FGRC

Rotary

**Electric actuator
Motor specification**

FLSH

FLCR

FGRC

ECR
(controller)

ECG-B
(controller)

Safety
precautions

CONTENTS

FGRC Series variation

Model No.	Motor size	Max. torque (N·m)	Max. angular speed (deg/s)
FGRC-10	☐20	0.89	
FGRC-30	☐25	2.71	200
FGRC-50	☐35	4.66	

CKD

FLSH

FLCR

FGRC

ECR (controller)

ECG-B (controller)

Safety precautions
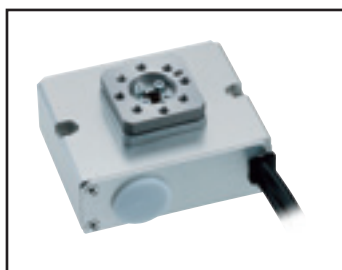
Electric actuator Rotary

FGRC-10

☐ 20 stepper motor

For applicable controller ECR, 48 V and 24 V power supplies can be used.
For applicable controller ECG, 24 V power supplies can be used.

CE   RoHS

How to order

FGRC - 10 G 360 N C N - F S03

Ⓐ   Ⓑ   Ⓒ   Ⓓ

Ⓐ Size

10

Ⓑ Applicable controller *1

G	ECG
Blank	ECR

Ⓒ Encoder

C	Incremental encoder

Ⓓ Relay cable *2

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 45 or page 59.
*2 Refer to page 55 or page 70 for relay cable dimensions.

Specifications

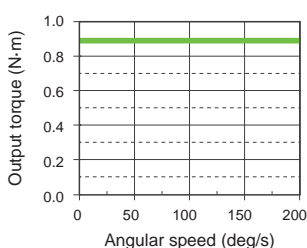| Motor	☐ 20 stepper motor
Encoder type	Incremental encoder
Drive method	Worm gear + belt
Travel angle *1	360
Max. output torque *2 N·m	0.89
Repeatability deg	±0.05
Backlash *3 deg	±0.3
Lost motion deg	0.3 or less
Operation angular speed range deg/s	20 to 200
Pressing operation angular speed range deg/s	20 to 30
Allowable moment of inertia *2 kg·m²	0.0057
Allowable thrust load N	80
Allowable radial load N	80
Allowable moment N·m	2.5
Motor power supply voltage	24 VDC ±10% or 48 VDC ±10%
Motor section maximum instantaneous current A	1.4
Insulation resistance	10 MΩ, 500 VDC
Withstand voltage	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
Degree of protection	IP40
Weight kg	0.65

*1 Movable angle is up to 359.9° via travel instructions.
*2 Rotation torque and allowable moment of inertia change in accordance with angular speed and angular acceleration/deceleration. Refer to the table at right for details.
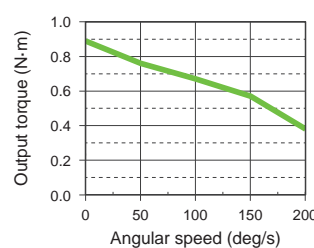*3 When stopping precision is required, stop with an external stopper, etc., and complete positioning with pressing operation.
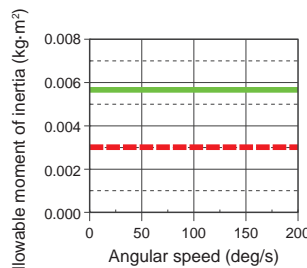
Angular speed and output torque
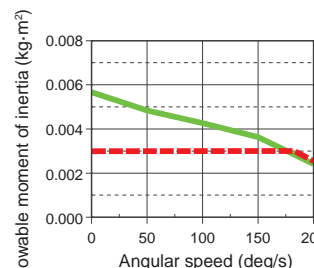
[At 48 VDC]

[At 24 VDC]

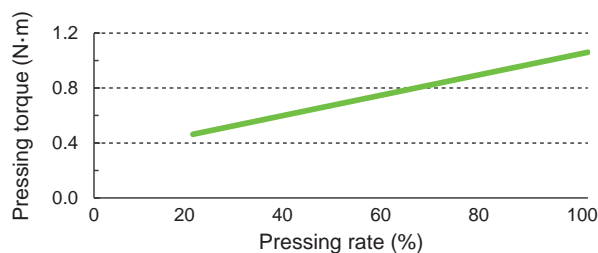## Angular speed and allowable moment of inertia

