

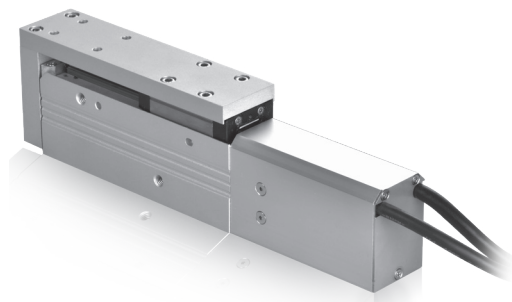
EQX series Electric Actuator

Product features/ Code of order

CHELIC

Feature

- Rolling ball screw moving type
- Close-Loop step motor
- High precision



Specification

Item \ Model		10	
Gripper stroke mm		25, 50, 75, 100	
Lead mm		1	2
Max. thrust N		466	230
Work load kg	Horizontal	6	5.2
	Vertical	2	1.7
Max speed mm/s		50	0~1
Actuation type		Ball screw	
Ambient and fluid temperature ° C		5~40	
Operating humidity range %		35~85	
Motor size		25 □	
Position repeatability mm		±0.02	
Idling stroke mm		0.2 or less	
Clearance mm		0.2 or less	

Note: 1. Idling stroke: Reference value when correcting the error caused by reciprocating motion.

2. The speed and thrust will change base on the length of the wire, load weight and mounting conditions...etc. If the length of the wire over 5m, the speed and thrust will reduce 10% per 5m.

3. If the load weight over the recommended value, the lifetime will shorter.

Code of order **EQX - 10 - 50 - 03 - 1 - P**

1 2 3 4 5

1	Mark	Motor size □
	10	25

2	Mark	Stroke(mm)
	25	25
	50	50
	75	75
	100	100

3	Mark	Wire length(m)
	01	1
	03	3
	05	5
	10	10

● Standard: 3M

4	Mark	Lead
	1	1
	2	2

5	Mark	Actuator
	P	P-servo

● Standard component Refer to P6-1.89

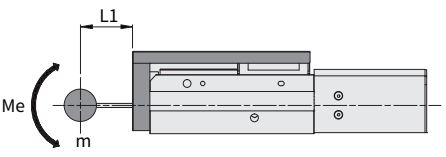
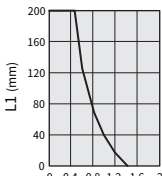
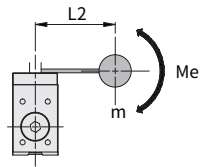
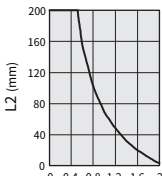
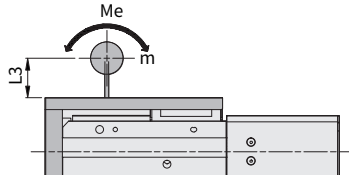
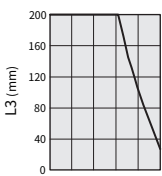
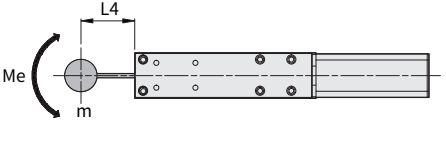
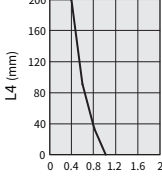
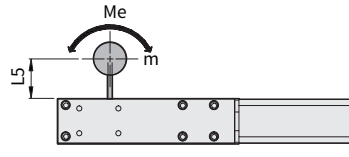
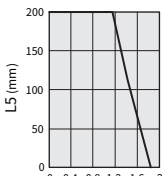
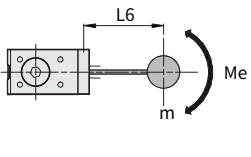
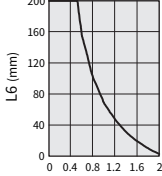
EQX series Electric Actuator

Allowable torque

CHELIC

Allowable torque

Acceleration, Deceleration 3000mm/s²

Method	Direction of Load Extension m: Mass Transported (kg) Me: Allowable Dynamic Torque (N · m) L: Extension of the Center of Gravity of Workpiece (mm)		Model
			EQX 10
Horizontal • Top		X	 Mass Transported m (kg)
		Y	 Mass Transported m (kg)
		Z	 Mass Transported m (kg)
Walls		X	 Mass Transported m (kg)
		Y	 Mass Transported m (kg)
		Z	 Mass Transported m (kg)

