Electric Actuator with Motor Specification

FLCR

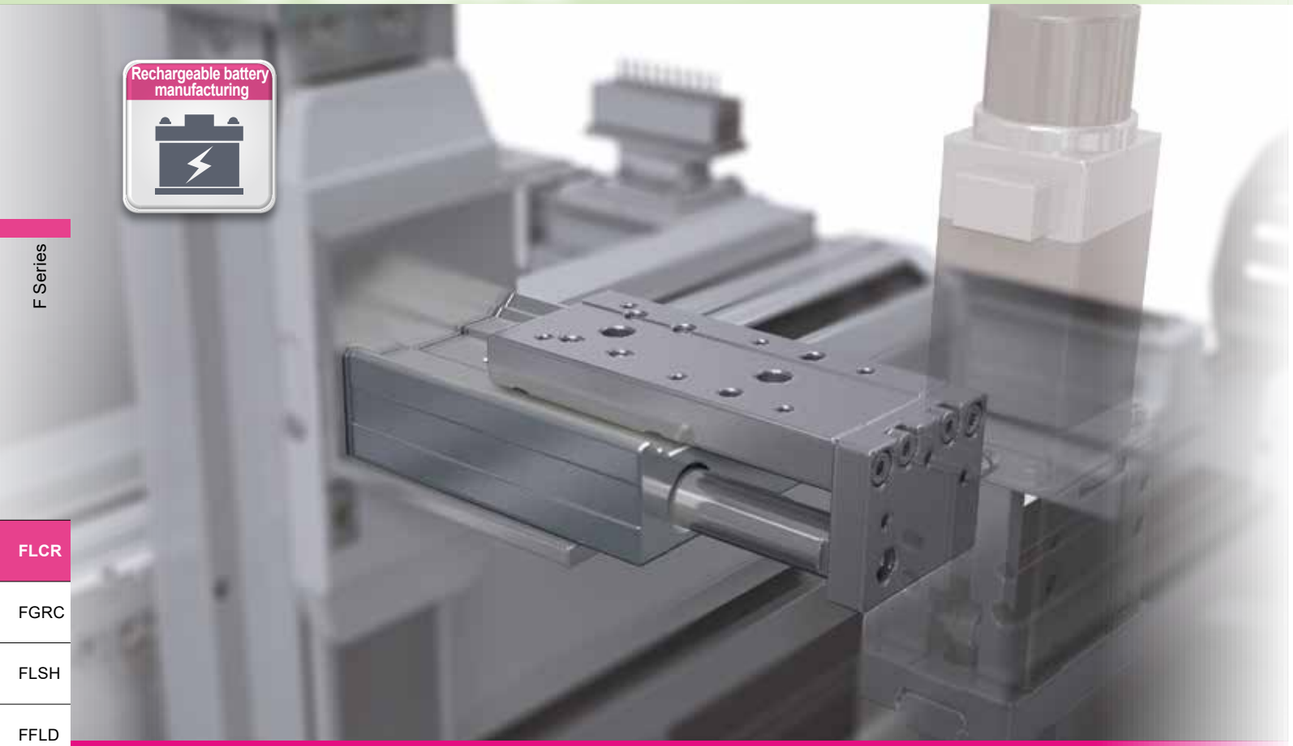
Table Type

CONTENTS

FLCR System Table

Model No.	Motor Size	Screw Lead (mm)	Max. Payload (kg)		Stroke and max. speed (mm/s)			Max. Pushing Force (N)
			Horizontal	Vertical	50 mm	75 mm	100 mm	
FLCR-16	□20	2	4	4	100 mm/s			90
		8	3	0.5	300			20
FLCR-20	□25	2	5.5	6	100			150
		8	5	0.8	300			55
FLCR-25	□25L	2	11	8.5	100			210
		6	11	3	300			90

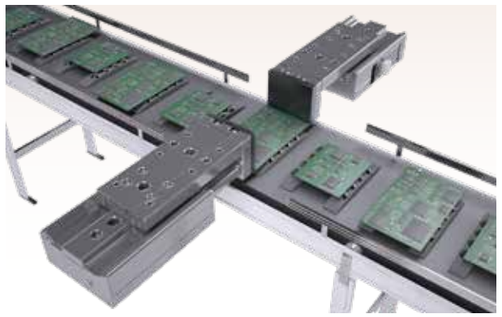
Table FLCR Series



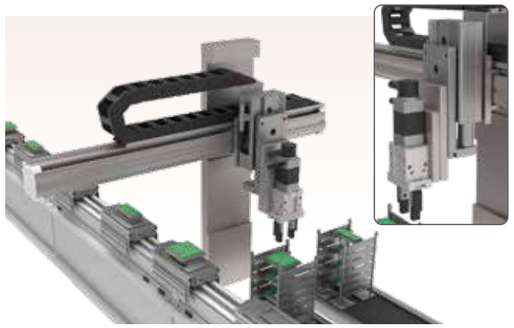
For short-stroke workpiece transfer and positioning

Application examples

Centering of different sized substrate materials

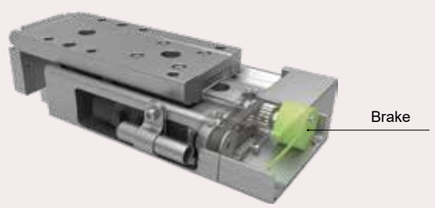


Brake option improves Z-axis safety



Brake Option

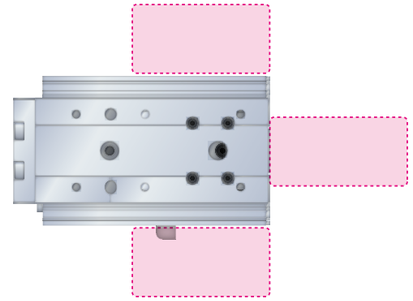
When the power is cut off, the brake part locks and holds the position (non-excitation operating type). Can be used as a safety measure, such as preventing falls on the Z-axis. A lock release unit (sold separately) is also available.



Built-in motor

Space saving

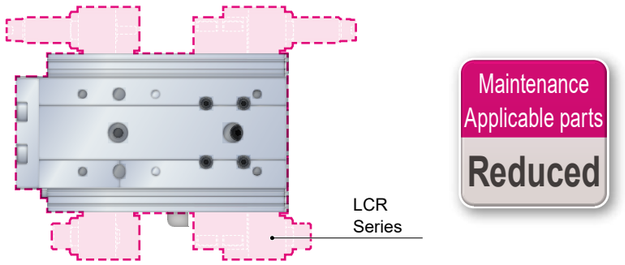
The motor is built into the main body. Since there are no protrusions or returns on the motor part, it is possible to save space in the equipment.



Dimensional compatibility with air products

Space saving | Reduced design | Easy maintenance

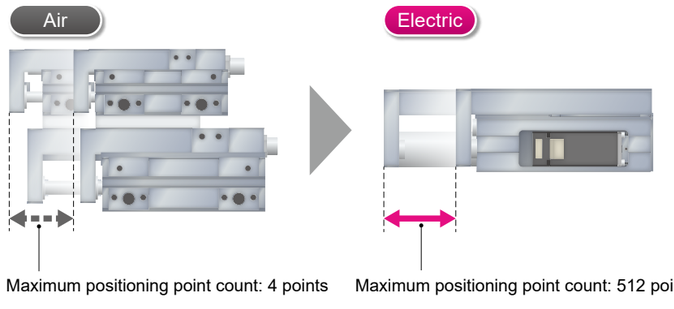
Since it is dimensionally compatible with the air type LCR, a compact design with an air feel is possible.
In addition, since the acceleration and deceleration of the FLCR series can be arbitrarily adjusted, a shock absorber is not required.



Multi-point positioning

Space saving | Productivity improved

The FLCR series can be positioned at any position. Since one actuator can handle multi-product production, it also contributes to space saving.



Electric Actuator Table Type

FLCR-16

□20 Stepping motor

For compatible detailed model Nos., please visit the CKD website.

