BERNARD® CONTROLS

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FIRST BC



AQ Logic RANGE

Start Up Guide

SUG_17004 EN - Ind. D
Art : 5100549

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DEFINITIONS



Tip or info.



Warning requiring a check and/or a compulsory action.

!

Warning requiring a check and/or a compulsory action on the device because of risks of damages for the device or danger for the staff working on the device.

1 SAFETY

This device complies with current applicable safety standards.

Installation, maintenance, and use of this unit require a skilled and trained staff.

Please carefully read this whole document before mounting and starting-up the actuator.

2 DELIVERY, STORAGE AND MAINTENANCE

2.1 Delivery

AQ actuators are delivered in a cardboard box of a size equivalent to the actuator and sit in a cardboard wedge.

2.1.1 Check identification sticker

Information on the nameplate sticker on the side of the actuator should match those on your order.

QR Code on this sticker can be used to identify the actuator.

2.2 Storage

Actuators should be stored under a shelter, in a clean and dry place and at a stable ambient temperature.



- Avoid placing the actuator directly on the floor
- Check that plugs of cable entries are correctly tightened.
- Check that cover screws are correctly tightened to ensure weatherproof sealing of the cover

AQ actuator includes electrical components and lubricated gear stages. Even with a weatherproof enclosure, oxidation, seizing and other alterations may occur if actuator is not correctly stored.



Heating resistor should be connected to power supply especially if the storage place is wet.

What to check after storage

1. Visually check the electrical equipment.
2. Manually operate buttons, selectors, etc., to ensure their proper mechanical functionality.
3. Manually operate the actuator for a few travels.

What to check on pre-installed actuators

If you expect a long period between actuator mounting and electrical wiring:

1. Visually check that cable entries and cover are tightly closed.

2.3 Maintenance

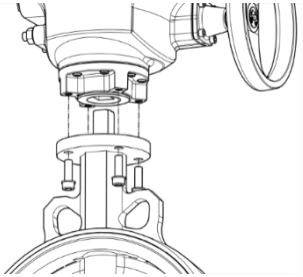
All AQ actuators feature lifetime lubrication and therefore require no specific maintenance, if they were correctly commissioned and used in conditions foreseen by design.

3 ACTUATOR INSTALLATION

3.1 Fastening actuator on the valve

Actuator should be secured directly to the valve using proper bolts or via a proper interface.

After assembly, the actuator can operate in any position.



You can modify your display orientation to keep normal reading orientation.
➔ To set display orientation, see §5.6.

However:

- do not handle the actuator by handwheel to avoid damage on actuator gearing
- cable glands must not be oriented upwards (loss of water tightness)

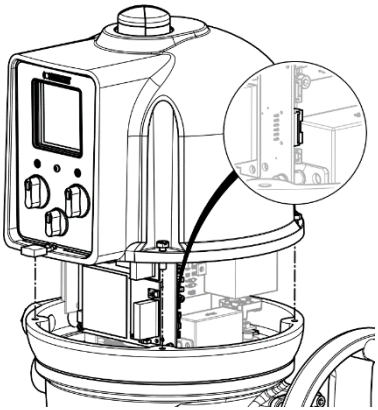
3.2 Opening the control compartment

You need to open the control compartment and remove the cover in order to wire the actuator.
If closing direction is not standard (clockwise), and it is not already done, change the orientation of the position indicator cap.

When opening, unplug the control panel cable from the main board in order to avoid to damage it.

How to remove the cover

1. With 10mm angled socket wrench or flat blade screwdriver, unscrew the 4 screws from the housing.
2. Raise the cover along its axis.
3. When cover plug is accessible, unplug it from the mainboard
4. Remove the cover completely.

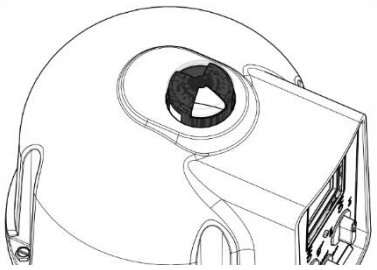


3.2.1 Changing closing direction indication

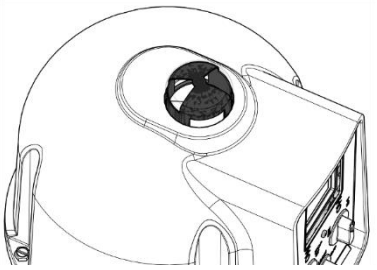
As a standard, AQ actuator is configured to close clockwise. If the actuator must close counter-clockwise, you can change the orientation of the position indicator cap.

This change requires to have the actuator software set accordingly.