[At 48 VDC]

[At 24 VDC]

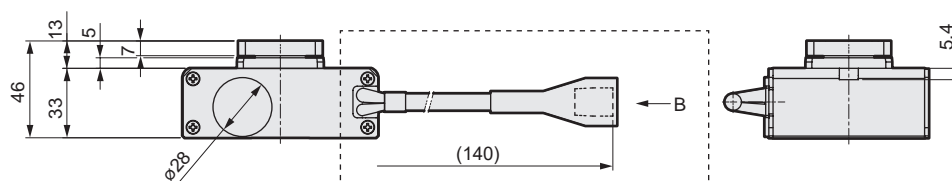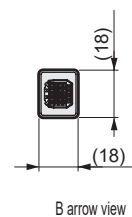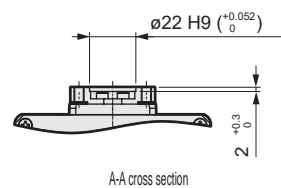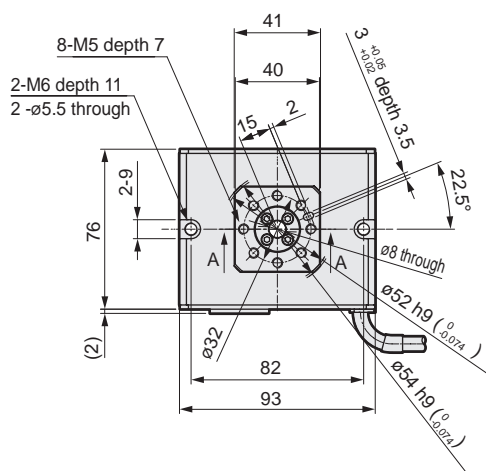* When angular acceleration/deceleration is greater than 1700deg/s², operate below the dashed line.
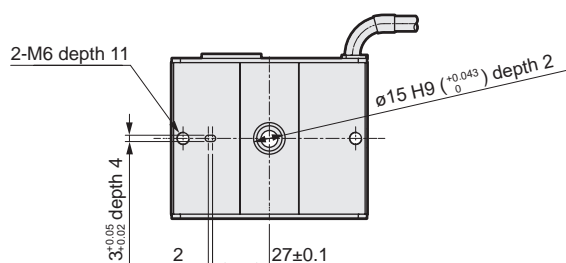
Pressing torque

* The pressing torque and pressing rate are merely guidelines. Individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.

● FGRC-10

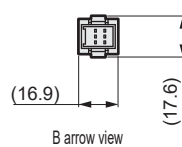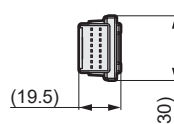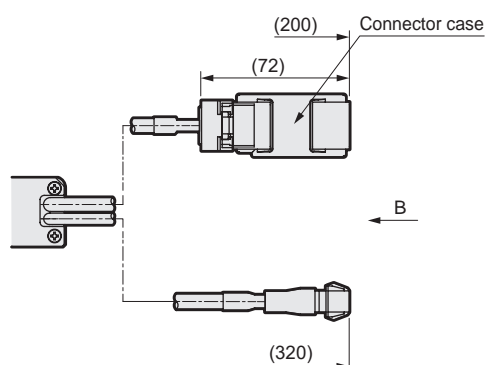8-M5 depth 7
2-M6 depth 11
2 -ø5.5 through
41
40
15
2
$3^{+0.05}_{+0.02}$ depth 3.5
22.5°
2-9
76
A
A
ø8 through
ø52 h9 $\binom{0}{-0.074}$
ø32
82
93
(2)
ø54 h9 $\binom{0}{-0.074}$

ø22 H9 $\binom{+0.052}{0}$
$2^{+0.3}_{0}$
A-A cross section

(18)
(18)
B arrow view

13
5
7
46
33
ø28
B
(140)
5.4

* The cable cannot be removed.

2-M6 depth 11
ø15 H9 $\binom{+0.043}{0}$ depth 2
$3^{+0.05}_{-0.02}$ depth 4
2
27±0.1

* The dotted line is as shown below when connecting ECR.