Model No. Notation Method

FLCR - 16 ❶ | G ❷ | 02 ❸ | 050 ❹ | N ❺ | C ❻ | N - L ❼ | S03 ❽

❶Size
16

❷Connected Controllers *1	
G	ECMG/ECG-B
Blank	ECR

❸Screw lead	
02	2 mm
08	8 mm

❹Stroke	
050	50 mm
075	75 mm
100	100 mm

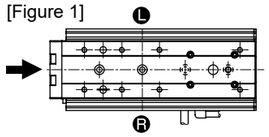
❺Brake	
N	None
B	Yes (ECMG/ECG-B only)

❻Encoder	
C	Incremental Encoder

❼Connector leadout direction *2	
L	Left side
R	Right side

❽Relay cable *3	
N00	None
S01	Fixing cable 1 m
S03	Fixing cable 3 m
S05	Fixing cable 5 m
S10	Fixing cable 10 m
R01	Movable cable 1 m
R03	Movable cable 3 m
R05	Movable cable 5 m
R10	Movable cable 10 m

[Figure 1]



*1 Select the controller from page 529.
*2 Please refer to Figure 1.
*3 For Dimensions diagram of the relay cable, refer to P. 607 for ECR or P. 592 for ECMG/ECG.

Specifications

Connected Controller		ECMG, ECG-B, ECR	
Motor		□20 Stepping motor	
Encoder Type		Incremental Encoder	
Drive Method		Ball screw (ø 6) + belt	
Stroke	mm	50, 75, 100	
Screw lead	mm	2	8
Max. Payload kg *1*2	Horizontal	4 (4)	3 (3)
	Vertical	4 (4)	0.5 (0.5)
Operation speed range *3	mm/s	2 to 100 (100)	10 to 300 (250)
Max. Pushing Force	N	90	20
Pushing Operation Speed Range	mm/s	2 to 20	5 to 20
Repeatability	mm	±0.02	
Lost Motion	mm	0.1 or less	
Static Allowable Moment N·m		[50st] MP: 17.8, MY: 17.8,MR: 19.2	
		[75st or more]: MP: 37.3, MY: 37.3, MR: 19.2	
Motor Power Supply Voltage		24 VDC ±10% or 48 VDC ±10%	
Brake *4	Type, Power Supply Voltage	Non-excitation operating type, 24 VDC (+10%/-5%)	
	Power consumption W	1	
	Holding Force N	51	9
Insulation Resistance		10 MΩ, 500 VDC	
Dielectric Strength		500 VAC for 1 minute	
Operating Ambient Temperature, Humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage Ambient Temperature, Humidity		-10 to 50°C (No freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Protection Structure		IP40	

*1 The values in ( ) are at 24 VDC.
*2 Maximum value at acceleration/deceleration of 0.3 G. Payload varies depending on acceleration/deceleration and speed. Refer to Speed and Payload for details.
*3 The maximum speed values in ( ) are at 24 VDC.
*4 Applicable only for ECMG and ECG-B.

Speed and Payload

[At 48 VDC]

[Horizontal Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	8	0.3 Screw Lead (mm) 2	8
2	4		4	
10	4	4	4	3
90	4	4	4	3
100	4	4	3.5	3
200		4		3
300		3		3

[Vertical Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	8	0.3 Screw Lead (mm) 2	8
2	4		4	
10	4	0.5	4	0.5
50	4	0.5	4	0.5
60	2.5	0.3	2.5	0.3
70	2	0.3	1.5	0.3
80	1.5	0.3	1.5	0.3
90	1	0.3	0.5	0.3
100	0.4	0.3		0.3
250		0.3		0.3

[At 24 VDC]

[Horizontal Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	8	0.3 Screw Lead (mm) 2	8
2	4		4	
10	4	4	4	3
70	4	4	4	3
80	4	4	2	3
90	2.5	4	1	3
100	2.5	4	0.5	3
200		4		3
250		1		1

[Vertical Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	8	0.3 Screw Lead (mm) 2	8
2	4		4	
10	4	0.5	4	0.5
20	4	0.5	4	0.5
30	4	0.5	3	0.5
40	4	0.5	3	0.5
50	3	0.5	2.5	0.5
60	0.5	0.3	0.4	0.3
70	0.5	0.3	0.4	0.3
80	0.4	0.3		0.3
100		0.3		0.3

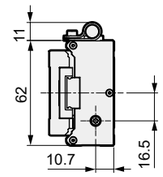
Stroke and Max. Speed

(mm/s)

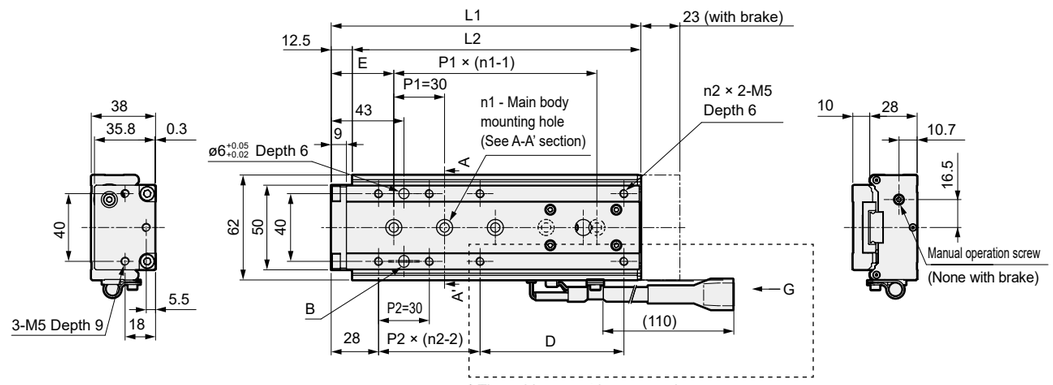
Screw Lead	Power supply voltage	Stroke 50 to 100
2	48 VDC	100
	24 VDC	100
8	48 VDC	300
	24 VDC	250

External Dimensions Drawing

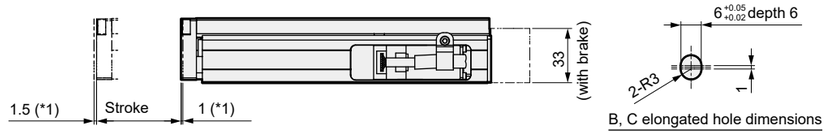
● FLCR-16



In case of connector outlet direction L (left side)

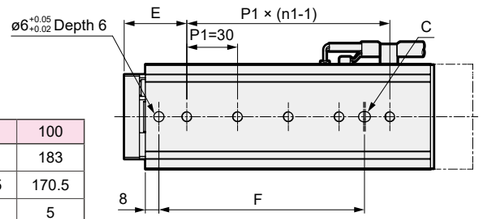


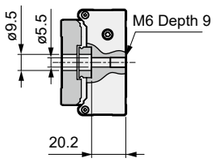
* The cable cannot be removed.



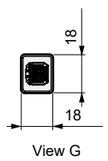
B, C elongated hole dimensions

* 1 Operational range to the mechanical stopper.





A-A' Section



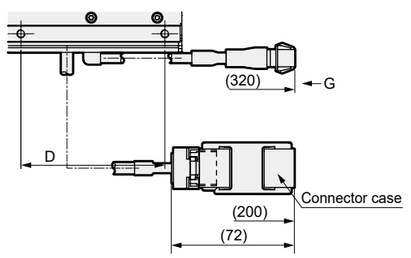
View G

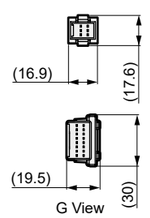
[Dimensions Table by Stroke]

Stroke		50	75	100
L1		116	158	183
L2		103.5	145.5	170.5
n1		3	4	5
n2		3	4	4
D		48	60	85
E		35.5	39	37
F		60	93.5	121.5
Weight kg	Without Brake	0.8	1.1	1.3
	With Brake	0.9	1.2	1.4

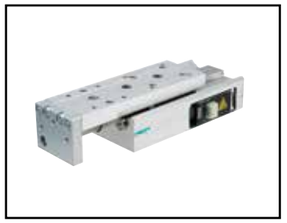
This figure shows the case of connector outlet direction R (right side).