EDG

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EQX

EDK

ETB

P-SERVO

**Operation
manual**

EQX series Electric Actuator

Model selection-1

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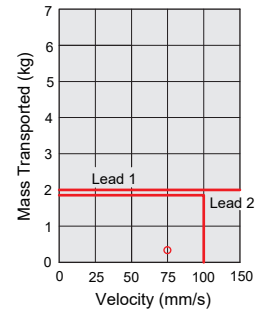
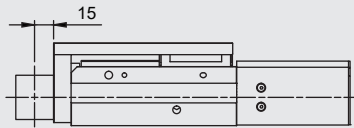
Positioning Control, Sequence Selection

Seq 1 Confirm the mass transported and velocity (vertical move) → **Seq 2** Confirm the actuation time

Example

Conditions of Use

- Mass of Workpiece: 0.25 (kg)
- Velocity: 100 (mm/s)
- Acceleration/Deceleration: 3,000(mm/s)
- Stroke: 50 (mm)
- Installation Condition: Horizontal Move



Seq 1 Confirm the mass transported – velocity and velocity

Refer to the velocity – vertical move mass graph, where the target model is to be selected by mass and speed of workpiece.

Example

From the right graph, EQX 10 is temporarily selected.

Seq 2 Confirm the actuation time

From the calculations shown as below, we can obtain the actuation time. Actuation Time:

T can be solved through the equation below
 $T = T1 + T2 + T3 + T4$ (s)

- T1: Acceleration time, and T3: Deceleration time from the equation below we can learn:

$$T1 = V/a1(s) \quad T3 = V/a2(s)$$

- T2: Time of constant velocity can be obtained through the equation below.

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} \quad (s)$$

- T4: time of stability, which might vary due to different motor models, loads and positioning widths of step position; the values shown as follows should be included considering the selection.

$$T4 = 0.15(s)$$

Example

The values from T1 to T4 are shown as follows.

$$T1 = V/a1 = 100/3000 = 0.033(s)$$

$$T2 = \frac{L - 0.5 \cdot V \cdot (T1 + T3)}{V} = \frac{50 - 0.5 \cdot 100 \cdot (0.033 + 0.033)}{100}$$

$$T3 = V/a2 = 200/3000 = 0.033(s)$$

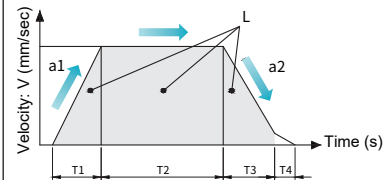
$$T4 = 0.15(s)$$

As a result, the actuation time: T is

$$T = T1 + T2 + T3 = 0.033 + 0.467 + 0.033 + 0.15 = 0.683(s)$$

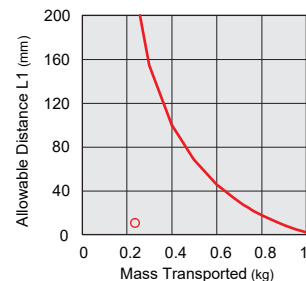
From the outcomes shown as above, EQX 10 is selected

Vertical movable mass graphs



L: Stroke (mm) ——— Operating Conditions
 V: Velocity (mm/s) ——— Operating Conditions
 a1: Acceleration (mm/s)² ——— Operating Conditions
 a2: Deceleration (mm/s)² ——— Operating Conditions

T1: Acceleration Time (s) -----
 The time spent before reaching the preset velocity
 T2: Time of Constant Velocity (s) -----
 The time of operation with a constant speed
 T3: Deceleration Time (s) -----
 The time from constant speed to operation stop
 T4: Time of Stability (s) -----
 The time before positioning is completed



EQX series Electric Actuator

Model selection-2

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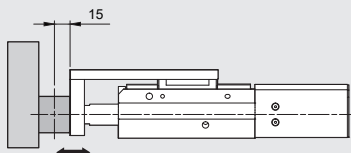
Thrust Control, Sequence Selection

Seq 1 Confirm the duty cycle → **Seq 2** Confirm the thrust force → **Seq 3** Confirm the allowable distance – movable mass curve graph

Example

Conditions of Use

- Installation Condition: horizontal (touch)
- Duty Cycle: 30(%)
- Jig Mass: 0.3(kg)
- Velocity: 100 (mm/s)
- Thrust Force: 120(N)
- Stroke: 40 (mm)



Seq 1 Confirm the duty cycle

Refer to the conversion table of thrust force–duty cycle. According to the duty cycle to select “thrust force”.