(200)
Connector case
(72)
B
(320)

(19.5)
(30)

(16.9)
(17.6)
B arrow view

The FGRC Series detects the origin position by detecting a proximity sensor located in the actuator. Therefore, depending on the zero point return start position, the actuator may move by more than one rotation during zero point return. With FGRC-10, after detecting a proximity sensor, the actuator operates within the range of ±45deg with the sensor as its center. After that, the zero point return operation is completed.

Position of origin

Proximity sensor detection range

Origin return starting position
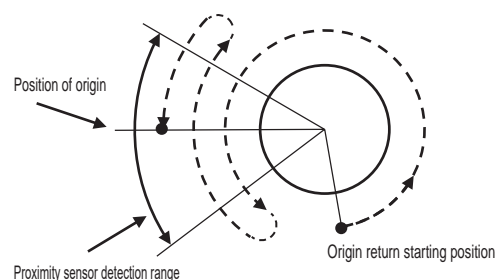
*The angle at which the unit operates around the sensor varies somewhat for each product due to factors such as how the sensor is fixed.
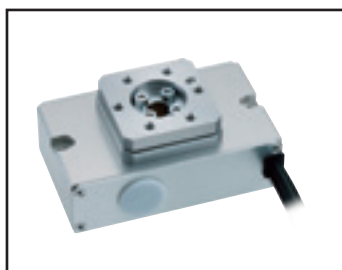
Electric actuator Rotary

FGRC-30

□ 25 stepper motor

For applicable controller ECR, 48 V and 24 V power supplies can be used.
For applicable controller ECG, 24 V power supplies can be used.

CE RoHS

How to order

FGRC	-	30	G	360 N	C	N - F	S03
		Ⓐ	Ⓑ		Ⓒ		Ⓓ

Ⓐ Size

30

Ⓑ Applicable controller *1

G	ECG
Blank	ECR

Ⓒ Encoder

C	Incremental encoder

Ⓓ Relay cable   *2

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 45 or page 59.
*2 Refer to page 55 or page 70 for relay cable dimensions.

Specifications

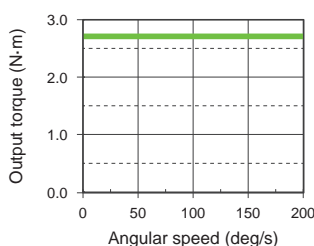| Motor	□ 25 stepper motor
Encoder type	Incremental encoder
Drive method	Worm gear + belt
Travel angle *1	360
Max. output torque *2 N·m	2.71
Repeatability deg	±0.05
Backlash *3 deg	±0.2
Lost motion deg	0.3 or less
Operation angular speed range deg/s	20 to 200
Pressing operation angular speed range deg/s	20 to 30
Allowable moment of inertia *2 kg·m²	0.0173
Allowable thrust load N	200
Allowable radial load N	200
Allowable moment N·m	5.5
Motor power supply voltage	24 VDC ±10% or 48 VDC ±10%
Motor section maximum instantaneous current A	3
Insulation resistance	10 MΩ, 500 VDC
Withstand voltage	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
Degree of protection	IP40
Weight kg	1.05

*1 Movable angle is up to 359.9° via travel instructions.
*2 Rotation torque and allowable moment of inertia change in accordance with angular speed and angular acceleration/deceleration. Refer to the table at right for details.
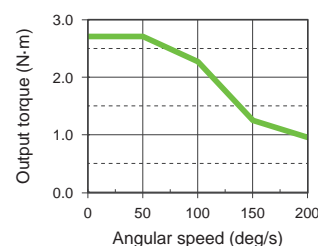*3 When stopping precision is required, stop with an external stopper, etc., and complete positioning with pressing operation.