* When an ECR is connected, the dotted line area is as shown below.





G View



Electric Actuator Table Type

FLCR-20

□25. Stepping motor

For compatible detailed model Nos., please visit the CKD website.

Model No. Notation Method

FLCR - 20 ❶ | G ❷ | 02 ❸ | 050 ❹ | N ❺ | C ❻ | N - L ❼ | S03 ❽

❶Size

20

❷Connected Controllers *1

G	ECMG/ECG-B
Blank	ECR

❸Screw lead

02	2 mm
08	8 mm

❹Stroke

050	50 mm
075	75 mm
100	100 mm

❺Brake

N	None
B	Yes (ECMG/ECG-B only)

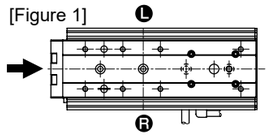
❻Encoder

C	Incremental Encoder

❼Connector leadout direction *2

L	Left side
R	Right side

[Figure 1]



❽Relay cable *3

N00	None
S01	Fixing cable 1 m
S03	Fixing cable 3 m
S05	Fixing cable 5 m
S10	Fixing cable 10 m
R01	Movable cable 1 m
R03	Movable cable 3 m
R05	Movable cable 5 m
R10	Movable cable 10 m

*1 Select the controller from page 529.
*2 Please refer to Figure 1.
*3 Refer to P. 607 for ECR or P. 592 for ECMG/ECG relay cable Dimensions diagram.

Specifications

Connected Controller		ECMG, ECG-B, ECR	
Motor		□25 Stepping motor	
Encoder Type		Incremental Encoder	
Drive Method		Ball screw (ø6) + belt	
Stroke	mm	50, 75, 100	
Screw lead	mm	2	8
Max. Payload k *1*2	Horizontal	5.5 (5.5)	5 (5)
	Vertical	6 (6)	0.8 (0.8)
Operation speed range * 3	mm/s	2 to 100 (100)	10 to 300 (300)
Max. Pushing Force	N	150	55
Pushing Operation Speed Range	mm/s	2 to 20	5 to 20
Repeatability	mm	±0.02	
Lost Motion	mm	0.1 or less	
Static Allowable Moment N·m		[50st] MP: 31.1, MY: 31.1, MR: 37.6	
		[75st or more]: MP: 56.2, MY: 56.2, MR: 37.6	
Motor Power Supply Voltage		24 VDC ±10% or 48 VDC ±10%	
Brake *4	Type, Power Supply Voltage	Non-excitation operating type, 24 VDC (+10%/-5%)	
	Power consumption W	1	
	Holding Force N	77	15
Insulation resistance		10 MΩ, 500 VDC	
Dielectric Strength		500 VAC for 1 minute	
Operating Ambient Temperature, Humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage Ambient Temperature, Humidity		-10 to 50°C (No freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Protection Structure		IP40	

*1 The values in ( ) are at 24 VDC.
*2 Maximum value at acceleration/deceleration of 0.3 G. Payload varies depending on acceleration/deceleration and speed. Refer to Speed and Payload for details.
*3 The maximum speed values in ( ) are at 24 VDC.
*4 Only compatible with ECMG and ECG-B.

Speed and Payload

[At 48 VDC]

[Horizontal Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	8	0.3 2	8
2	5.5		5.5	
10	5.5	5.5	5.5	5
100	5.5	5.5	5.5	5
300		5		5

[Vertical Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	8	0.3 2	8
2	6		6	
10	6	0.8	6	0.8
50	6	0.8	6	0.8
60	6	0.4	6	0.4
90	6	0.4	6	0.4
100	5.5	0.4	5.5	0.4
300		0.4		0.4

[At 24 VDC]

[Horizontal Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	8	0.3 2	8
2	5.5		5.5	
10	5.5	5.5	5.5	5
75	5.5	5.5	5.5	5
90	5.5	5.5	5	5
100	5.5	5.5	2.5	5
150		5.5		5
250		5.5		4.5
300		3		3

[Vertical Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	8	0.3 2	8
2	6		6	
10	6	0.8	6	0.8
50	6	0.8	6	0.8
60	6	0.4	6	0.4
75	4	0.4	3	0.4
90	2	0.4	2	0.4
100	1.5	0.4	1.5	0.4
200		0.4		0.4

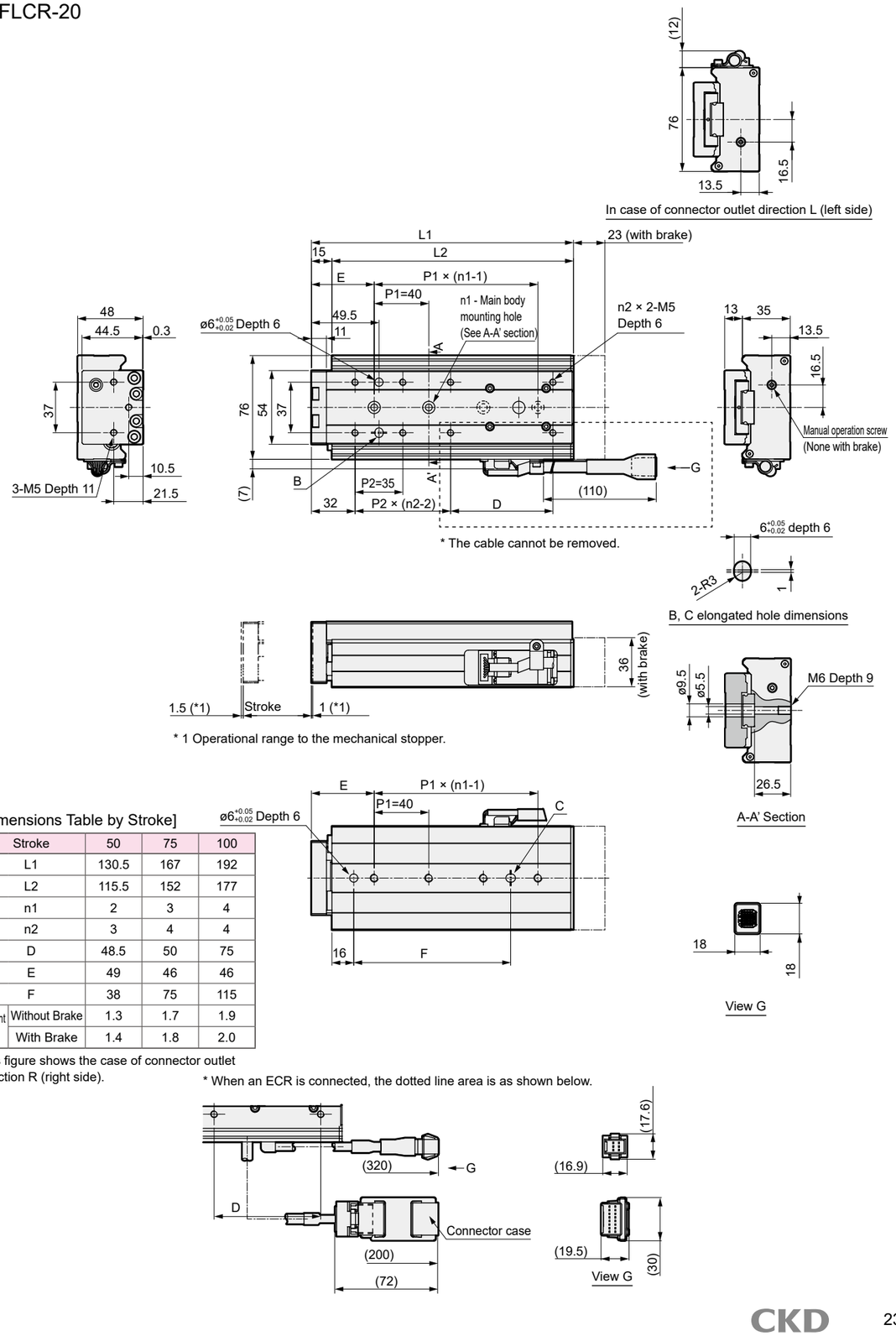
Stroke and Max. Speed

(mm/s)

Screw Lead	Power supply voltage	Stroke 50 to 100
2	48 VDC	100
	24 VDC	100
8	48 VDC	300
	24 VDC	300

Outline Dimension Drawing

● FLCR-20



[Dimensions Table by Stroke]

Stroke		50	75	100
L1		130.5	167	192
L2		115.5	152	177
n1		2	3	4
n2		3	4	4
D		48.5	50	75
E		49	46	46
F		38	75	115
Weight kg	Without Brake	1.3	1.7	1.9
	With Brake	1.4	1.8	2.0

This figure shows the case of connector outlet direction R (right side).

