

Electric Linear Actuators

INSTALLATION & OPERATION MANUAL

BRQ-ACT-104 SERIES



1000 N / 20 mm



2000 N / 40 mm



CONTROL

3-Position / Modulating



SUPPLY OPTIONS

24 V / 230 V



PROTECTION OPTIONS

IP54 / IP67

Safety-return and non-safety-return versions.

INSTALL / CONNECT / CONFIGURE / COMMISSION

Read before installation. Retain with the product records.

BARIQ / COVER

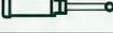
Product family and model code

Electric linear actuators for regulating valves, with selectable control, supply and safety-return options.

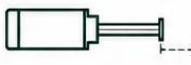
Model identification

BRQ-ACT-104-M-24-10-FR-IP67

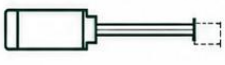
Example configuration

	CODE	DESCRIPTION
	BRQ-ACT-104	BARIQ actuator family
	M / T	Modulating / 3-Position control
	24 / 230	Supply voltage option (V)
	10	1000 N force / 20 mm nominal stroke
	20	2000 N force / 40 mm nominal stroke
	NR / FR	Without / with safety-return function
	IP54 / IP67	Enclosure protection option

Two force and stroke options



1000 N
20 mm nominal stroke



2000 N
40 mm nominal stroke

Safety-return options

	NR — No safety return	Version without the safety-return function.
	FR — Safety return	Version with return action on loss of power. Return direction is selected in the applicable settings.



Identify the supplied version

Use the complete model code to select the matching wiring and configuration instructions.

Mounting bracket options are specified separately.

Model selection guide

Select the control type, supply and force, then add the safety-return and enclosure suffix.

1. Select the base model

BASE MODEL	CONTROL	SUPPLY	FORCE / STROKE
BRQ-ACT-104-M-24-10	Modulating	24 V	1000 N / 20 mm
BRQ-ACT-104-M-24-20	Modulating	24 V	2000 N / 40 mm
BRQ-ACT-104-M-230-10	Modulating	230 V	1000 N / 20 mm
BRQ-ACT-104-M-230-20	Modulating	230 V	2000 N / 40 mm
BRQ-ACT-104-T-24-10	3-Position	24 V	1000 N / 20 mm
BRQ-ACT-104-T-24-20	3-Position	24 V	2000 N / 40 mm
BRQ-ACT-104-T-230-10	3-Position	230 V	1000 N / 20 mm
BRQ-ACT-104-T-230-20	3-Position	230 V	2000 N / 40 mm

2. Add the version suffix

SUFFIX	SAFETY RETURN	PROTECTION
-NR-IP54	Without	IP54
-NR-IP67	Without	IP67
-FR-IP54	With	IP54
-FR-IP67	With	IP67

Each base model is available with one of the four suffixes above.

Complete model example

BRQ-ACT-104-T-230-20-FR-IP67

3-Position • 230 V • 2000 N / 40 mm • Safety return • IP67



8 base models × 4 suffixes = 32 configurations

Specify the mounting bracket separately to suit the valve interface.

Technical specifications



MOTOR

Brushless DC (BLDC)



RUNNING SPEED

2 or 6 s/mm

Performance by version

PARAMETER	1000 N NR	1000 N FR	2000 N NR	2000 N FR
Nominal stroke	20 mm	20 mm	40 mm	40 mm
Maximum power	7 VA	24 VA	14 VA	24 VA
Weight	2.10 kg	2.15 kg	2.30 kg	2.35 kg

NR: without safety return. FR: with safety return.

General specifications

PARAMETER	VALUE
Supply options	24 V / 230 V, $\pm 10\%$
Operating temperature	0 to +55 °C
Storage temperature	-15 to +55 °C
Transport temperature	-30 to +60 °C
Humidity	<95%, non-condensing
Connecting wires	Maximum 1.5 mm ²
Enclosure options	IP54 / IP67
Accessories	Manual wrench and instructions

Use the supply voltage specified on the actuator nameplate.