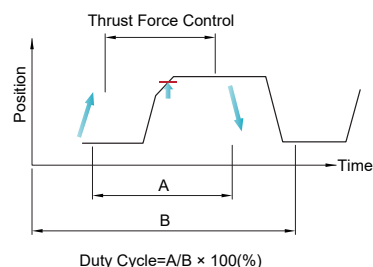
Example

From the table below, we can learn that the duty cycle: 30(%) As a result, the thrust force setup=70(%)

Conversion table of thrust force – Duty cycle of EQX 10

Thrust force setup (%)	Duty cycle (%)	Continuous thrust time (min)
60 below	100	–
70	30	3
100	15	1

※ “Thrust force setup” is an input value of step position information of the driver.
 ※ “Continuous thrust time” is the time of continuous thrust.



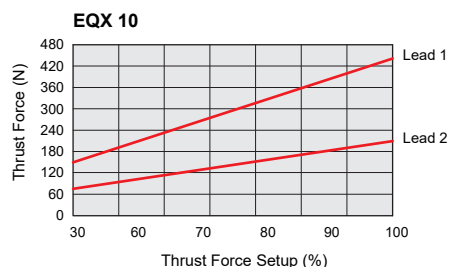
Seq 2 Confirm the thrust force

Refer to Thrust force setup – Thrust force graph

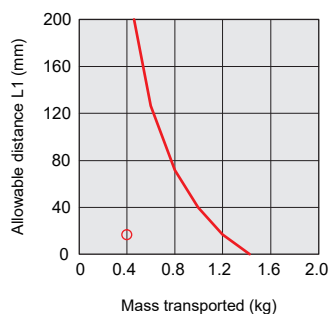
Example

From the right graph

- Thrust Force Setup: 70(%)
 - Thrust Force: 120(N)
- Hence, EQX 10 is selected



Seq 3 Confirm the allowable distance-movable mass curve



From the outcomes shown as above, EQX 10 is selected

EDG

EDF

EDM

EDQ

EDX

EQX

EDK

ETB

P-SERVO

Operation
manual

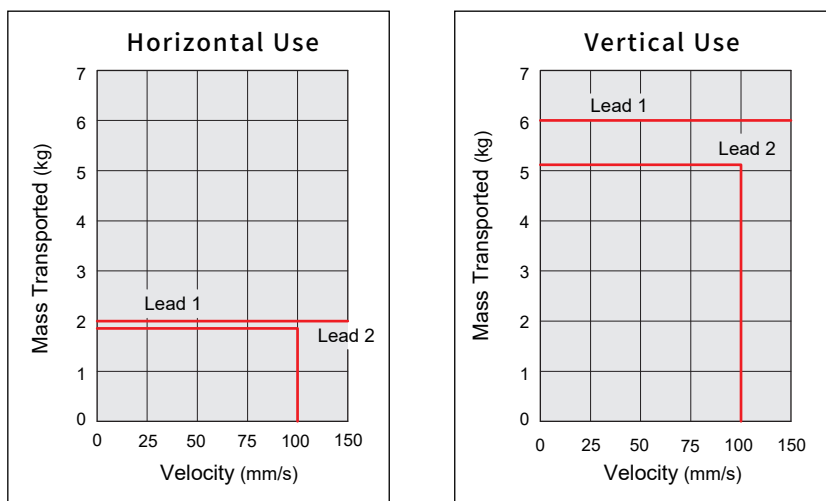
EQX series Electric Actuator

Movable mass graph criterion, Thrust force graph

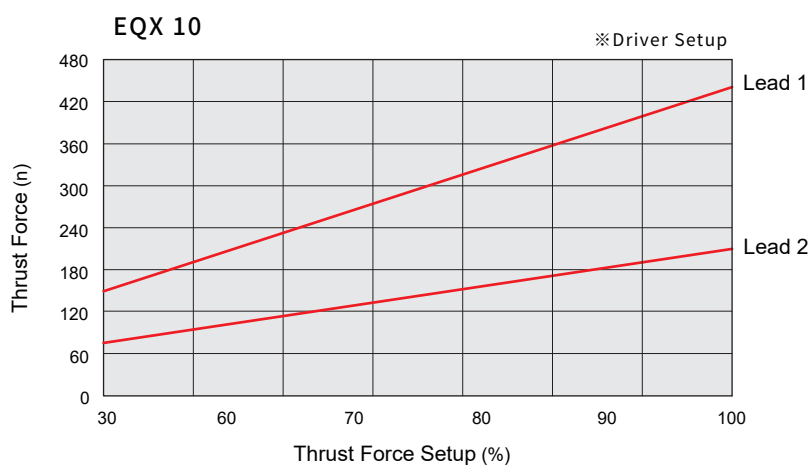
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Velocity – Movable Mass Graph Criterion