* When an ECR is connected, the dotted line area is as shown below.

Electric Actuator Table Type

FLCR-25

□25L stepping motor

For compatible detailed model Nos., please visit the CKD website.

Model No. Notation Method

FLCR - 25 G 02 050 N C N - L S03

❶Size

25	

❷Connected Controllers *1

G	ECMG/ECG-B
Blank	ECR

❸Screw lead

02	2 mm
06	6 mm

❹Stroke

050	50 mm
075	75 mm
100	100 mm

❺Brake

N	None
B	Yes (ECMG/ECG-B only)

❻Encoder

C	Incremental Encoder

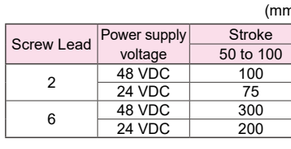
❼Connector leadout direction *2

L	Left side
R	Right side

❽Relay cable *3

N00	None
S01	Fixing cable 1 m
S03	Fixing cable 3 m
S05	Fixing cable 5 m
S10	Fixing cable 10 m
R01	Movable cable 1 m
R03	Movable cable 3 m
R05	Movable cable 5 m
R10	Movable cable 10 m

[Figure 1]



*1 Select the controller from page 529.
*2 Please refer to Figure 1.
*3 For Dimensions diagram of the relay cable, refer to P. 607 for ECR or P. 592 for ECMG/ECG.

Specifications

Connected Controller		ECMG, ECG-B, ECR	
Motor		□25L stepping motor	
Encoder Type		Incremental Encoder	
Drive Method		Ball screw (ø 10) + belt	
Stroke	mm	50, 75, 100	
Screw lead	mm	2	6
Max. Payload kg *1*2	Horizontal	11 (11)	11 (11)
	Vertical	8.5 (8.5)	3 (3)
Operation speed range *3	mm/s	2 to 100 (75)	7 to 300 (200)
Max. Pushing Force	N	210	90
Pushing Operation Speed Range	mm/s	2 to 20	5 to 20
Repeatability	mm	±0.02	
Lost Motion	mm	0.1 or less	
Static Allowable Moment N·m		[50st] MP: 65.1, MY: 65.1, MR: 116.3	
		[75st or more]: MP: 127.5, MY: 127.5, MR: 116.3	
Motor Power Supply Voltage		24 VDC ±10% or 48 VDC ±10%	
Brake *4	Type, Power Supply Voltage	Non-excitation operating type, 24 VDC (+10%/-5%)	
	Power consumption W	1	
	Holding Force N	109	38
Insulation resistance		10 MΩ, 500 VDC	
Dielectric Strength		500 VAC for 1 minute	
Operating Ambient Temperature, Humidity		0 to 40°C (no freezing) 35 to 80% RH (no condensation)	
Storage Ambient Temperature, Humidity		-10 to 50°C (No freezing) 35 to 80% RH (no condensation)	
Atmosphere		No corrosive gas, explosive gas, or dust	
Protection Structure		IP40	

*1 The values in ( ) are at 24 VDC.
*2 Maximum value at acceleration/deceleration of 0.3 G. Payload varies depending on acceleration/deceleration and speed. Refer to Speed and Payload for details.
*3 The maximum speed values in ( ) are at 24 VDC.
* 4 Only compatible with ECMG and ECG-B.

Speed and Payload

[At 48 VDC]

[Horizontal Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	0.1 6	0.3 2	0.3 6
2	11		11	
10	11	11	11	11
100	11	11	11	11
300		11		11

[Vertical Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	0.1 6	0.3 2	0.3 6
2	8.5		8.5	
10	8.5	3	8.5	3
50	8.5	3	8.5	3
60	8.5	2.5	8.5	2.5
75	7.5	2.5	7	2.5
90	7.5	2.5	6	2.5
100	7.5	2.5	4.5	2.5
150		2		2
300		1		1

[At 24 VDC]

[Horizontal Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	0.1 6	0.3 2	0.3 6
2	11		11	
10	11	11	11	11
75	11	11	11	11
200		11		11

[Vertical Installation] (kg)

Speed (mm/s)	Acceleration/Deceleration (G) 0.1 Screw Lead (mm) 2	0.1 6	0.3 2	0.3 6
2	8.5		8.5	
10	8.5	3	8.5	3
30	8.5	3	8.5	3
45	4	3	4	3
50	3.5	3	3.5	3
60	3.5	2.5	3.5	2.5
75	3.5	2.5	3.5	2.5
100		2.5		2.5
150		2		2
200		1		1

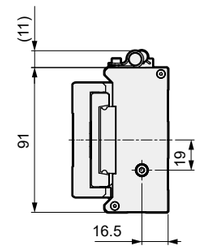
Stroke and Max. Speed

(mm/s)

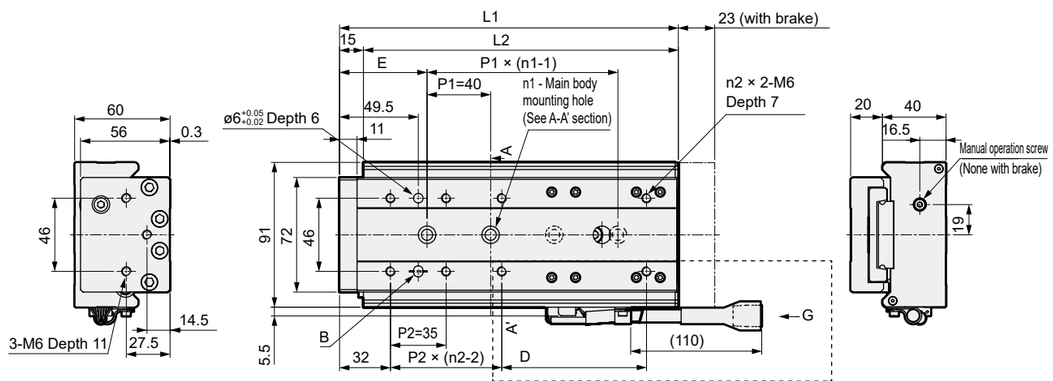
Screw Lead	Power supply voltage	Stroke 50 to 100
2	48 VDC	100
	24 VDC	75
6	48 VDC	300
	24 VDC	200

Outline Dimension Drawing

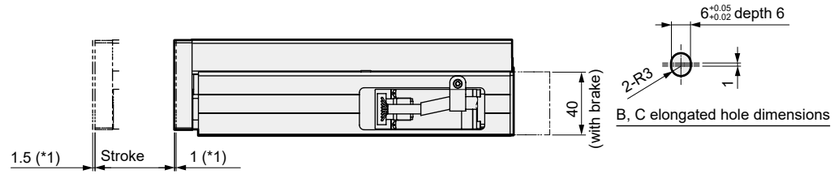
● FLCR-25



In case of connector outlet direction L (left side)



* The cable cannot be removed.

