.5	M10	134.5	26	12	50	44	10	2	25	10	50	74		
ø100	34.5	80	34	13.5	27	Rc3/8	30	46	95	118	M20 depth 30	M27×2	M10	151.5	34	13.5	60	54	10	2	25	10	60	90		
Bore size (mm)														R type switch						H type switch						
	T	V	WE	WF	WG	X	FC	FD	FF	FG	FH	FL	FM	FT	O	P	Reed R0, R4, R5, R6		Proximity R1, R2, R3		Y	O	P	HD	RD	Y
																	HD	RD	HD	RD						
ø40	8	20	35	54.5	33.5	134	40	9	23	111	57	80	100	12	66	39.5	3	0	4	0	31.5	66	39.5	4	0	33.5
ø50	10	20	35	56.5	33.5	144	47	9	23	121	65	85	108	12	74	44.5	5.5	2.5	6	3	31.5	74	44.5	6	3	33.5
ø63	11	24	39	62.5	37.5	151.5	60	11	23	128.5	80	106	130	16	90	51	7	4.5	7.5	5	31.5	90	51	7.5	5	33.5
ø80	13	27	44	72	42.5	180.5	74	14	25	155.5	98	125	153	19	114	59.5	14.5	7	15	7.5	31.5	114	59.5	15	7.5	33.5
ø100	16	27	47	77.5	45.5	200.5	88	14	28	172.5	118	144	180	19	128	67	18.5	8.5	19.5	10	31.5	128	67	19.5	10	33.5

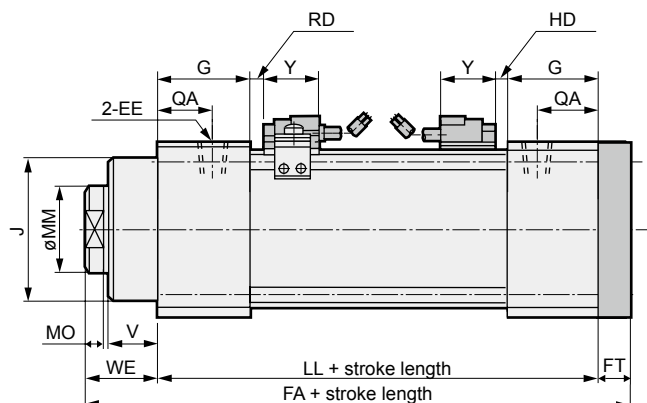
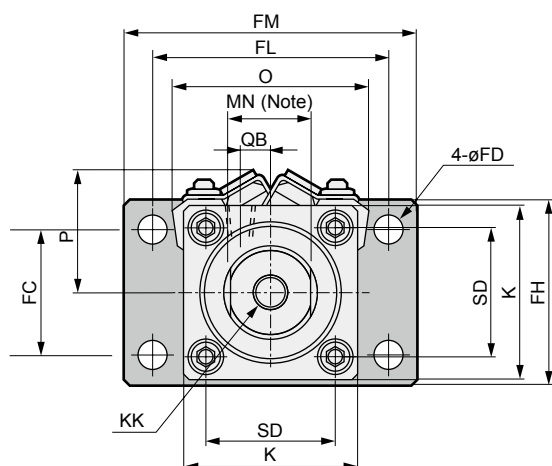
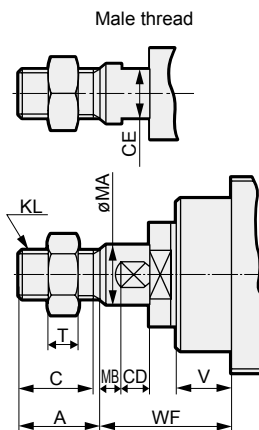
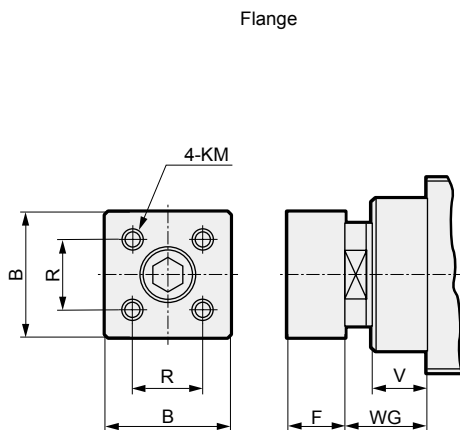
LCM
LCR
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STM
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STS/STL
STR2
UCA2
ULK*
JSK/M2
JSG
JSC3/JSC4
USSD
UFCD
USC
UB
JSB3
LMB
LML
HCM
HCA
LBC
CAC4
UCAC2
CAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MedHnd/Chuk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