Modulating signals

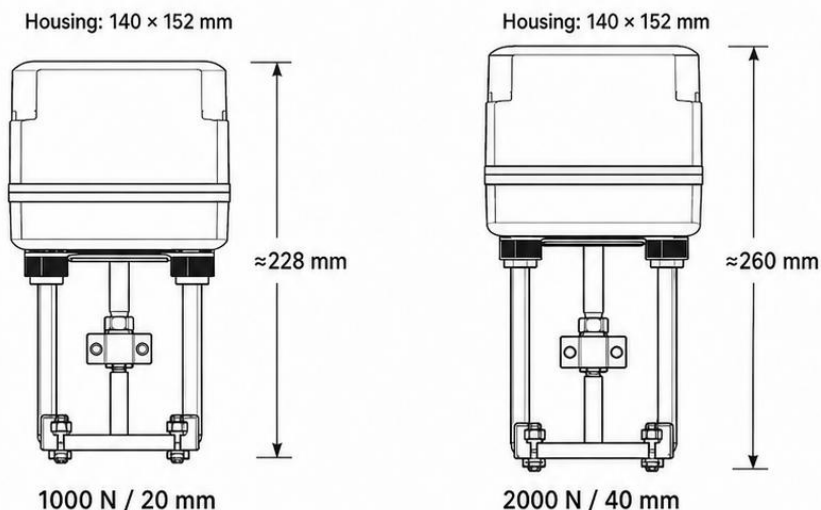
SIGNAL	RANGE	ELECTRICAL REQUIREMENT
Input	0-10 / 2-10 VDC	Input impedance 30 k Ω
Input	4-20 mA	Input impedance 250 Ω
Feedback	0-10 / 2-10 VDC	Load impedance ≥ 10 k Ω
Feedback	4-20 mA	Load impedance ≤ 500 Ω



3-Position versions

3-Position control with active point feedback.

Dimensions and mounting interface

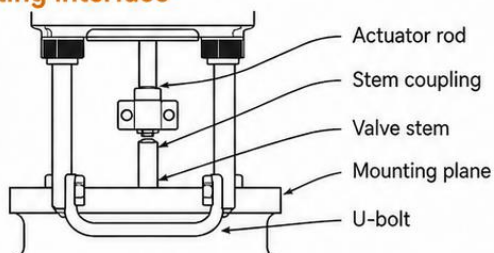


Standard product outlines. Dimensions in mm. Not to scale.

Dimensional summary

VERSION	NOMINAL STROKE	HOUSING	APPROX. HEIGHT
1000 N	20 mm	140 × 152 mm	228 mm
2000 N	40 mm	140 × 152 mm	260 mm

Mounting interface



Schematic connection arrangement.



Bracket selection

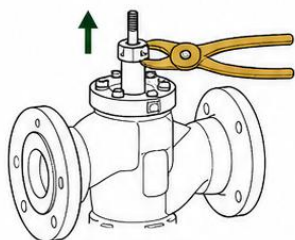
Select the mounting bracket to suit the valve interface.



Service access

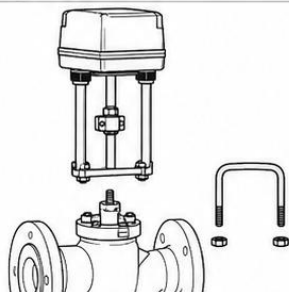
Leave room to remove the protective cover and access the actuator.

Mechanical installation



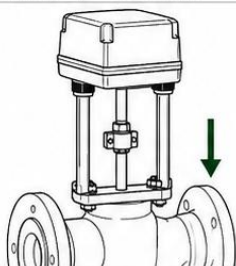
1 Prepare the valve stem

Carefully pull the valve stem to its top position using pliers or a wrench. Protect the stem surface from damage.



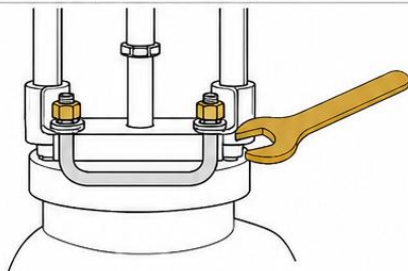
2 Prepare and align the actuator

Remove the U-bolt and loosen the stem clamp. Position the actuator rod and valve stem at the top of their travel.



3 Seat the mounting bracket

Press down together until the actuator base seats on the valve mounting plane. Align the support plane parallel to the valve axis.



4 Secure the U-bolt

Insert the U-bolt through the mounting holes. Tighten the two M8 nuts using a 13 mm spanner.

M8 NUTS: MAX. 16 N·m

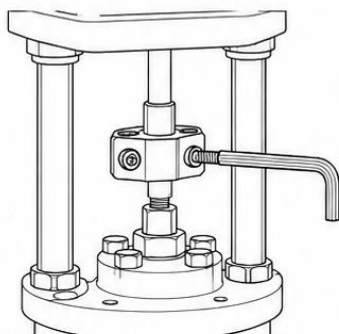
This torque limit applies to the U-bolt nuts.