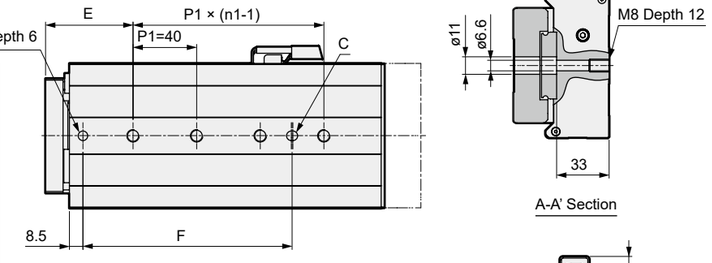


B, C elongated hole dimensions

* 1 Operational range to the mechanical stopper.

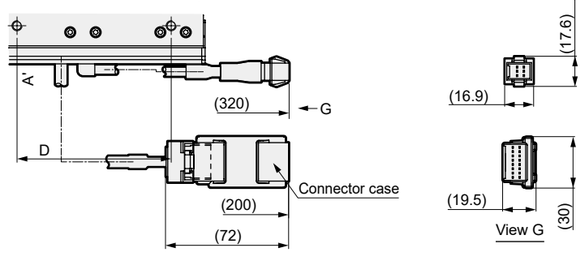
[Dimensions Table by Stroke]

Stroke	50	75	100
L1	142.5	188	213
L2	127.5	173	198
n1	2	3	4
n2	3	4	4
D	55.5	66	91
E	60.5	60	55
F	57	96.5	131.5
Weight kg: Without Brake	2.3	3.0	3.3
Weight kg: With Brake	2.5	3.2	3.5



This figure shows the case of connector outlet direction R (right side).

* When an ECR is connected, the dotted line area is as shown below.



Model Selection

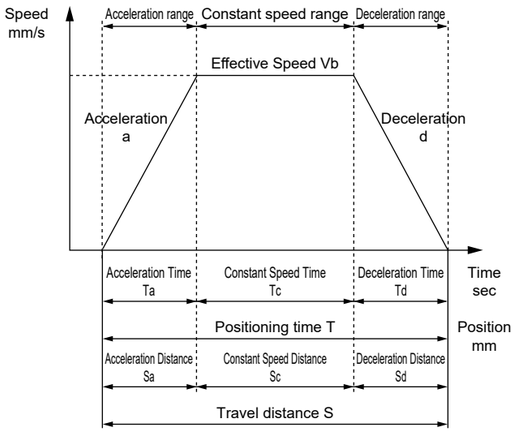
STEP1 Confirmation of Payload

The payload changes depending on the mounting orientation, screw lead, transport speed, acceleration/deceleration, and power supply voltage. Refer to the Series Variation (page 225), the specification table for each model and the Table of Payload by Speed and Acceleration/Deceleration to select the size and screw lead.

STEP2 Confirmation of Positioning Time

Calculate the positioning time for the selected product according to the example below and check if it meets the required tact time.

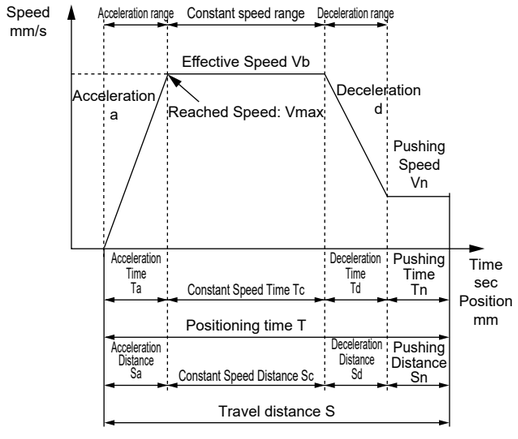
Positioning time for general transfer operations



	Content	Code	Unit	Remarks
Setting Value	Set Speed	V	mm/s	
	Set Acceleration	a	mm/s²	
	Set Deceleration	d	mm/s²	
	Travel distance	S	mm	
Calculated Value	Reached Speed	Vmax	mm/s	$= [2 \times a \times d \times S / (a + d)]^{1/2}$
	Effective Speed	Vb	mm/s	The smaller of V and Vmax
	Acceleration Time	Ta	s	= Vb / a
	Deceleration Time	Td	s	= Vb / d
	Constant Speed Time	Tc	s	= Sc / Vb
	Acceleration Distance	Sa	mm	$= (a \times Ta^2) / 2$
	Deceleration Distance	Sd	mm	$= (d \times Td^2) / 2$
	Constant Speed Distance	Sc	mm	= S - (Sa + Sd)
	Positioning Time	T	s	= Ta + Tc + Td

* Do not use at speeds that exceed the specifications.
* Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In that case, select the smaller of the set speed (V) and the reached speed (Vmax) as the effective speed (Vb).
* Use at the acceleration and deceleration of 0.3G or less. For details, please refer to the specifications P. for each model.
* Though the stabilization time differs depending on working conditions, it may take approximately 0.2s.
* 1G≈9.8 m/s².

Positioning time for pushing operations



	Content	Code	Unit	Remarks
Setting Value	Set Speed	V	mm/s	
	Set Acceleration	a	mm/s²	
	Set Deceleration	d	mm/s²	
	Travel distance	S	mm	
	Pushing Speed	Vn	mm/s	
	Pushing Distance	Sn	mm	
Calculated Value	Reached Speed	Vmax	mm/s	$=[2 \times a \times d \times (S-Sn+Vn^2/2/d)/(a + d)]^{1/2}$
	Effective Speed	Vb	mm/s	The smaller of V and Vmax
	Acceleration Time	Ta	s	= Vb / a
	Deceleration Time	Td	s	= (Vb - Vn) / d
	Constant Speed Time	Tc	s	= Sc / Vb
	Pushing Time	Tn	s	= Sn / Vn
	Acceleration Distance	Sa	mm	$= (a \times Ta^2) / 2$
	Deceleration Distance	Sd	mm	= ((Vb + Vn) × Td) / 2
	Constant Speed Distance	Sc	mm	= S - (Sa + Sd + Sn)
	Positioning Time	T	s	= Ta + Tc + Td + Tn

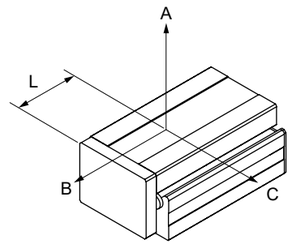
* Do not use at speeds that exceed the specifications.
* Pressing speed differs depending on the product.
* Depending on acceleration/deceleration and stroke, the trapezoid speed waveform may not be formed (the set speed may not be achieved). In this case, select the effective speed (Vb) from the set speed (V) and the achieved speed (Vmax), whichever is smaller.
* Use at the acceleration and deceleration of 0.3G or less. For details, please refer to the specifications P. for each model.
* Though the stabilization time differs depending on working conditions, it may take approximately 0.2s.
* 1G≈9.8 m/s².

STEP3 Confirmation of Allowable Overhang Length

Make sure that the load overhang length during operation is within the allowable range (P. 235 to 237).