➔ **To proceed to this setting, see §5.2.**



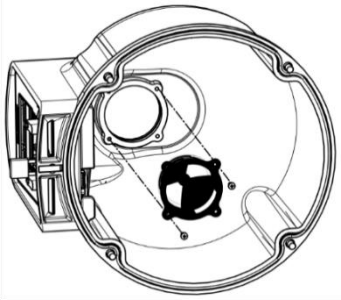
Standard indicator orientation
for clockwise closing



Reverse indicator orientation
for counter-clockwise closing

How to change cap orientation

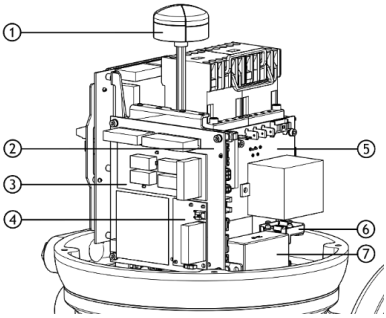
1. Disassemble the cover then the cap.
2. Turn the cap 90°.
3. Reassemble the cap then the cover.

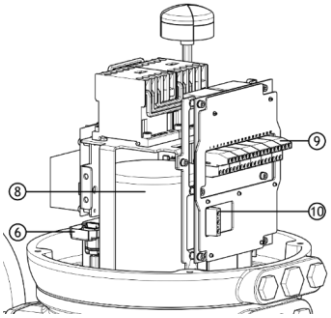


3.3 Electrical wiring

> **!** Ensure wires are not supplied with electric power before wiring is finished and the control compartment is closed.
>
> If you need to open control compartment, previously cut off power supply to the actuator.

3.3.1 Components





1 - Position indicator
2 - Mainboard
3 – 4-Relay board (option)
4 – AI/AO board (option)
5 – Power supply board
6 - Torque limiter
7 – Capacitor (single phase only)
8 – Motor
9 – Control terminal block
10 – Power terminal block

Control panel board is attached on the actuator cover.

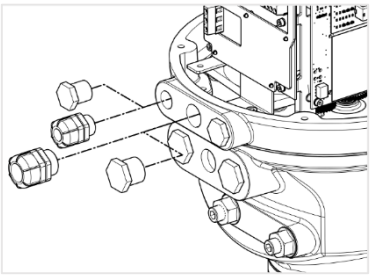
3.3.2 Connection and preliminary tests

First install cable glands, then connect wires on the terminal blocks.

How to install cable glands

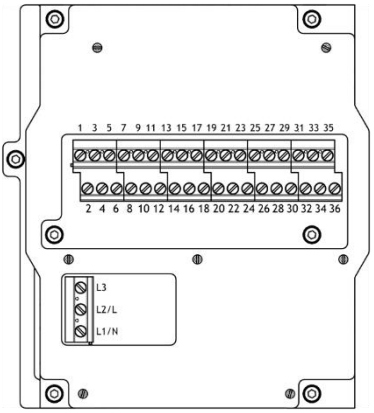
For each cable entry used

1. Remove plug from the cable entry with 19mm (M16 entry) or 23mm (M20 entry) open-end wrench.
2. Separate sealing nut from its cable gland.
3. Screw and tighten cable gland in the cable entry.
4. Thread the sealing nut on the cable and pass the cable through the cable gland.



Unused entries must be kept closed by their plug.

Terminal blocks



Terminal blocks are located on a side of the electronic assembly and consist of screw-type terminals. There are 2 main blocks: 1st is to connect power supply, 2nd to connect command and signaling.

Control terminals are 1-35 & 2-36

Power terminals (3Ph/1Ph)

- **3Ph: L1, L2, L3** with phase discriminator
- **1Ph: L** (Live)**, N** (Neutral)

Both thermal protector and torque limit device must be integrated into your control system in order to prevent potential damage to the actuator or valve.

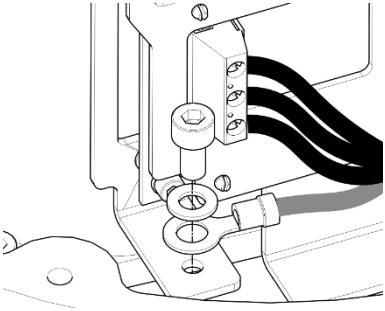
Internal ground terminal

The ground terminal is a metal tab with a fixation hole located under the terminal board at its bottom left (see following picture).

How to wire actuator

The wiring must be done according to the wiring diagram of your actuator.

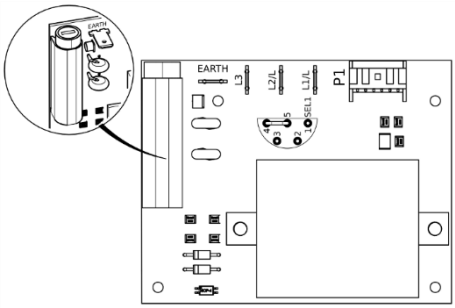
Using a 3×0.5mm flat blade screwdriver and a 4 mm Allen key



5. Connect power supply on terminals marked L1, L2 & L3 (3Ph) or L, N (1Ph) according to your supply type
6. At the same time, connect ground cable on ground terminal.
7. Connect control and signaling wires on uneven (marked 1 to 35) and even (marked 2 to 36) upper terminals.
8. Tighten sealing nut on the cable gland when you have completed wiring.