Dimensions



● Head side flange (FB)

Note: The position (vertical in the diagram below) of the width across flats of the female thread (MN dimension) is not fixed, as the end cap screws into the piston rod.



Bore size (mm)	Basic dimensions																									
	A	B	C	CD	CE	EE	F	G	J	K	KK	KL	KM	LL	MA	MB	MM	MN	MO	QA	QB	R	SD			
ø40	21.5	35	20	6.5	14	Rc1/8	18	30	40	57	M10 depth 15	M14×1.5	M6	97	17	11.5	25	23	8	18	7.5	24	40.5			
ø50	23.5	45	22	9	17	Rc1/4	20	34	52	66	M12 depth 18	M16×1.5	M8	107	19	11.5	35	31	8	20	9	32	48			
ø63	26.5	50	25	10	17	Rc1/4	20	34	64	80	M14 depth 20	M18×1.5	M8	110.5	21	11.5	40	36	8	22	10	36	59			
ø80	30	70	29	14	22	Rc3/8	27	41	75	98	M18 depth 25	M22×1.5	M10	134.5	26	12	50	44	10	25	10	50	74			
ø100	34.5	80	34	13.5	27	Rc3/8	30	46	95	118	M20 depth 30	M27×2	M10	151.5	34	13.5	60	54	10	25	10	60	90			
Bore size (mm)													R type switch							H type switch						
	T	V	WE	WF	WG	FA	FC	FD	FH	FL	FM	FT	O	P	Reed R0, R4, R5, R6		Proximity R1, R2, R3		Y	O	P	HD	RD	Y		
															HD	RD	HD	RD								
ø40	8	20	35	54.5	33.5	144	40	9	57	80	100	12	66	39.5	3	0	4	0	31.5	66	39.5	4	0	33.5		
ø50	10	20	35	56.5	33.5	154	47	9	65	85	108	12	74	44.5	5.5	2.5	6	3	31.5	74	44.5	6	3	33.5		
ø63	11	24	39	62.5	37.5	165.5	60	11	80	106	130	16	90	51	7	4.5	7.5	5	31.5	90	51	7.5	5	33.5		
ø80	13	27	44	72	42.5	197.5	74	14	98	125	153	19	114	59.5	14.5	7	15	7.5	31.5	114	59.5	15	7.5	33.5		
ø100	16	27	47	77.5	45.5	217.5	88	14	118	144	180	19	128	67	18.5	8.5	19.5	10	31.5	128	67	19.5	10	33.5		

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

Conditions...stroke length $\chi = 300$ mm, load weight $m = 15$ kg, eccentricity $L_2 = 50$ mm, distance to the center of gravity from end $b = 50$ mm, force F applied to rod end $= m \times g$ (N) ($g =$ gravity acceleration 9.8 m/s²)

(1) First, calculate lateral load moment $F \cdot L$.

* Calculate dimension a by first substituting 34 (mm) of temporarily selected $\phi 63$.

$$L = 34 + 300 + 50 = 384(\text{mm}) = 0.384(\text{m})$$

$$F = 15 \times 9.8 = 147(\text{N})$$

$$F \cdot L = 147 \times 0.384 = 56.4 (\text{N} \cdot \text{m})$$

(2) Calculate self-weight moment M caused by the piston rod, etc.

$$M = \frac{\chi^2}{2} \times C \times g + (a + \chi) \times D \times g$$

$$= \frac{300^2}{2} \times 4.3 \times 10^{-3} \times 9.8 +$$

$$(34 + 300) \times 0.24 \times 9.8$$

$$= 2682 (\text{N} \cdot \text{mm}) \text{ is approximately } 2.7 (\text{N} \cdot \text{m})$$