Allowable Overhang Length

[Horizontal Installation]



[Allowable Overhang Length]

■FLCR-16

Stroke mm	Acceleration/Deceleration G	Screw Lead	Load weight kg	Overhang mm A	B	C
50	0.1	2	1	630	155	195
			2	630	75	95
			4	630	35	45
		8	1	630	135	155
			2	630	65	75
			4	340	30	35
	0.3	2	1	630	160	195
			2	630	80	95
			4	340	35	45
		8	1	475	120	120
			2	225	60	55
			3	145	40	35
75, 100	0.1	2	1	630	380	195
			2	630	185	95
			4	630	85	45
		8	1	630	325	165
			2	630	155	80
			4	630	75	35
	0.3	2	1	630	385	200
			2	630	185	95
			4	630	90	45
		8	1	630	295	145
			2	630	140	70
			3	460	90	45

■FLCR-20

Stroke mm	Acceleration/Deceleration G	Screw Lead	Load weight kg	Overhang mm A	B	C
50	0.1	2	1	645	285	380
			3	645	90	125
			5.5	645	50	65
		8	1	645	225	265
			3	645	75	85
			5.5	350	35	45
	0.3	2	1	645	285	380
			3	645	90	120
			5.5	405	50	65
		8	1	645	220	235
			3	270	70	75
			5	155	40	40
75, 100	0.1	2	1	645	580	385
			3	645	185	125
			5.5	645	95	65
		8	1	645	460	295
			3	645	145	95
			5.5	645	75	45
	0.3	2	1	645	580	385
			3	645	185	125
			5.5	645	95	65
		8	1	645	450	280
			3	645	145	90
			5	410	80	50

■FLCR-25

Stroke mm	Acceleration/Deceleration G	Screw Lead	Load weight kg	Overhang mm A	B	C
50	0.1	2	3	940	210	410
			5	940	125	245
			11	940	55	105
		6	3	940	165	245
			5	780	95	145
			11	330	40	60
	0.3	2	3	940	210	405
			5	940	125	240
			11	450	55	105
		6	3	630	165	225
			5	365	95	130
			11	150	40	55
75, 100	0.1	2	3	940	465	420
			5	940	275	245
			11	940	115	105
		6	3	940	360	300
			5	940	210	175
			11	920	90	75
	0.3	2	3	940	465	420
			5	940	275	245
			11	940	115	105
		6	3	940	360	295
			5	940	210	175
			11	445	90	70

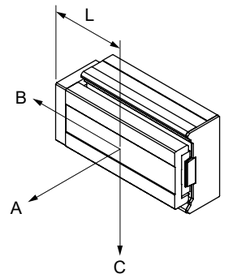
* Values are limited when the actuator operation cycle is 5 million cycles or when the operating life is shorter by 1000km.
* The overhang direction is for a single-direction load.
* dimensions A, B, and C are measured from the table top.
* Values are at maximum speed and maximum payload.
* Values may vary according to power supply voltage. Please contact us for details.
* For acceleration/deceleration and payload, refer to the Table of Payload by Speed and Acceleration/Deceleration (specifications page for each model).

L Value (Guide Block Center Distance) [mm]

Size	Stroke 50	75	100
FLCR-16	91	124	149
FLCR-20	101	127	152
FLCR-25	104	143	168

Allowable Overhang Length

[When Wall-Mounted]



[Allowable Overhang Length]

■FLCR-16

Stroke mm	Acceleration/ Deceleration G	Screw Lead	Load weight kg	Overhang mm A	B	C
50	0.1	2	1	180	145	630
			2	80	65	630
			4	30	25	540
		8	1	140	125	630
			2	60	55	600
			4	20	20	230
	0.3	2	1	185	150	630
			2	85	65	630
			4	30	25	300
		8	1	110	110	440
			2	45	45	190
			3	25	25	110
75, 100	0.1	2	1	180	350	630
			2	80	160	630
			4	30	60	630
		8	1	150	295	630
			2	65	130	630
			4	20	45	630
	0.3	2	1	185	360	630
			2	80	160	630
			4	30	60	630
		8	1	130	265	630
			2	55	115	620
			3	30	65	370

■FLCR-20

Stroke mm	Acceleration/ Deceleration G	Screw Lead	Load weight kg	Overhang mm A	B	C
50	0.1	2	1	365	275	645
			3	110	80	645
			5.5	50	35	645
		8	1	255	215	645
			3	70	60	565
			5.5	30	25	245
	0.3	2	1	365	275	645
			3	110	80	645
			5.5	50	35	365
		8	1	225	210	645
			3	60	55	235
			5	30	25	115
75, 100	0.1	2	1	370	560	645
			3	110	165	645
			5.5	50	75	645
		8	1	280	440	645
			3	80	125	645
			5.5	30	50	645
	0.3	2	1	370	560	645
			3	110	165	645
			5.5	50	75	645
		8	1	270	430	645
			3	75	120	640
			5	35	60	335

■FLCR-25

Stroke mm	Acceleration/ Deceleration G	Screw Lead	Load weight kg	Overhang mm A	B	C
50	0.1	2	3	390	200	940
			5	225	115	940
			11	85	45	850
		6	3	230	150	940
			5	130	85	680
			11	45	30	230
	0.3	2	3	385	200	940
			5	220	115	940
			11	85	45	415
		6	3	215	150	600
			5	120	85	335
			11	40	25	115
75, 100	0.1	2	3	400	445	940
			5	225	250	940
			11	85	95	940
		6	3	285	335	940
			5	155	190	940
			11	55	65	700
	0.3	2	3	400	445	940
			5	225	250	940
			11	85	95	940
		6	3	280	335	940
			5	155	190	940
			11	55	65	370

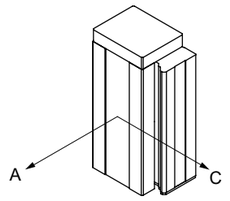
* Values are limited when the number of actuator operations is 5 million cycles or when the operating life is shorter by 1000 km.
* The overhang direction is for a single-direction load.
* dimensions A, B, and C are measured from the table top.
* Values are at maximum speed and maximum payload.
* Values may vary according to power supply voltage. Please contact us for details.
* For acceleration/deceleration and payload, refer to the Table of Payload by Speed and Acceleration/ Deceleration (specifications page for each model).

L Value (Guide Block Center Distance) [mm]

Size	Stroke 50	75	100
FLCR-16	91	124	149
FLCR-20	101	127	152
FLCR-25	104	143	168

Allowable Overhang Length

[Vertical Installation]



[Allowable Overhang Length]

■FLCR-16

Stroke mm	Acceleration/ Deceleration G	Screw Lead	Load weight kg	Overhang mm A	C
50	0.1	2	1	160	160
			2	70	70
			4	30	30
		8	0.3	520	510
			0.4	425	420
			0.5	335	335
	0.3	2	1	160	160
			2	70	70
			4	30	30
		8	0.3	520	510
			0.4	425	420
			0.5	335	335
75, 100	0.1	2	1	410	410
			2	195	195
			4	95	90
		8	0.3	630	630
			0.4	630	630
			0.5	630	630
	0.3	2	1	410	410
			2	195	195
			4	95	95
		8	0.3	630	630
			0.4	630	630
			0.5	630	630

■FLCR-20

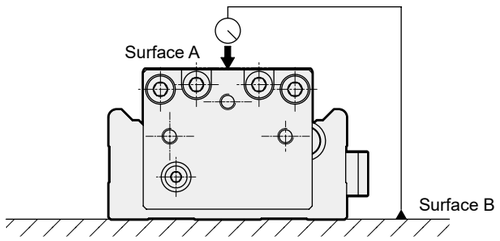
Stroke mm	Acceleration/ Deceleration G	Screw Lead	Load weight kg	Overhang mm A	C
50	0.1	2	1	270	265
			2	130	125
			4	60	55
		8	0.3	645	645
			0.5	615	610
			0.8	375	375
	0.3	2	1	270	265
			2	130	125
			4	60	60
		8	0.3	645	645
			0.5	610	610
			0.8	375	375
75, 100	0.1	2	1	575	570
			2	285	280
			4	140	135
		8	0.3	645	645
			0.4	645	645
			0.5	645	645
	0.3	2	1	575	570
			2	285	280
			4	140	140
		8	0.3	645	645
			0.4	645	645
			0.5	645	645

■FLCR-25

Stroke mm	Acceleration/ Deceleration G	Screw Lead	Load weight kg	Overhang mm A	C
50	0.1	2	2	315	310
			4	155	155
			8.5	65	65
		6	1	525	490
			2	275	265
			3	210	210
	0.3	2	2	315	310
			4	155	155
			8.5	65	65
		6	1	520	485
			2	270	260
			3	210	210
75, 100	0.1	2	2	730	725
			4	375	375
			8.5	170	170
		6	1	940	940
			2	645	625
			3	505	500
	0.3	2	2	730	725
			4	375	375
			8.5	170	170
		6	1	940	940
			2	640	620
			3	505	500

* Values for which the number of actuator operations is limited to 5 million cycles or with a shorter service life of 1000 km.
* The overhang direction is for a single-direction load.
* dimensions A and C are measured from the table top.
*Values are at maximum speed and maximum payload.
*Values may vary according to power supply voltage. Please contact us for details.
* For acceleration/deceleration and payload, refer to the Table of Payload by Speed and Acceleration/Deceleration (specification page for each model).