Next: connect the stems and set the position indicators.

Assembly illustrations are schematic.

Stem connection and mounting



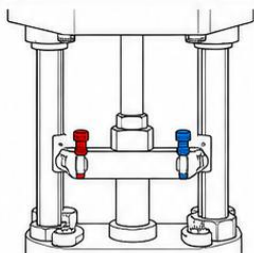
5

Connect the stems

Centre the stem clamp over the valve stem connection.

Align the raised section inside the clamp with the groove in the actuator rod.

Tighten both clamp screws using a 5 mm hex key.

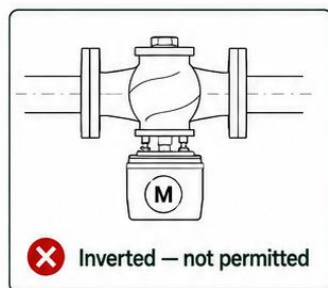
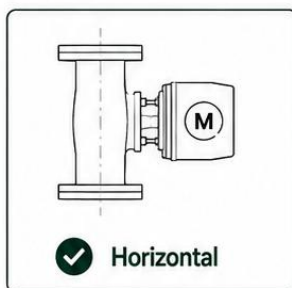
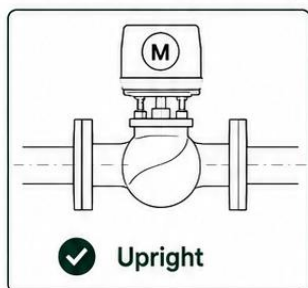


6

Set the position indicators

After assembly, secure the red and blue pointer rings on the actuator bracket at the pointer position.

Permitted mounting positions



Install upright or up to 90° to either side. Do not install the actuator upside down.



Access and protection

Leave space to remove the protective cover.
For outdoor installation, provide a protective cover with ventilation and heat dissipation.
Prevent water ingress and internal frost.



Before power-on

Confirm that the supply voltage matches the actuator nameplate.
Do not operate with the protective cover removed.

Assembly illustrations are schematic.

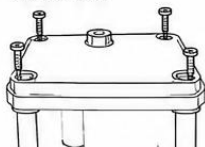
3-position electrical connections

BRQ-ACT-104-T versions

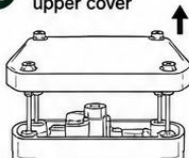


Isolate the power supply before opening the cover.
Match the supply voltage to the actuator nameplate.

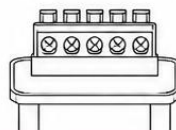
1 Remove the four screws



2 Lift off the upper cover



3 Connect at the terminal block



SP	1	2	3	14	15
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Terminal identification

TERMINAL	FUNCTION
1	Supply common (SN / 0 V)
2	DOWN command
3	UP command
SP	Separate supply connection in 4-wire arrangements
14 / 15	Relay outputs (2 A RL, as marked)

Select the connection arrangement

NR · 3-wire	Terminal 1 to supply common. Controller switches the supply to terminal 2 (DOWN) or terminal 3 (UP). SP is not connected in this arrangement.
NR · 4-wire	Terminal 1 to supply common. Separate supply to SP; controller commands to terminals 2 and 3.
FR · 4-wire	Terminal 1 to supply common. Supply to SP through the ST contact; controller commands to terminals 2 and 3.

NR: no safety return. FR: safety return.

S1 DIP switch settings

SWITCH	SELECTION
1	FAST: 2 s/mm / SLOW: 6 s/mm
2	SD: stem extends down / SU: stem retracts up



DIP 2 applies only to versions with safety return.

Refit the protective cover before operation.

24 V modulating connections

BRQ-ACT-104-M-24 versions



24 VAC/DC $\pm 10\%$ only.
Isolate the supply before wiring.



DIP 6 = OFF · MODULATING

5-wire terminal assignment

B	O	O	E	Y
Supply	Common	Signal common	Input	Feedback

TERMINAL	CONNECTION
B	24 V supply (AC ~ / DC +)
O – first	Supply common (AC ~ / DC –)
O – second	Signal common (–)
E	Positioning input (+)
Y	Position feedback (+)



Control input → E

0–10 V or 2–10 V: input impedance 30 k Ω .
4–20 mA: input impedance 250 Ω .



Position feedback → Y

0–10 V or 2–10 V: load ≥ 10 k Ω .
4–20 mA: load ≤ 500 Ω .