(3) The total of (1) and (2) is lateral load moment.

$$F \cdot L + M = 56.4 + 2.7 = 59.1 (\text{N} \cdot \text{m})$$

(4) Next, calculate the rotation torque $F \cdot L_2$.

$$L_2 = 50(\text{mm}) = 0.05(\text{m})$$

$$F = 147(\text{N})$$

$$F \cdot L_2 = 147 \times 0.05 = 7.35 (\text{N} \cdot \text{m})$$

(5) Refer to the allowable lateral load moment table and allowable torque table on the right to check if each allowable moment value is equal to or less than the values in the tables.

Lateral load moment this time 59.1 (N·m)

Rotation torque 7.35 (N·m)

Allowable lateral load moment

$\phi 50 \cdots 92.8$ N·m OK

$\phi 63 \cdots 144.6$ N·m OK

Allowable torque

$\phi 50 \cdots 4.2$ N·m NG

$\phi 63 \cdots 8.8$ N·m OK

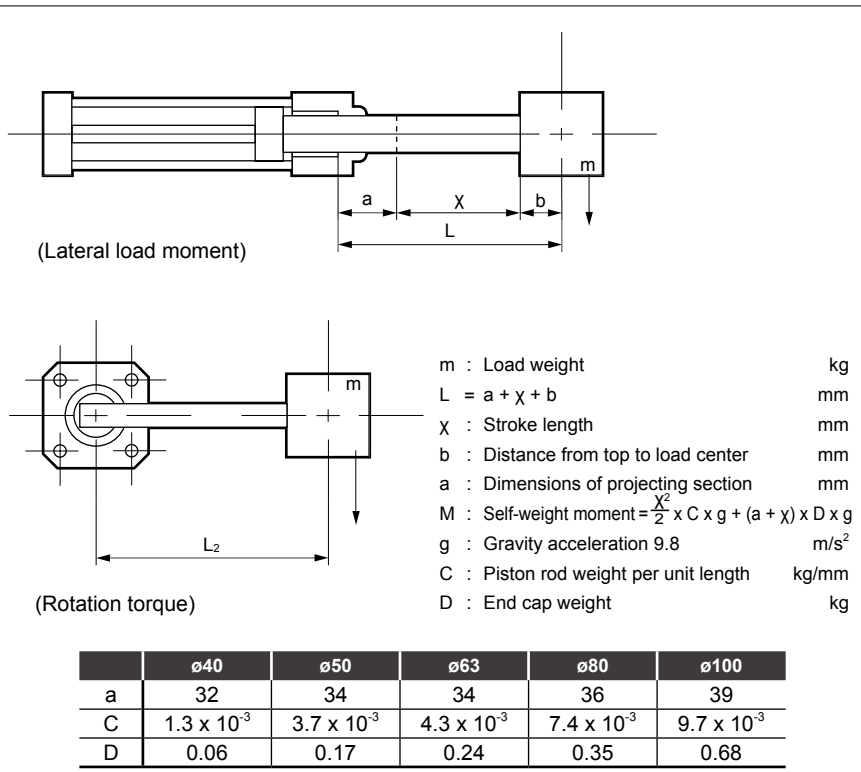
In this case, $\phi 50$ may be good for lateral load moment, but $\phi 63$ should be used since torque exceeds allowable values.

Make a selection such that both the lateral load moment and rotation torque are within the allowable values.

(6) The min. working pressure is the sum of the rotation torque and lateral load moment.

$$0.18 \text{ MPa} + 0.23 \text{ MPa} = 0.41 \text{ MPa}$$

Find the operating pressure according to the graph on the following page.