3.3.3 Power supply board

Power supply board supplies actuator with electrical power.
Power characteristics are factory set according to your order.



Fuse

The fuse is located at the upper left angle of the board (see picture).

Its characteristics are the following:

Fuse current	500 mA	Fuse size (mm) (inches)	6.3×32 ¼''×1-¼''
Voltage rating VAC	500 V	Blow characteristic	Fast acting
Breaking current capacity current AC			1 kA

3.3.4 Relays

AQ Logic is equipped with a Default relay and customizable relays

Fault relay

AQ Logic is equipped with a Fault relay which triggers system alarms. This list of alarms cannot be modified.

➔ **See list of Fault relay Alarms in Appendix III.**

Customizable relays

AQ Logic actuator is equipped with 3 customizable relays, to which you can add a 4-Relays board as an option.

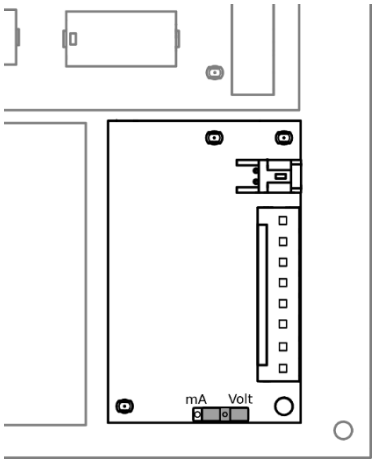
Function of each relay can be set.

➔ **To see possible settings and set relays, see §5.9.**

3.3.5 Positioner board (OPTION)

Positioner board is assembled on the main board.

You can select either **mA** or **V** using the small switch at the base of the board according to your input signal.



3.3.6 Heating resistor

Each actuator includes a heating resistor.

As soon as the actuator is installed in the field, it is recommended to supply the resistor to prevent condensation.

- Immediately put the cover back in place after start-up while ensuring its seal is clean. Never leave actuator electrical components without their protection cover.

In case of water intrusion:

- dry electrical components before putting back the cover.
- check electrical insulation.

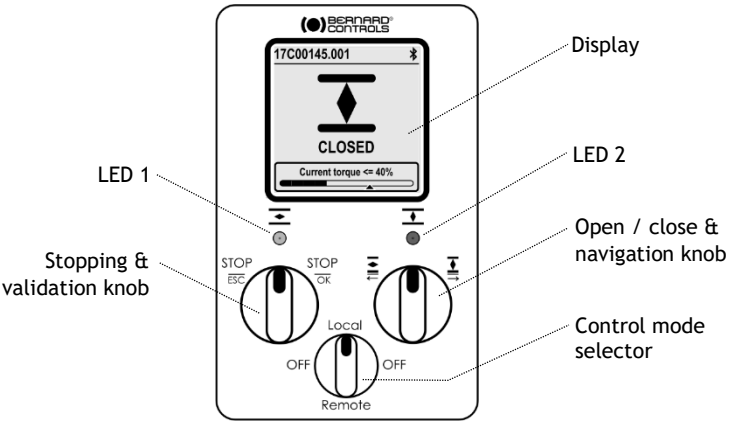
3.4 Closing the control compartment

- **To close the control compartment, see §3.2 and follow the steps in the opposite order.**

Make sure to re-plug the cover on the mainboard, otherwise control panel **(see §4.1)** will not work.

4 ACTUATOR CONTROLS

4.1 Control panel



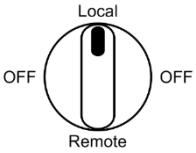
AQ Logic control panel consists of a **screen**, **2 control knobs**, **1 control selector** and 2 configurable **LEDs**.

Screen	Screen displays operating status or Logic menu
Control selector	Control selector allows to choose the control mode: • **Local**: actuator is controlled using this Control panel or Smartphone via Bluetooth® • **Remote**: actuator is controlled remotely • **OFF**: controls are deactivated Your actuator is set on **Local** at startup. You can lock the control mode with an optional padlock at the bottom of the control panel.
Knobs	Knobs are used for **operation** (upper mention) or **menu navigation** (lower mention). Once operated, these knobs return to center position.
LEDs	LEDs indicate actuator status (CLOSED or OPEN). Default colors are red for CLOSED and green for OPEN, and can be set (see §5.8), according to your country. One will blinking during operation according to travel direction, and both at Bluetooth® connection.

4.2 Control modes

AQ logic can be controlled locally or remotely.