Select the signal type

SWITCH	OFF	ON
DIP 1 · Feedback	Voltage	4–20 mA
DIP 2 · Input	Voltage	4–20 mA
DIP 7 · Voltage range	0–10 V	2–10 V

DIP 7 does not change the current-signal range.



NR and FR versions

The five modulating connections are the same for versions without safety return (NR) and with safety return (FR).



Wiring and closure

Maximum conductor cross-section: 1.5 mm².
Refit the protective cover before operation.

230 V modulating connections

BRQ-ACT-104-M-230 versions



Isolate the supply before wiring.
Confirm the supply voltage on
the actuator nameplate.



DIP 6 = OFF · MODULATING

Connections used in modulating mode

Power supply



Control and feedback



Functional terminal groups — identify terminals by their markings.

TERMINAL	FUNCTION
L	AC supply line
N	AC supply neutral
O	Signal common (–)
E	Positioning input (+)
Y	Position feedback (+)

Signal connections



Input → E

0–10 V or 2–10 V: input impedance 30 kΩ.
4–20 mA: input impedance 250 Ω.



Feedback → Y

0–10 V or 2–10 V: load ≥ 10 kΩ.
4–20 mA: load ≤ 500 Ω.

Signal selection

SWITCH	OFF	ON
DIP 1 · Feedback	Voltage	4–20 mA
DIP 2 · Input	Voltage	4–20 mA
DIP 7 · Voltage range	0–10 V	2–10 V

DIP 7 does not change the current-signal range.



NR and FR versions

The L, N, O, E and Y modulating connections apply to versions without safety return (NR) and with safety return (FR).



Wiring and closure

Maximum conductor cross-section: 1.5 mm².
Refit the protective cover before operation.

DIP switch settings

Eight-switch controller · M versions

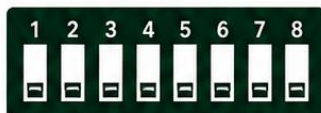


Illustration only — select settings for the application.

DIP	FUNCTION	OFF	ON
1	Feedback type	Voltage	4–20 mA
2	Input type	Voltage	4–20 mA
3	Increasing input	Rod moves UP	Rod moves DOWN
4	Return direction*	DOWN / lower limit	UP / upper limit
5	Signal loss	Move to limit set by DIP 4	Hold current position
6	Control mode	Modulating	3-position
7	Voltage range	0–10 V	2–10 V
8	Running speed	2 s/mm · FAST	6 s/mm · SLOW



Signal type · DIP 1, 2 and 7

Voltage input and feedback use the range selected by DIP 7.
DIP 7 has no effect on 4–20 mA signals.



Signal loss · DIP 4 and 5

With DIP 5 OFF, DIP 4 selects the travel limit.
With DIP 5 ON, the rod holds its position regardless of DIP 4.
Standard signal-loss response applies to 2–10 V and 4–20 mA;
0–10 V requires the custom option.



Power-loss return · FR versions only

*On versions with safety return, DIP 4 also sets the power-loss return direction: OFF = down to the lower limit; ON = up to the upper limit.

Rod direction is stated relative to the actuator.
Match the direction to the valve assembly.

Signal configuration examples

Modulating control · M versions

DIP 6 = OFF

Select the control input and position feedback required by the controller.

Matching input and feedback

CONTROL INPUT	FEEDBACK	DIP 1	DIP 2	DIP 7
0–10 V	0–10 V	OFF	OFF	OFF
2–10 V	2–10 V	OFF	OFF	ON
4–20 mA	4–20 mA	ON	ON	—

Mixed input and feedback

CONTROL INPUT	FEEDBACK	DIP 1	DIP 2	DIP 7
4–20 mA	0–10 V	OFF	ON	OFF
4–20 mA	2–10 V	OFF	ON	ON
0–10 V	4–20 mA	ON	OFF	OFF
2–10 V	4–20 mA	ON	OFF	ON

— = no effect when both signals are 4–20 mA.



DIP 1 · Feedback

OFF selects voltage feedback.
ON selects 4–20 mA feedback.



DIP 2 · Control input

OFF selects voltage input.
ON selects 4–20 mA input.



DIP 7 · Voltage range

OFF selects 0–10 V.
ON selects 2–10 V.
This switch does not change the current-signal range.



Complete the application settings

Set DIP 3 for rod direction, DIP 4 and 5 for the required return or signal-loss response, and DIP 8 for running speed.
Refer to the DIP switch settings page.