● EQX 10 Movable Mass – Velocity Curve Graph



Thrust Force Setup – Thrust Force Graph



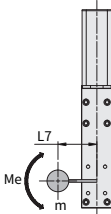
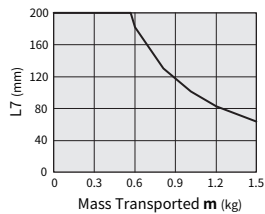
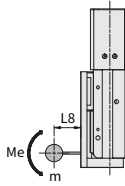
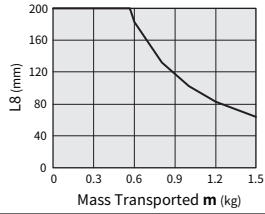
Thrust Force Setup (%)	Duty Cycle (%)	Continuous Thrust Time (min)
60 below	100	—
70	30	3
100	15	1

EQX series Electric Actuator

Allowable torque, Offset of slider

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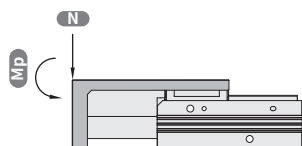
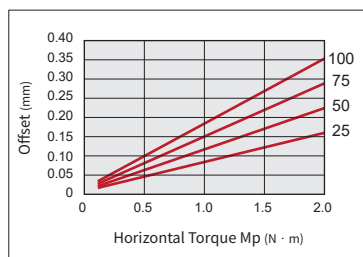
Allowable torque

Method	Direction of Load Extension m: Mass Transported (kg) Me: Allowable Dynamic Torque (N · m) L: Extension of the Center of Gravity of Workpiece (mm)	Model	
		EQX 10	
Vertical		X	
		Y	

Offset of Slider (reference)

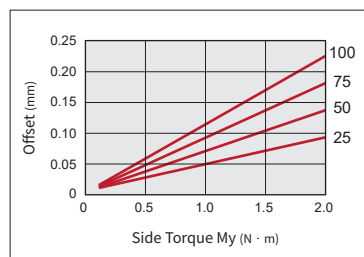
The table deflection of horizontal load

The deflection is incurred by the load on the table when the table is completely extended. (outermost)



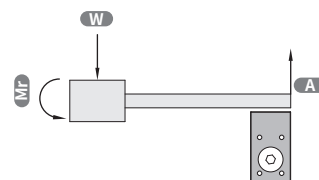
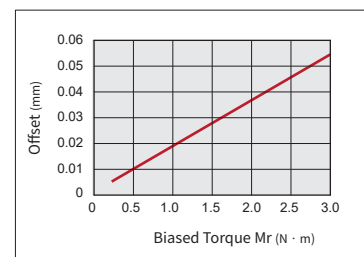
The table deflection of lateral load

The deflection is incurred by the load on the table when the table is completely extended. (outermost)



The table deflection of lateral load

When the table is completely extended, the deflection is incurred when the load is shifted outside the table. (outermost)