Mode is set using **Control selector** on the control panel. It can be locked using a padlock located at the bottom of control panel.



Modes are:

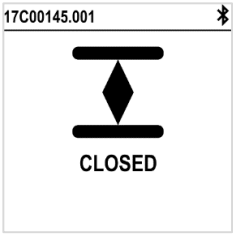
- Local mode with control panel or Smartphone via Bluetooth® connection
- Remote mode
- Forced local mode when in Remote mode using the Application

  ➔ **This mode requires first to be authorized, see §5.12**

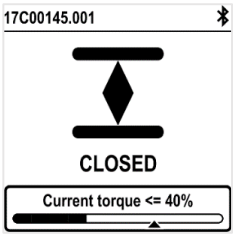
ⓘ The 3 modes allow to read settings, but they can be modified in Local mode only.

4.3 Local control with Control panel

4.3.1 Operation



AQ5 to AQ15



AQ25 to AQ50

Operation screen indicates…

- **Top**: actuator id and status icons

  ⚠: warning / ⊗: alarm

  : Bluetooth® activated

  : Bluetooth® activated with device connected

  : Local control inhibited
- **Center**: current position of the valve, either CLOSED, current percentage between 0 and 100% depending on the travel direction, or OPEN
- **Bottom (from AQ25)**: torque level with a torque gauge and an arrow marker to indicate torque limit set

Knobs use

Left knob	**STOP**	**Opening**	**Right knob**
	STOP	**Closing**	

4.3.2 Settings



Menu screen has 2 main sections…

- **Alarms and warnings**



Messages are of 2 types identified by icon ⚠ for warnings or icon ⊗ for alarms.

➔ **See complete list in appendix III.**

- **Settings** that allows you to check or change the settings of the actuator: valve tag, password, torque limits, Bluetooth®, etc.

➔ **See Alarms and Settings menu in appendix II.**

Knobs use

	Menu navigation		
Left knob	**ESC**	↑ (up)	**Right knob**
	OK	↓ (down)	
	Edition		
	← (1 digit left)	− (decrease values)	
	→ (1 digit right)	+ (increase values)	

4.4 Local control with Smartphone application

Using the Bluetooth® connection of your actuator, you can operate it with Bernard Control smartphone application (**BC App**).

- Bluetooth® is active on the actuator at delivery.
- Using the Local control with BC App requires to have Bluetooth® activated on your smartphone

You need first to download the application, install it on your phone, then connect to your actuator by entering an access code.

➔ **See Appendix I for preliminary steps.**

4.4.1 Operation screen



Before operation



During operation

Status screen indicates…

- **Top**:
  1. access to main menu
  2. alternately valve tag and mainboard reference, or control mode
  3. warnings or alarms if any
- **Center**: current position of the valve, either CLOSED, opening percentage between 0 and 100%, or OPEN.

  You got the following commands to operate the valve:

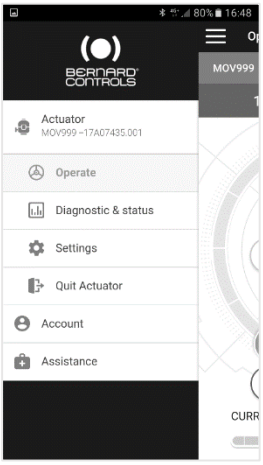
  < > defines target position on the dial with a swipe

  − decreases / **+** increases the opening target with one or several taps

  ⤓ closes / ⤒ opens the valve
- **Bottom (from AQ25)**: torque level with a torque gauge

4.4.2 Main menu

You can access the main menu anytime by tapping on .

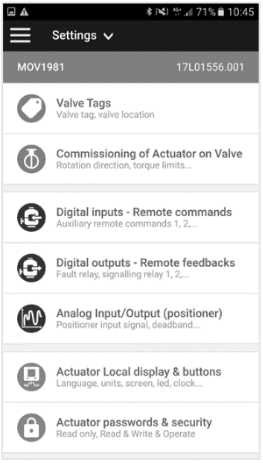


From main menu, you can access…

- Actuator
  - Operation
  - Diagnostic & status
  - Actuator settings
  - Quit
- Account data
- Assistance info

4.4.3 Settings screen

From the main menu, you can access the settings.



Menu screen has 2 main sections…

- **Top**: access to main menu, then valve tag and mainboard reference
- **Settings list:**
  - Valve identification
  - Commissioning of valve
  - Inputs / Outputs / Bus
  - Actuator local settings
  - Access code definition
  - Reset to factory data

4.5 Remote controls

The AQ Logic remote control system can be operated using an external or an internal voltage supply.

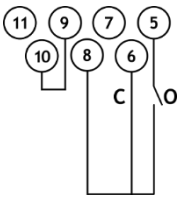
The input circuits are fully opto-isolated. The self-hold pulse command system requires 4 connecting wires on the client terminal strip: Common, STOP, OPEN and CLOSE. If the STOP push-button is not used, do not connect the STOP wire, OPEN (or CLOSE) contact must be maintained to operate the actuator.