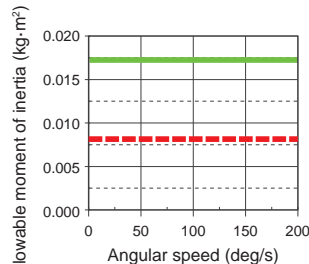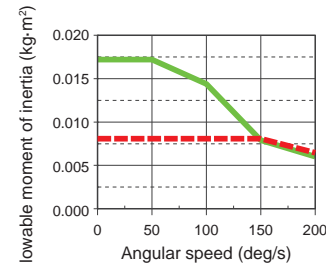## Angular speed and output torque

[At 48 VDC]

[At 24 VDC]

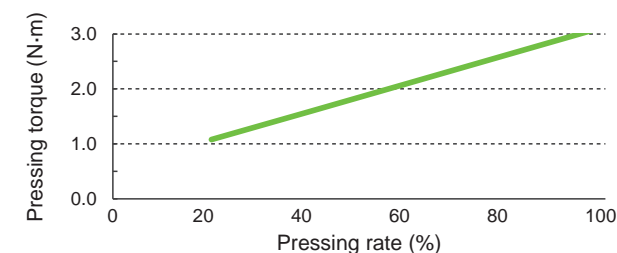## Angular speed and allowable moment of inertia

[At 48 VDC]

[At 24 VDC]

* When angular acceleration/deceleration is greater than 1700deg/s², operate below the dashed line.
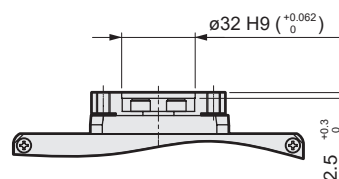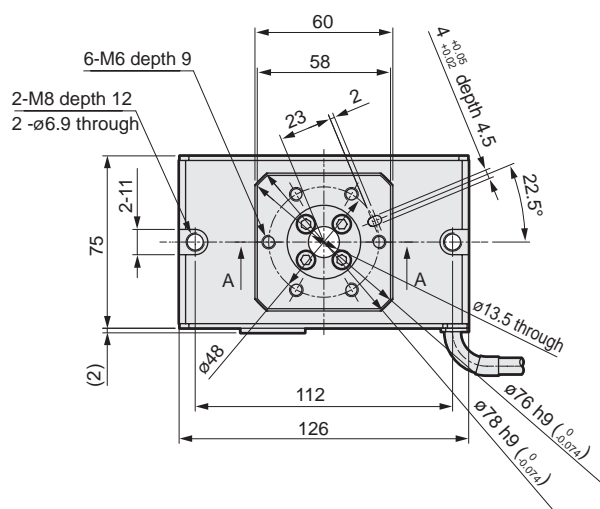
Pressing torque

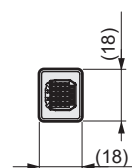* The pressing torque and pressing rate are merely guidelines. Individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.
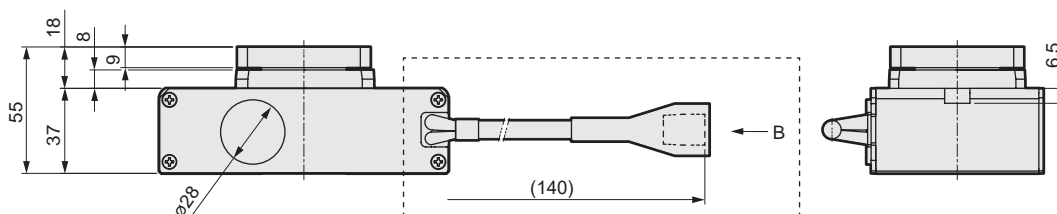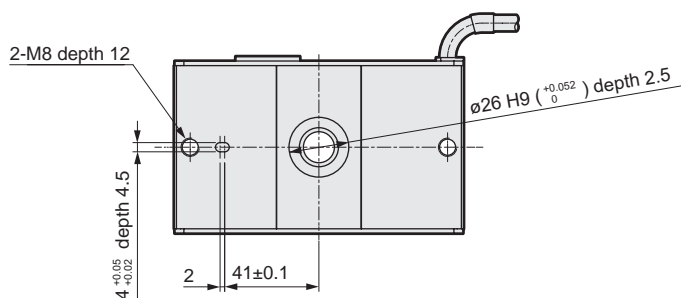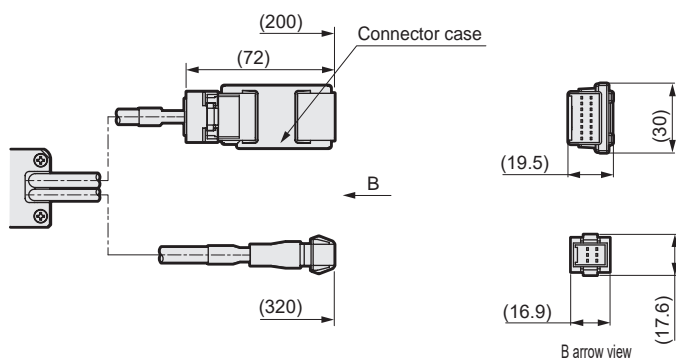
CKD