EDG

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EDX

EQX

EDK

ETB

P-SERVO

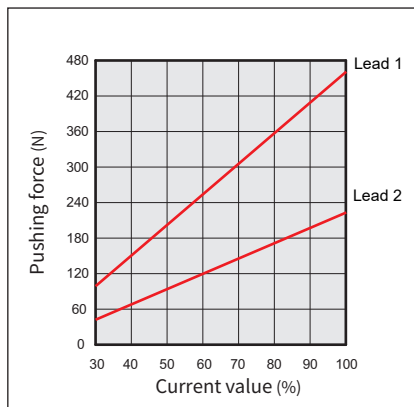
Operation
manual

EQX series Electric Actuator

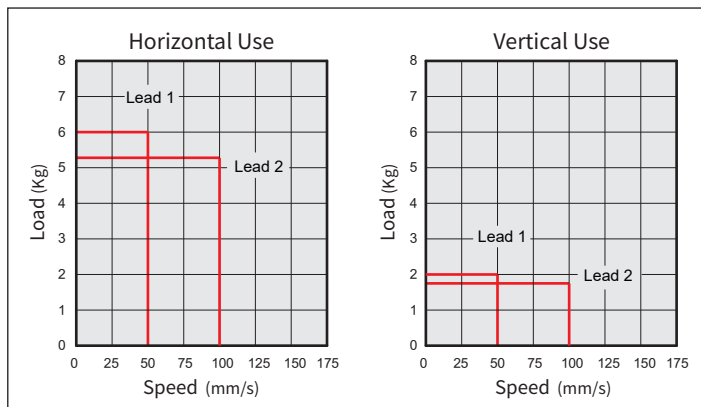
Characteristics graph, Mounting type

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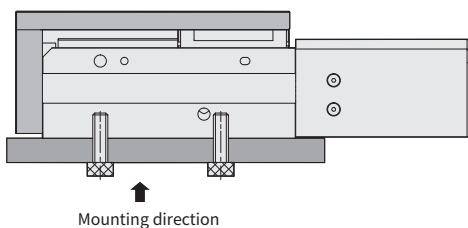
Pushing force-Current graph



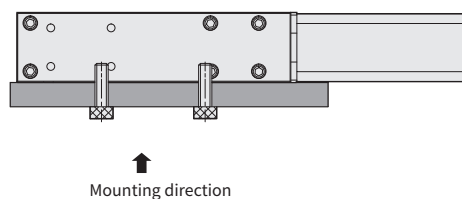
Load-Speed graph



Body mounting



Side mounting



Product weight

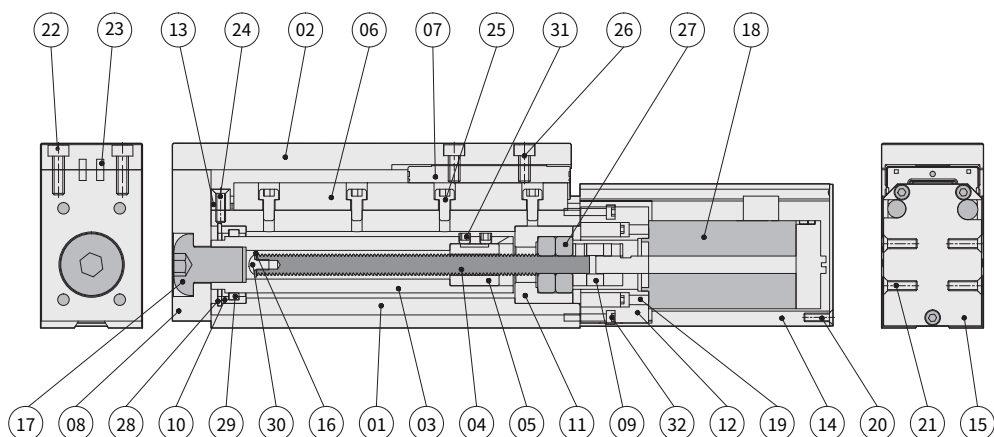
Item \ Model	EQX 10			
	25mm	50mm	75mm	100mm
Weight (kg)	1	1.1	1.2	1.3

EQX series Electric Actuator

Product features

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EQX



Components and material list

No.	Name	Material	No.	Name	Material
01	Body	Aluminum alloy	17	Shaft screw	Alloy steel
02	Slider-1	Aluminum alloy	18	Closed loop motor 25	Customized
03	Main shaft	Carbon steel	19	Motor mount screw	Alloy steel
04	Ball screw(Ball screw)	Customized	20	Rear cover mount screws	Alloy steel
05	Ball screw(Nut)	Customized	21	Shell mount screws	Alloy steel
06	Linear slide (Rail)	Stainless	22	Slider mount screw	Alloy steel
07	Linear slide(Slider)	Stainless	23	Positioned pin	Bearing steel
08	Slider-2	Aluminum alloy	24	Positioning block mount screw	Alloy steel
09	Packing mount ring	Customized	25	Slide rail mount screws	Alloy steel
10	Packing mount ring	Aluminum alloy	26	Slider mount screw	Alloy steel
11	Bearing mount ring	Aluminum alloy	27	Radial bearing	Bearing steel
12	Motor mount	Aluminum alloy	28	Packing block buckle	Alloy steel
13	Spacer block	Aluminum alloy	29	Shaft packing	NBR
14	Shell	Aluminum alloy	30	Screw washer mount screw	Alloy steel
15	Rear cover	Stainless	31	Screw mount screw	Alloy steel
16	Ball screw gasket	Nylon	32	Motor mount fixing screw	Alloy steel