These commands are self-holding (pulse commands) as a standard.
To remove self-holding, remove wire to terminal 7.

4.5.1 Single switch control

The actuator can be controlled via a single external switch.

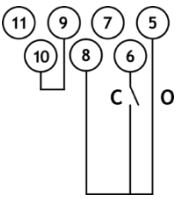
Opening



O : Open
C : Close

- Switch closed: valve opens
- Switch open: valve closes

Closing



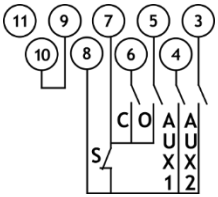
O : Open
C : Close

- Switch closed: valve closes
- Switch open: valve opens

➔ **The actuator has to be configured for the priority type required (open or close). See to open (see §5.9)**

4.5.2 Auxiliary remote controls

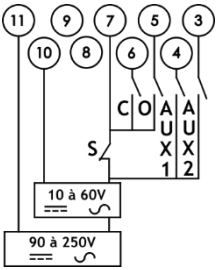
Dry contact control



S - Stop
C - Close
O - Open

A jumper must be fitted across customer terminal 9-10.

Voltage control



S - Stop
C - Close
O - Open

Remote control can use either in AC or DC voltage :

- Use terminal **10** for voltage from 10 to 60V
- Use terminal **11** for voltage from 90 to 250V

! It is imperative to comply with voltage ranges mentioned above, otherwise component will not function or will be damaged.

4.6 Analog Input / Output (OPTION)

4.6.1 Analog signal types

Some actuator configurations can perform control functions in response to a control signal.

Possible signals	Input impedance (ohms)
4-20 mA **0-20 mA** **4-12 mA**	160
12-20 mA	160
0-10V	11000

Positioner board switch setting (see §3.3.5):

- for signals in mA, the switch must be on **mA**
- for signals in V, the switch must be on **V**

4.6.2 Positioner configuration

To use this function, Positioner mode has to be activated:

- using Logic menu - **see §5.10.1**
- using Auxiliary Commands set with Proportional/ON-OFF - **see §5.9.1**

The input signal is automatically calibrated on the stroke of the actuator (0 - 100%), so there is no need to adjust the operating range of the actuator.

The input signal is isolated from the ON/OFF commands and from the remote position signal.

The actuator can still be operated in ON/OFF mode with the Open, Close and Stop commands or using Proportional control. One of the auxiliary commands must be used to select between these 2 control modes.

In the standard configuration, Auxiliary Command is set on Proportional/ON-OFF to allow the control mode to be selected remotely:

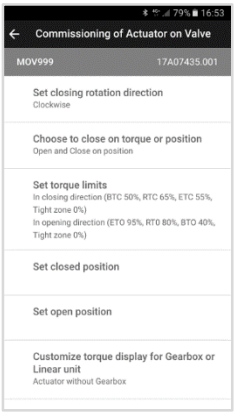
- Proportional = Analog control
- ON/OFF = ON/OFF control.

➔ **For Analog Input/Output settings (e.g. Deadband), see §5.9.**

5 COMMISSIONING

This section describes the commissioning with the Control panel, except otherwise mentioned.

You can set the same settings with App from the menu **Settings** > **Commissioning of Actuator on valve**.



In order to modify the actuator settings, control mode must be set to **Local mode**.

5.1 Accessing the actuator menu

To be able to set the actuator software or check the warnings or alarms, you need to access the actuator menu, either with Control panel or BC App depending on which Local control you use.

It is your responsibility to set the security of the Local Commands (Control Panel or Smartphone Application) for your process:

- The default position of the **Control selector** button should be on **Remote**
- The **Access Code** of the actuator should have been changed
- The remote command "Local Command Inhibition" (from DCS) should be active

To enter the actuator menu, you need first to enter the access code.

If you are the end-user:

At the first on-site start, we strongly advise you to modify the default **Bluetooth®** access codes. To proceed to these changes, please follow the 2 following procedures.

Initial access codes are 0000 to check settings or 9000 to modify them.

How to enter the access code with Control panel

1. Hold the left knob on the right, and turn left then right the right knob. Menu access screen appears.



2. Enter the access code
   a. Set the digit value with ↓ and ↑.
   b. Validate with **OK** when value is right.
   c. Set the following digit.
   If you validate a wrong value, choose **ESC** and reset it.
   d. Once you have set all digits, validate with **OK**.



The actuator menu appears



How to reset the access codes

1. If the actuator is ON for more than 10 minutes, switch it OFF then switch it ON.
2. *When on the operation display,*

   Hold both left knob and right knob during 10s.

   Reset password screen appears.