Dimensions

● FGRC-30

6-M6 depth 9
2-M8 depth 12
2 -ø6.9 through
4 +0.05 +0.02 depth 4.5
22.5°
60
58
23
2
2-11
75
(2)
ø48
112
126
ø13.5 through
ø76 h9 (0 -0.074)
ø78 h9 (0 -0.074)

ø32 H9 (+0.062 0)
2.5 +0.3 0

A-A cross section

(18)
(18)

B arrow view

18
8
9
55
37
ø28

(140)

B

6.5

* The cable cannot be removed.

2-M8 depth 12
ø26 H9 (+0.052 0) depth 2.5
4 +0.05 +0.02 depth 4.5
2
41±0.1

* The dotted line is as shown below when connecting ECR.

(200)
(72)
Connector case

B

(320)

(19.5)
(30)

(16.9)
(17.6)

B arrow view

The FGRC Series detects the origin position by detecting a proximity sensor located in the actuator. Therefore, depending on the zero point return start position, the actuator may move by more than one rotation during zero point return. With FGRC-30, after detecting a proximity sensor, the actuator operates within the range of ±35deg with the sensor as its center. After that, the zero point return operation is completed.

Position of origin

Proximity sensor detection range

Origin return starting position
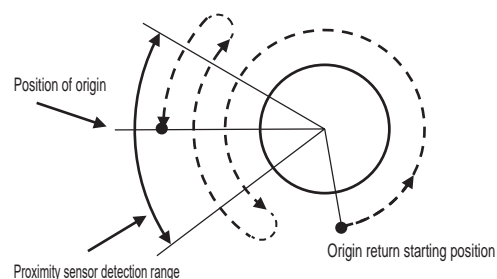
*The angle at which the unit operates around the sensor varies somewhat for each product due to factors such as how the sensor is fixed.

FLSH

FLCR

FGRC

ECR (controller)

ECG-B (controller)

Safety precautions

FLSH
FLCR
FGRC
ECR (controller)
ECG-B (controller)
Safety precautions

Electric actuator Rotary

FGRC-50

☐ 35 stepper motor

For applicable controller ECR, 48 V and 24 V power supplies can be used.
For applicable controller ECG, 24 V power supplies can be used.

CE RoHS

How to order

FGRC - **50** **G** 360 N **C** N - F **S03**

Ⓐ Ⓑ Ⓒ Ⓓ

Ⓐ Size
50

Ⓑ Applicable controller *1	
G	ECG
Blank	ECR

Ⓒ Encoder	
C	Incremental encoder

Ⓓ Relay cable	*1*2
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 45 or page 59.
*2 Refer to page 55 or page 70 for relay cable dimensions.

Specifications

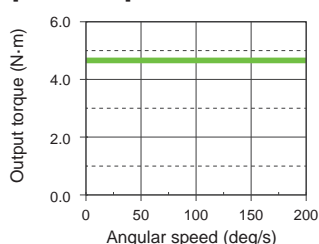| Motor	☐ 35 stepper motor
Encoder type	Incremental encoder
Drive method	Worm gear + belt
Travel angle *1	360
Max. output torque *2 N·m	4.66
Repeatability deg	±0.05
Backlash *3 deg	±0.2
Lost motion deg	0.3 or less
Operation angular speed range deg/s	20 to 200
Pressing operation angular speed range deg/s	20 to 30
Allowable moment of inertia *2 kg·m²	0.0297
Allowable thrust load N	450
Allowable radial load N	320
Allowable moment N·m	10
Motor power supply voltage	24 VDC ±10% or 48 VDC ±10%
Motor section maximum instantaneous current A	4.2
Insulation resistance	10 MΩ, 500 VDC
Withstand voltage	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
Degree of protection	IP40
Weight kg	1.85