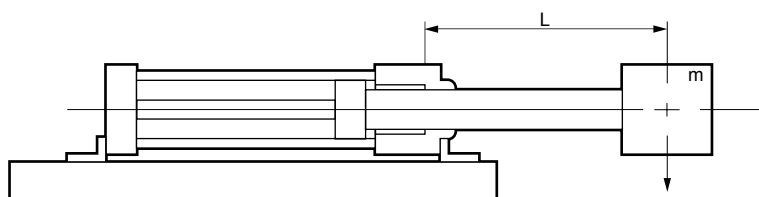
(Lateral load moment)

(Rotation torque)

m : Load weight kg
 $L = a + \chi + b$ mm
 χ : Stroke length mm
 b : Distance from top to load center mm
 a : Dimensions of projecting section mm
 M : Self-weight moment $= \frac{\chi^2}{2} \times C \times g + (a + \chi) \times D \times g$ m/s²
 g : Gravity acceleration 9.8 m/s²
 C : Piston rod weight per unit length kg/mm
 D : End cap weight kg

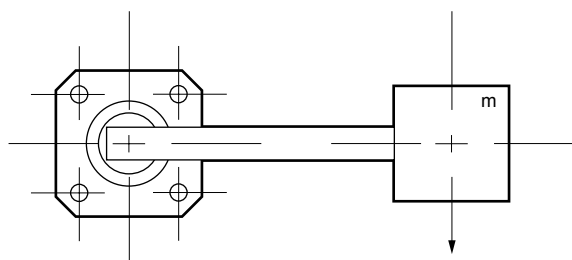
	$\phi 40$	$\phi 50$	$\phi 63$	$\phi 80$	$\phi 100$
a	32	34	34	36	39
C	1.3×10^{-3}	3.7×10^{-3}	4.3×10^{-3}	7.4×10^{-3}	9.7×10^{-3}
D	0.06	0.17	0.24	0.35	0.68

Allowable lateral load moment



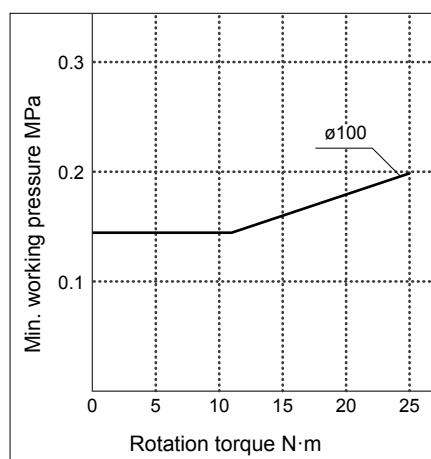
Bore size	Allowable lateral load moment
$\phi 40$	54.6 N·m
$\phi 50$	92.8 N·m
$\phi 63$	144.6 N·m
$\phi 80$	275.0 N·m
$\phi 100$	468.1 N·m

Allowable torque



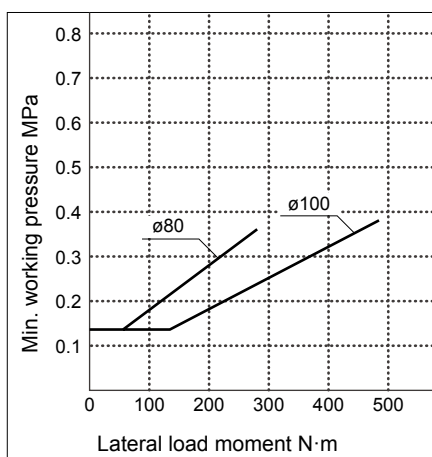
Bore size	Allowable torque
$\phi 40$	2.4 N·m
$\phi 50$	4.2 N·m
$\phi 63$	8.8 N·m
$\phi 80$	13.8 N·m
$\phi 100$	19.9 N·m

Relation between rotation torque and min. working pressure



Note : Select within the allowable torque. (The ideal torque is 70% or less of the allowable torque.)

Relation between lateral load moment and min. working pressure



Note : Select within the allowable lateral load moment. (The ideal moment is 70% or less of the lateral load moment.)