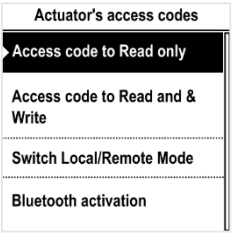
3. Select **YES** then validate with **OK**.

   Access codes are now reset to 0000 and 9000. You can now set again your own access codes.

How to change the Bluetooth® access codes with Control panel

Bluetooth® access codes can only be changed using **Read & Write mode**.

1. Go to **Settings** > **Actuator's access code**.
   Actuator's access codes screen appears.



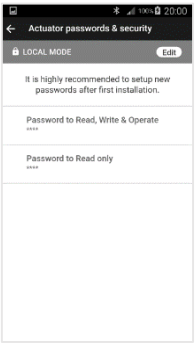
2. Depending on the access code you need to change:
   - choose **Access code to Read & Write**
   - else choose **Access code to Read only**
3. Set each digit value with ↓ or ↑, and validate with **OK**.



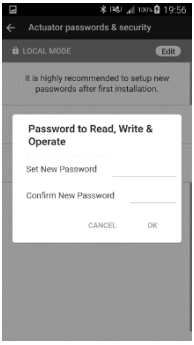
4. When all digits are set, select **Save** and validate with **OK**.
5. Go back to the root menu or quit the settings with several **ESC**.

How to change the Bluetooth® Access codes with BC App

1. Go to Main Menu
2. Select **Settings** > **Actuator passwords and security.**
3. The **Actuator passwords & security** menu appears.



4. Select the Password you want to change.



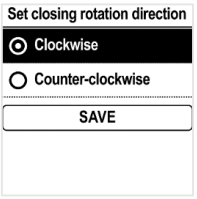
5. Enter your new password and confirm it.
6. Tap on **OK** to validate.

5.2 Set closing rotation direction

Default setting for closing direction is clockwise. According to your needs, you may have to change your closing direction.

How to change closing direction

1. Enter the menu, then go to **Settings** > **Actuator commissioning** > **Set closing rotation direction**.



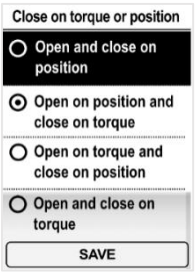
2. Choose the closing rotation direction required, **Clockwise** or **Counter-clockwise** with ↓ or ↑ then confirm with **OK**.
3. Go to **SAVE** with ↓ or ↑ then validate with **OK**.

5.3 Set closing and opening on torque or position

This section allows you to define the way you want to stop actuator travel in both directions. You can choose either **Position** or **Torque**.

How to set opening and closing type of end of travel

1. Enter the menu, then go to **Settings** > **Actuator commissioning** > **Choose to close on torque or position**.



2. Select your option with ↓ or ↑ then confirm with **OK**.
3. Select **Save** then validate with **OK**.

5.4 Set torque limits

This setting allows to set torque limits at main steps of the travel: at the beginning (**Break**), during the travel (**Run**) and at the end of the travel (**End**).

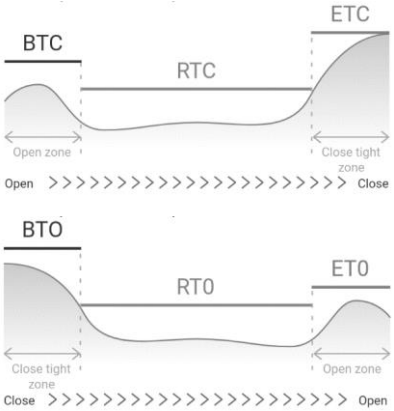
Limits are:

- In closing direction:

Break to Close (**BTC**), Run to Close (**RTC**), End to Close (**ETC**), Tight zone

- In opening direction:

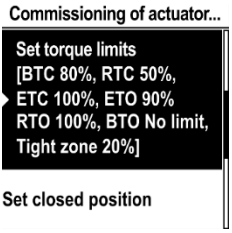
Break to Open (**BTO**), Run to Open (**RTO**), End to Open (**ETO**), Tight zone



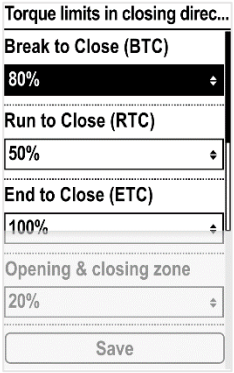
In order to ensure unsitting, Break value should be upper to Tight zone one.

How to set torque limits

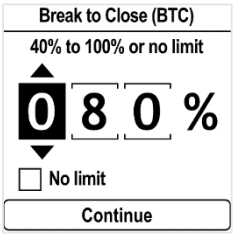
1. Enter the menu, then go to **Settings** > **Commissioning**
2. Select **Set torque limits** and validate with **OK.**



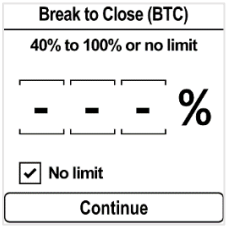
3. Select closing or opening direction and validate with **OK.**
   Torque limits screen appears.