*1 Movable angle is up to 359.9° via travel instructions.
*2 Rotation torque and allowable moment of inertia change in accordance with angular speed and angular acceleration/deceleration. Refer to the table at right for details.
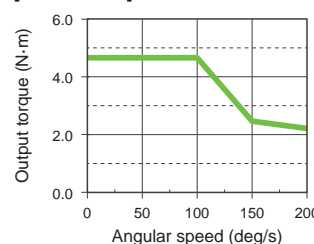*3 When stopping precision is required, stop with an external stopper, etc., and complete positioning with pressing operation.
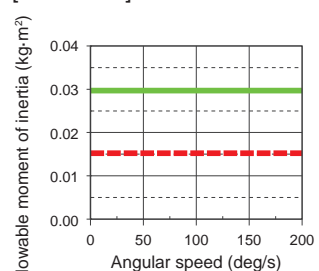
Angular speed and output torque
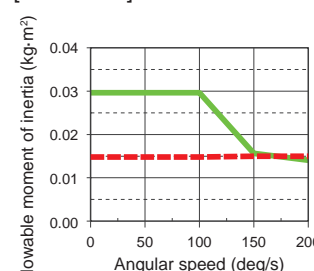
[At 48 VDC]

[At 24 VDC]

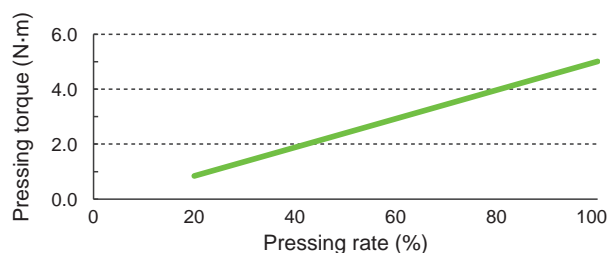## Angular speed and allowable moment of inertia

[At 48 VDC]

[At 24 VDC]

* When angular acceleration/deceleration is greater than 1700deg/s², operate below the dashed line.
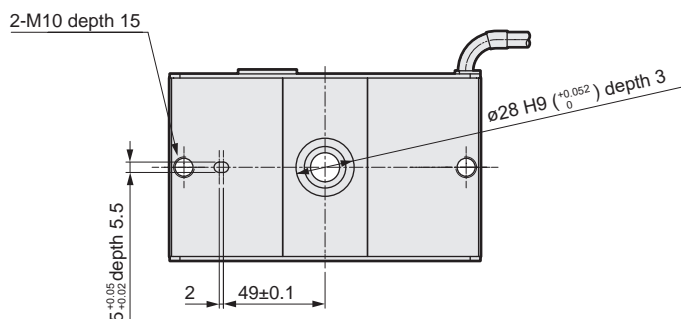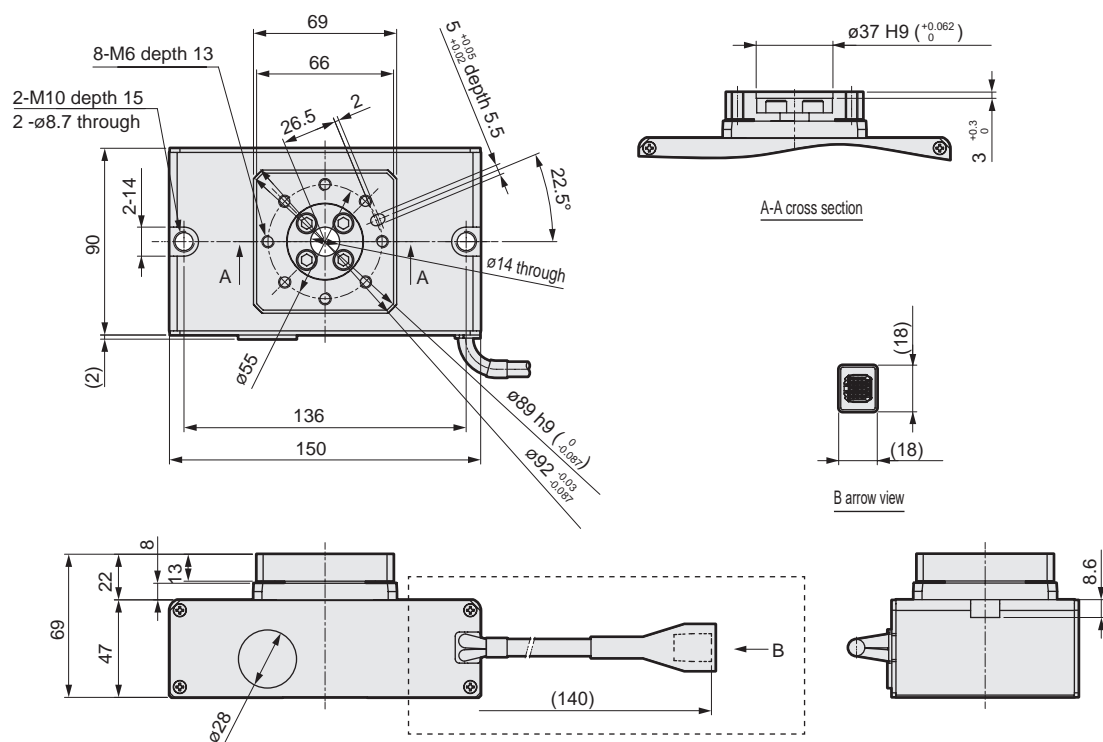
Pressing torque