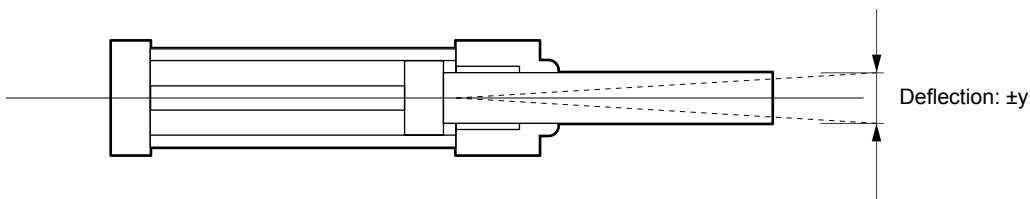
Allowable absorbed energy

Bore size	Allowable absorbed energy J
ø40	0.73
ø50	1.01
ø63	2.42
ø80	4.63
ø100	9.94

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
UCAC-N
UCAC-N
RCS2
RCC2
PCC
SHC
MCP
GLC
MFC
BBS
RRC
GRC
RV3*
NHS
HRL
LN
Hand
Chuk
MechInd/Chuk
ShkAbs
FJ
FK
SpdContr
Ending

LCM
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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

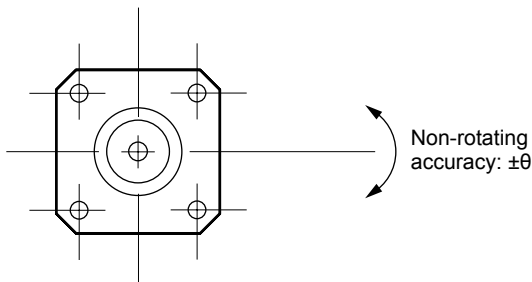
Deflection



(Unit: mm)

Bore size	Deflection: ±y (default value)	Standard stroke length						
		100	200	300	400	500	600	700
ø40	$y = (74 + \text{stroke length}) \times 3.66 \times 10^{-3}$	0.64	1.00	1.37	1.73	2.10	-	-
ø50	$y = (82.5 + \text{stroke length}) \times 3.50 \times 10^{-3}$	0.64	0.99	1.34	1.69	2.04	-	-
ø63	$y = (88 + \text{stroke length}) \times 3.36 \times 10^{-3}$	0.63	0.98	1.30	1.64	1.98	-	-
ø80	$y = (108 + \text{stroke length}) \times 2.80 \times 10^{-3}$	0.58	0.86	1.14	1.42	1.70	1.98	2.26
ø100	$y = (122.5 + \text{stroke length}) \times 2.86 \times 10^{-3}$	0.64	0.92	1.21	1.50	1.78	2.07	2.35

Non-rotating accuracy



(Unit : degree)

Bore size	Non-rotating accuracy : ±θ (default value)
ø40	0.57
ø50	0.38
ø63	0.33
ø80	0.28
ø100	0.24



Pneumatic components

Safety Precautions

Be sure to read this section before use.

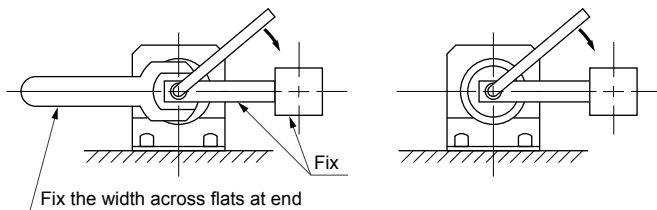
Refer to Intro Page 73 for general information of the cylinder, and to Intro Page 80 for general information of the cylinder switch.

Product-specific cautions: Guideless cylinder GLC Series

Mounting, installation and adjustment

⚠ WARNING

- Cushion is provided (rubber cushion). Use within the allowable absorbed energy. The product may be damaged if allowable values are exceeded.
- Assembling the piston rod end
When installing a jig, etc., on the end of the piston rod (female thread, male thread, flange), do not apply a torque 5 times or higher than the allowable torque to the cylinder or piston rod. Otherwise, the rotation-stop mechanism may be damaged. When connecting, fix the width across flats at the end of the rod as well as the end of the flange.



OK

X

⚠ CAUTION

- When using cylinder switch R1*, R2* or R3*, place the attached rubber plate under the switch base when mounting.

No. of pcs. attached

ø40 : 0

ø50 : 4

ø63 : 3

ø80 : 5

ø100 : 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
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LN
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Chuk
MechHnd/Chuk
ShkAbs
FJ
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SpdContr
Ending