EDG

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EDM

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EDX

EQX

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P-SERVO

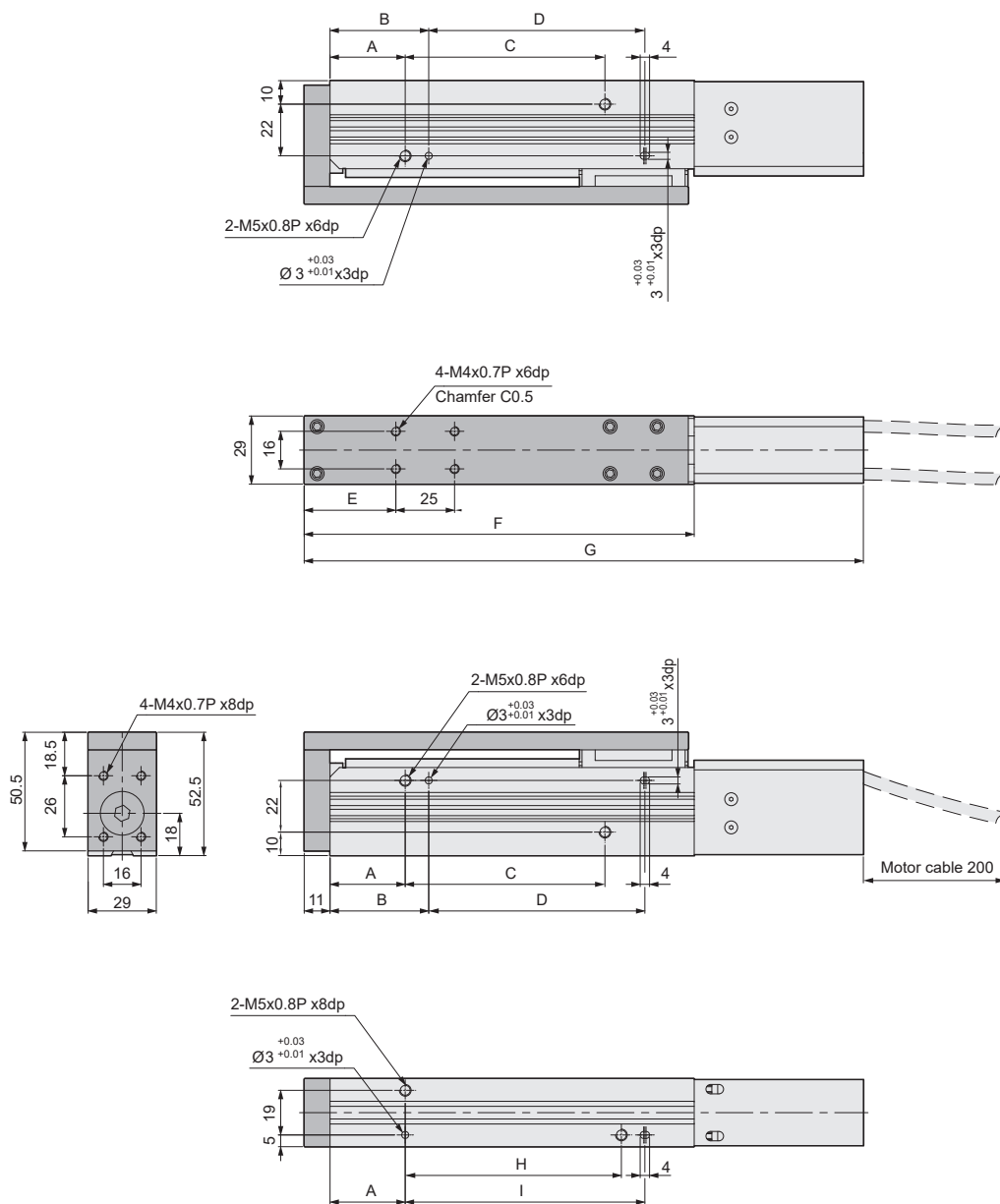
Operation
manual

EQX series Electric Actuator

Dimensions

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EQX



Unit: mm

Mark	A	B	C	D	E	F	G	H	I
Model									
EQX 10-25	20	30	22	29	14	91	164	29	39
EQX 10-50	24	34	43	50	14	116	189	50	60
EQX 10-75	28	38	64	71	39	141	214	71	81
EQX 10-100	32	42	85	92	39	166	239	92	102