4. Select the limit to modify with ↓ or ↑ then validate with **OK**.
   The torque limits setting screen appears.

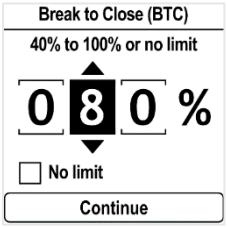


5. To set **Break** limits
   - To set **No limit**, use ↓ or ↑ on 1st digit,



   then **ESC**.

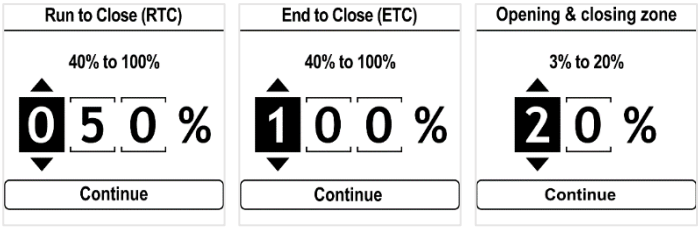
   - To set another value, validate 1st digit with **OK** then set 2nd & 3rd with ↓ or ↑ then validate each with **OK.**



   When 3rd digit is validated with **OK**, go to **Continue** with ↓ and validate with **OK**.

   You get back to the list of torque limit settings.

6. To set **Run**, **End** limits and **Tight zone**



   Set each digit value with ↓ or ↑ then validate with **OK**.
   Validate **Continue** with **OK**.

7. When you set all limits required, select **Save** and validate with **OK.**

5.5 Setting open and closed positions

5.5.1 Setting end positions

AQ Logic features position sensor. To set end positions, you have first to record OPEN and CLOSED positions one after the other, depending on the first one set.

Mechanical stops must not be used as travel limits.

How to set CLOSED and OPEN positions

1. Enter the menu, then go to **Settings** > **Commissioning** > **Set closed position** (depending on your needs).
   The setting screen appears.



2. Close your valve using the closing knob.
3. When the valve is closed, validate **Save** with **OK**.
   The confirmation window appears.



   If you reach the closing mechanical stops before valve is closed:
   a. Slightly untighten the actuator from its flange until it can turn on its flange.
   b. Turn the actuator in closing direction to wedge it at the maximum against the screws flange
   c. Re-tighten the screws and resume step 3.

If your valve still cannot reach closed position, reset the closing mechanical stop (see §0) and resume this procedure.

4. Validate **Confirm** with **OK**.
   The setting screen for the opposite setting appears.



5. Open your valve using the opening knob.
   An indication of stroke angle appears.
   You can validate with **OK** at any moment.

   If the Stroke set is too small, the opposite error screen appears.
   Validate **Try again** with **OK** and continue to open your valve.



   When you reach the correct position, validate **Save** with **OK**.



   The open position confirmation screen appears.



   If you reach the opening mechanical stop before valve is open, reset the opening mechanical stop.

6. Validate **Confirm** with **OK**.
   Closing and opening positions are set.

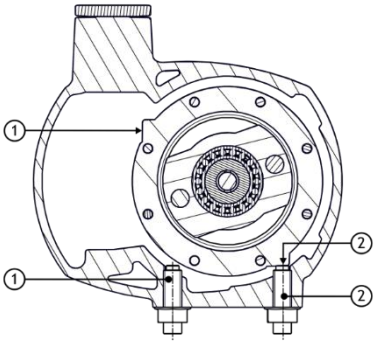
Once end positions are set, proceed to an operation in each direction to check the settings. The actuator must stop with position set in the software and not on mechanical stops.

5.5.2 Setting mechanical stops

The actuator is factory-set for a 90° travel.

Mechanical stops (**1**: counter-clockwise – **2**: clockwise) mechanically block rotation to protect the valve in case of over-travel in case of handwheel operation. They are factory-set.

They can be set on the actuator or on the gearbox if a gearbox is fitted on the actuator.



These screws are located on the lower part of the actuator.

How to adjust mechanical stops for both directions

Clockwise mechanical stop setting

1. Untighten the nut corresponding to clockwise mechanical stop and turn the mechanical stop 2 turns back.
2. Drive the actuator to clockwise travel limit position.
3. Get the clockwise mechanical stop in contact with output sleeve then turn it back of 1 turn.
4. Retighten nut to keep mechanical stop in position.