The tables specify signal settings only.

Signal loss and safety return

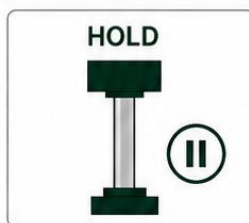
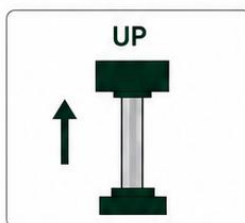
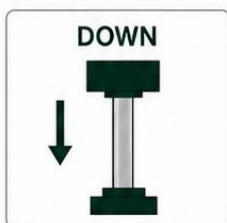
Modulating controller · M versions



1 Control signal lost

Response is selected by DIP 4 and DIP 5.

DIP 5	DIP 4	ROD RESPONSE
OFF	OFF	Moves DOWN to lower limit
OFF	ON	Moves UP to upper limit
ON	Either	Holds current position



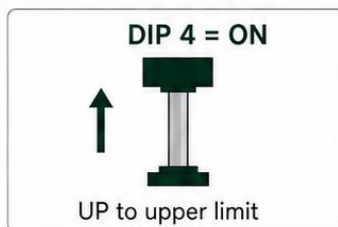
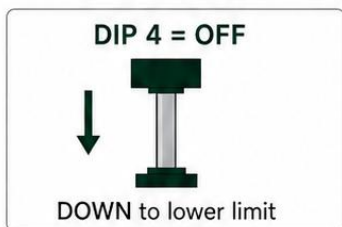
Standard signal-loss response: 2–10 V and 4–20 mA.
The 0–10 V response requires the custom option.



2 Power supply lost

FR VERSIONS ONLY

On actuators with safety return, DIP 4 selects the return direction when power is lost.



Select the required valve response

UP and DOWN describe actuator rod movement.
Confirm the resulting valve position for the installed assembly.

FR = safety return. NR = no safety return.

Commissioning and calibration

Modulating controller · M versions



Before commissioning

Complete the actuator-to-valve assembly.
Confirm the supply voltage matches the nameplate and connect the wiring for the supplied version.

Self-learning sequence

1

Start self-learning

Press and hold the **SET** button on the controller for more than 5 seconds.



2

Calibration in progress

The indicator starts flashing when self-learning begins.



FLASHING

3

Calibration complete

Self-learning is complete when the indicator goes out.



INDICATOR OFF



Typical sequence duration

120–180 seconds

Approximate time for the complete self-learning process.



Required before normal operation

After assembly, the modulating actuator requires self-learning before normal use.



Cover and electrical safety

Only qualified personnel may access the controller.
Isolate the supply before wiring or servicing.
Refit the protective cover before normal operation.

Manual operation and maintenance



Before repair or servicing

Switch off the power supply before repair work.
Only qualified personnel may open the protective cover.

Manual operation



Where a handwheel mechanism is fitted, use it to operate the valve when opening or closing is required.
If no handwheel is fitted, operate the actuator electrically.

Maintenance schedule

1



After commissioning

Inspect for paint damage. Repair the coating where necessary to prevent corrosion.

2



Every 3 months

Check lubrication of the gears and transmission parts.
If dry, replenish with the specified solid grease as required.

3



Every 6 months · infrequent use

Check actuator performance when the equipment is operated only rarely.

4



After one year

Check the mechanical connection to the valve body and retighten if necessary. Inspect gear and transmission lubrication.



Lubricant selection

Use only the specified grease. Do not add unspecified grease or oil; unsuitable lubricants can cause sintering or accelerated wear.



Overhaul and adjustment

For overhaul after several years of service, contact BARIQ for a maintenance plan suited to the operating condition.

Transport, storage and safety



OPERATION
0 to +55 °C



STORAGE
-15 to +55 °C



TRANSPORT
-30 to +60 °C

Relative humidity: <95%, non-condensing.

Handling and storage

1



Protect during transport

Pack the actuator suitably for transport to the installation site.
Do not place equipment or other loads on the actuator.

2



Store dry and ventilated

Protect against moisture and dust.
Keep the actuator in a dry, well-ventilated location.

3



Protect exposed metal

Apply anti-corrosion protection to
bright metal surfaces.



Installation safety

Confirm the supply voltage against the nameplate.
Do not operate with the protective cover removed.
For outdoor use, provide a protective cover with ventilation
and heat dissipation.
Prevent water ingress and internal frost.



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