Slider parallelism *Reference value

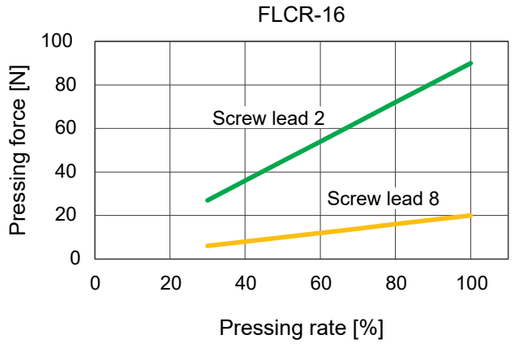


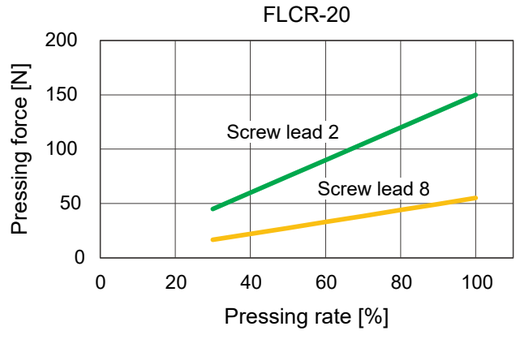
Parallelism of surface A with respect to surface B [mm]

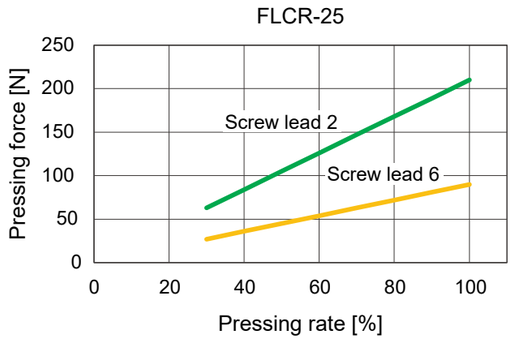
Size	Stroke		
	50	75	100
FLCR-16	0.070	0.105	0.135
FLCR-20	0.075	0.115	0.140
FLCR-25	0.080	0.110	0.140

* This is the parallelism when the product is fixed to a surface plate.

Pushing Force and Pushing Rate





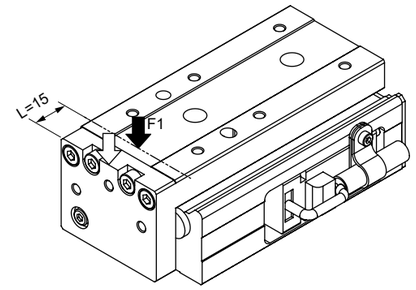


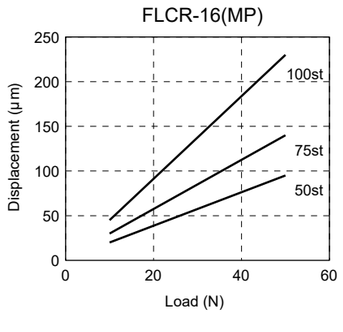
* Pressing force and pressing rate indicate a guideline. Individual motor differences and variations in mechanical efficiency may result in errors even at the same pressing rate.

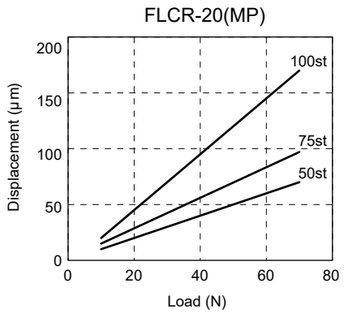
Table deflection *Reference value

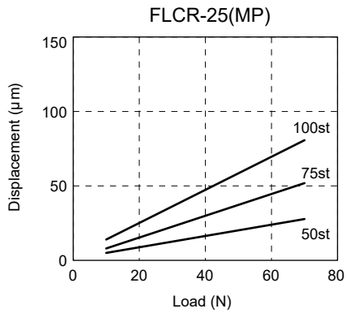
[Table deflection due to pitching moment MP]

Displacement at the table tip when a load (F1) is applied to the table tip



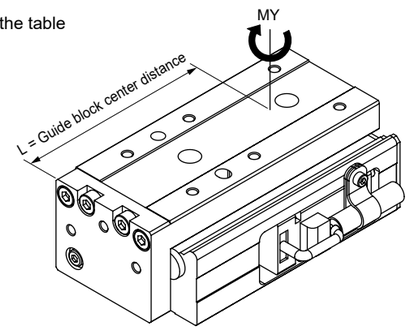


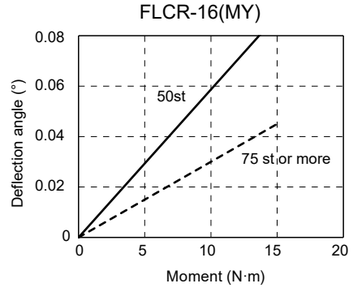


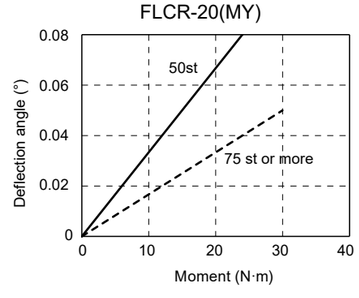


[Table deflection due to yawing moment MY]

Displacement angle of the table when a rotational moment (MY) is applied to the table







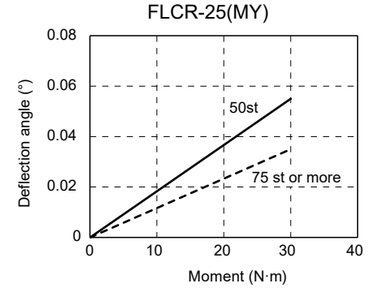
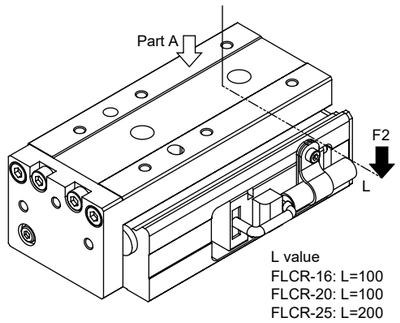


Table deflection *Reference value

[Table deflection due to rolling moment MR]

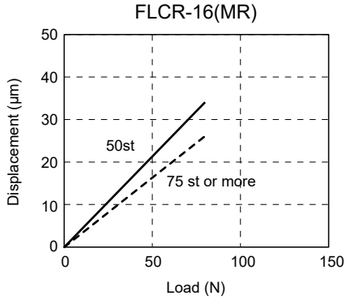
Displacement at the table end (part A) when a load (F2) is applied at a position L mm away from the actuator center



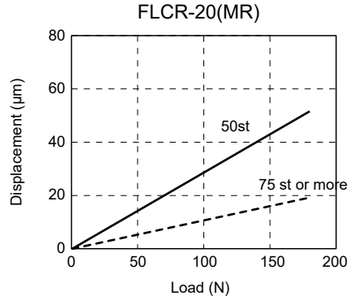
L value
FLCR-16: L=100
FLCR-20: L=100
FLCR-25: L=200

Plate (material: Iron) is attached when measuring.
w=12, t=19

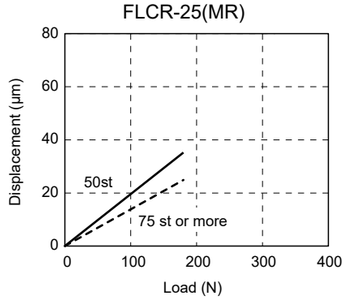
FLCR-16(MR)



FLCR-20(MR)



FLCR-25(MR)



MEMO

F Series
FLCR
FGRC
FLSH
FFLD
Ending

To Use This Product Safely

Be sure to read this before use.
Refer to Intro 17 for general information on electric actuators.