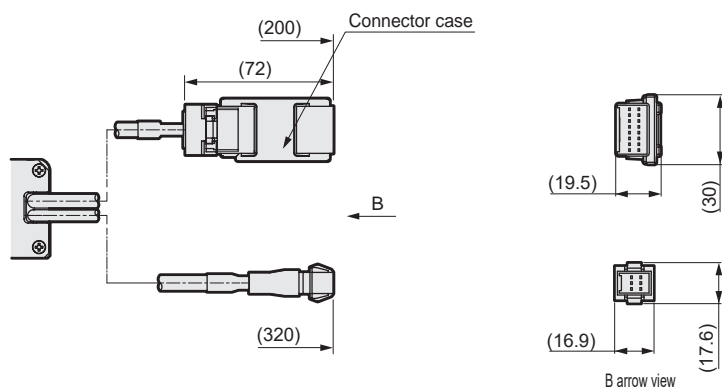* The pressing torque and pressing rate are merely guidelines.
  Individual motor differences and variations in mechanical efficiency may result in differing actual values, even at the same pressing rate.

CKD

Dimensions

● FGRC-50

8-M6 depth 13

2-M10 depth 15
2 -ø8.7 through

69

66

26.5

2

$5\,^{+0.05}_{+0.02}$ depth 5.5

2-14

90

22.5°

A

A

ø14 through

ø55

ø89 h9 $(\,^{0}_{-0.087}\,)$

ø92 $^{-0.03}_{-0.087}$

(2)

136

150

ø37 H9 $(\,^{+0.062}_{0}\,)$

A-A cross section

$3\,^{+0.3}_{0}$

(18)

(18)

B arrow view

8

22

13

69

47

ø28

8.6

B

(140)

* The cable cannot be removed.

B

2-M10 depth 15

$5\,^{+0.05}_{+0.02}$ depth 5.5

2

49±0.1

ø28 H9 $(\,^{+0.052}_{0}\,)$ depth 3

The FGRC Series detects the origin position by detecting a proximity sensor located in the actuator. Therefore, depending on the zero point return start position, the actuator may move by more than one rotation during zero point return. With FGRC-50, after detecting a proximity sensor, the actuator operates within the range of ±25deg with the sensor as its center. After that, the zero point return operation is completed.
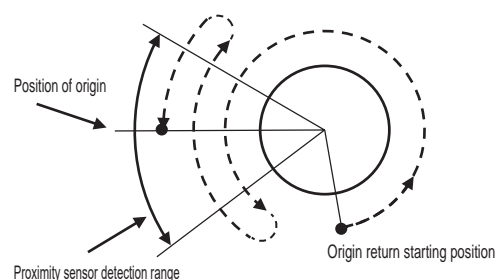
Position of origin

Origin return starting position

Proximity sensor detection range

*The angle at which the unit operates around the sensor varies somewhat for each product due to factors such as how the sensor is fixed.

* The dotted line is as shown below when connecting ECR.

(200)

Connector case

(72)

B

(320)

(19.5)

(30)

B arrow view

(16.9)

(17.6)

B arrow view

FLSH

FLCR

FGRC

ECR
(controller)

ECG-B
(controller)

Safety
precautions