Individual Precautions: Electric actuator FLCR Series

During Design / Selection

1. Common

DANGER

■ Do not use in places where dangerous goods such as ignitable substances, inflammable substances or explosives are present.
There is a risk of ignition, fire, or explosion.

■ Ensure that the product is free of water droplets and oil droplets.
This can cause fire or malfunction.

■ When mounting the product, be sure to securely hold and fix (including the workpiece) it.
There is a risk of injury due to the product tipping over, falling, malfunctioning, etc. As a general rule, please fix the product using all mounting holes.

Warning

■ Use within the product's specified operating range.

■ Provide a safety fence to prevent entry to the movable range of the electric actuator. In addition, install the emergency stop button switch as a device in a location which is easy to operate in an emergency situation. The emergency stop push button must have a structure and wiring that does not automatically reset and cannot be carelessly reset by a person.

■ If the moving workpiece poses a possible risk to personnel or if fingers could be caught, take safety measures.

■ It may take several seconds to complete an emergency stop, depending on the travel speed and load.

■ If the machine stops in the event of a system failure such as emergency stop or power outage, equipment damage or injury do not occur.Design a safety circuit or device.

■ Install indoors with low humidity.
In places where it is exposed to rainwater or in humid places (humidity of 85% or more, places with condensation), there is a risk of electric leakage or fire. Oil drops and oil mist are also strictly prohibited. Use in such an environment will cause damage and malfunction.

■ Make sure that the product is D type grounded (ground resistance of 100 Ω or less).
If an electric leakage occurs, there is a risk of electric shock or malfunction.

■ Use and store in accordance with the working/storage temperatures and where there is no condensation.
(Storage Temperature: -10°C to 50°C, Storage Humidity: 35% to 80%, Operating Temperature: 0°C to 40°C, Operating Humidity: 35% to 80%) It may cause abnormal shutdown of the product or decrease its service life. Ventilate if heat builds up.

■ Do not use this product in a location where the ambient temperature could suddenly change and cause dew to condense.

■ Install in a location free from direct sunlight, dust, and corrosive gas/explosive gas/inflammable gas/combustibles, and away from heat sources. In addition, this product has not been considered for chemical resistance.
This can cause malfunction, explosion, or fire.

■ Use and store in locations free from strong electromagnetic waves, ultraviolet rays, or radiation.
This can cause malfunction or failure.

■ Take possibility of power source breakdown into consideration.
Take measures to ensure that even if a failure occurs in the power source, it does not cause injury or damage to people or equipment.

■ Take the operational status into consideration if the machine is reactivated after emergency or abnormal stops.
Design it so that restarting does not cause harm to people or equipment. Also, if it is necessary to reset the electric actuator to the starting position, design a safe control device. Consider the possibility of failure of the installed motor. Take measures to ensure that even if a failure occurs in the power source, it does not cause harm to people or equipment.

■ Avoid using this product where vibration and impact are present.

■ Do not apply a load to the product that is greater than or equal to the allowable load listed in the materials for selection.

■ When installing the actuator in a direction other than horizontal, select the-type with brake.
If it does not have a brake, when the servo is OFF (including emergency stop and alarm) or when the power is OFF, the movable part may fall, causing injury or damage to the workpiece.

■ The brakes are not sufficient to completely retain the actuator in all situations. Be sure to achieve a balanced state or install a mechanical lock mechanism where safety must be guaranteed, such as when performing maintenance in an application where the table moves with an unbalanced load or when stopping the machine for a long period of time.

Caution

■ Never disassemble or modify the product.

■ The customer is responsible for confirming the compatibility of CKD products with the customer's systems, machines and equipment.

■ For UL compliance, use a Class2 power supply unit conforming to UL1310 for the combination DC power supply.

■ Set up the wiring so as not to apply inductive noise.
Avoid places where large currents or strong magnetic fields are generated. Do not use the same wiring as the power lines for large motors other than this product. Do not use the same wiring as the inverter power supply and wiring part used for robots, etc., apply a frame ground to the power supply, and insert a filter in the output part.

■ Be sure to separate the power supply of the output of this product and the power supply of inductive loads that generate surges, such as solenoid valves and relays.
If the power supply is shared, surge current will flow into the output part, causing damage. If a separate power supply cannot be used, connect a surge absorbing element directly in parallel to all inductive loads.

■ Select a power supply which provides ample capacity based on the number of installed products. If there is not enough capacity, it may malfunction.

■ Since a fixing cable cannot be used in applications where it is repeatedly bent, fix it so that it does not move easily. Use a movable cable in places where it is repeatedly bent.

■ Fixed/movable Use cables with a bending radius of 63 mm or more.
The bending radius cannot accommodate bending of the connector part, so it is recommended to fix it near the connector.

■ The origin position is recognized when the power supply is turned ON. If an external stopper or holding mechanism (brake, etc.) is attached, an unintended position may be recognized as the origin position. After turning on the power, please pay attention to the placement of external stoppers, etc., so that the home position can be reliably detected.

■ Use a cable within 10 m to connect the IF connector.

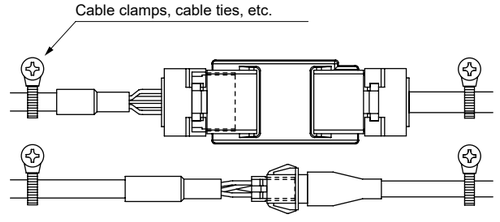
■ Select a model that has sufficient power to grip the workpiece weight.

■ Select a model that has sufficient opening/closing width for the workpiece size. Variations in the opening/closing width and workpieces can cause the gripping position to become unstable. Also, when opening from gripping operation, increase the stroke by the amount of backlash.

■ Use with a load that does not exceed the specified range. If used outside of the specified range, an excessive eccentric load will be applied to the guide. This can cause chattering in the guide, reduce accuracy, and/or reduce the operating life.

■ Do not hold the product's movable parts or cables during transportation and installation.
This can cause injury or disconnection.

■ Do not move the cable leading out of the actuator. Fix the cable part. Furthermore, use cables with a bending radius of 40 mm or more.



For precautions regarding mounting, installation, adjustment, operation, and maintenance, please refer to the CKD Equipment Product Site (https: //www.ckd.co.jp/kiki/en/) → 'model No.' → Instruction Manual

FLCR Series Model Selection Checklist → CKD (Contact)

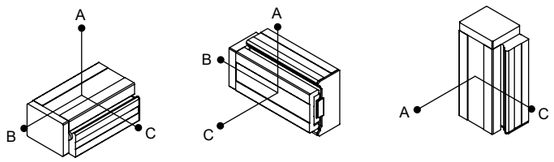
Fill in the form and send to the nearest CKD Sales Office. We will reply with the model selection results.

MEMO

Customer:

Company		Department	
Name		E-mail	
TEL		FAX	

Selection Conditions:

Desired Model		
Basic Specifications	Max. stroke: mm, Ball screw lead: mm	
Operating Conditions	Travel stroke: mm, travel time: s	
	Set speed: mm/s	
	Set acceleration/deceleration: mm/s^2 (set acceleration/deceleration time: s)	
	Repeatability: ± mm	
Load Conditions	Load weight: kg	
	Mounting orientation: Horizontal / Wall-mounted / Vertical / Ceiling-mounted / Other	
	Distance from table center to load's center of gravity: A direction: mm B direction: mm C direction: mm * B is the distance from the center of the guide block (refer to pages 235 and 236).	
	Pushing load: No / Yes (N) Operating / Stopped Direction of the force applied to table center ( )	
Usage Environment	Ambient Temperature: °C, ambient humidity: %	
	Atmosphere:	
Interface Specifications	Parallel I/O / IO-Link / CC-Link / EtherCAT / EtherNet/IP	
Special Notes		

F Series
FLCR
FGRC
FLSH
FFLD
Ending