Counter-clockwise mechanical stop settings

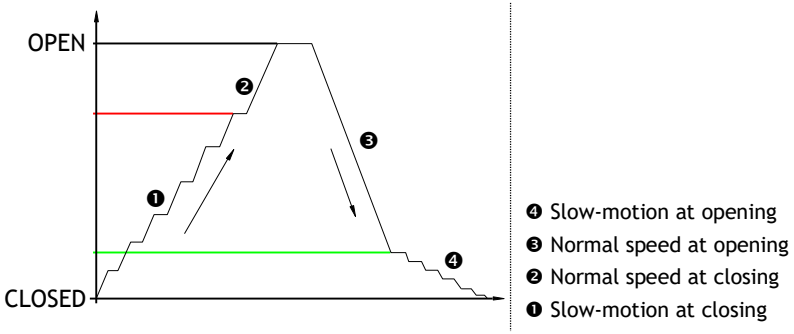
5. Untighten the nut corresponding to counter-clockwise mechanical stop and turn the mechanical stop 2 turns back.
6. Drive the actuator to the counter-clockwise travel limit position.
7. Redo settings steps 3 & 4 for counter-clockwise direction.

Perform complete electrical valve opening and closing operations. The motor must stop on the positions set in the software and not on the mechanical stops.

5.6 Setting speed control (Timer) (OPTION)

Speed control allows to reduce speed of operation of actuator, for instance to protect a pipe from water hammer.

You can set travel sections with reduced opening or closing speed.



The following options are available.

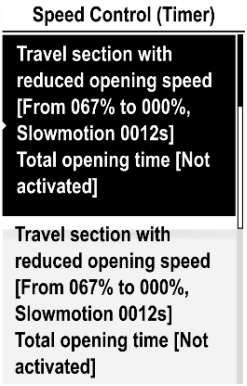
- Beginning of slow-motion zone (opening/closing direction)
- End of slow-motion zone (opening/closing direction)
- Slow-motion duration

Total opening/closing time are results of slow-motion duration and normal speed duration.

How to set timer

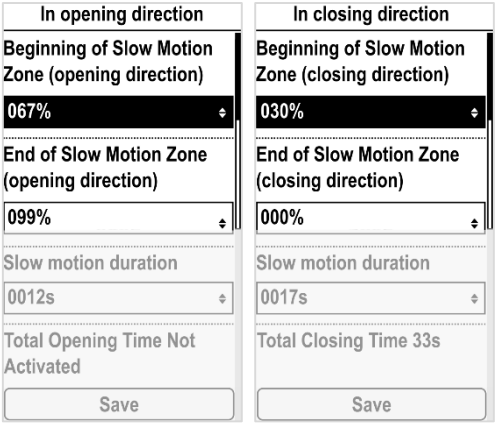
1. Enter the menu, then go to **Settings** > **Actuator Commissioning** > **Speed Control (Timer)**.

   The setting screen appears.

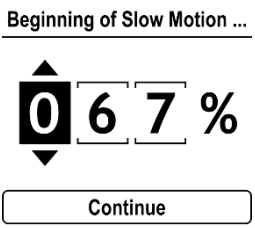


2. Either you select opening or closing direction, select it then confirm with **OK**.

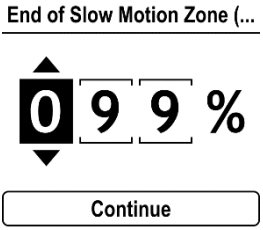
   Following screen is displayed.



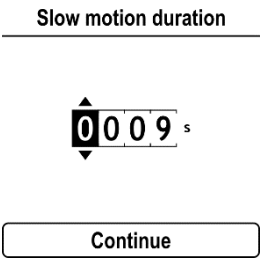
3. Select **Beginning of Slow Motion Zone**.
   The following screen is displayed.



4. Set the position in % between Closing (0%) and Opening (100%) and confirm with **Continue**.
5. Select **End of Slow Motion Zone**.
   The following display is displayed.



6. Set the position in % between Closing (0%) and Opening (100%) and confirm with **Continue**.
7. Select **Slow motion duration**.
8. The following screen is displayed.



9. Set the duration then confirm with **Continue**.
10. Go to **Save** with ↓ or ↑ then validate with **OK**.

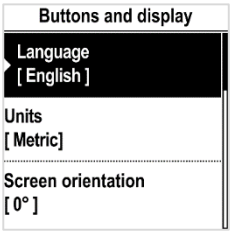
- The maximum duration that can be entered is 9999s.
- The maximum number of steps depends on many factors and cannot be guaranteed by Bernard Controls.

5.7 Set display orientation

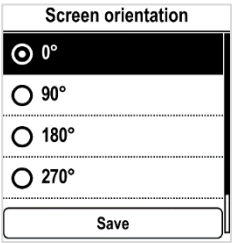
Your display orientation can be modified according to the physical orientation of your actuator.

How to change orientation of your display

1. Enter the menu, then go to **Settings** > **Buttons & Display**.
   The following screen appears.



2. Select **Screen orientation** then validate with **OK.** The following screen appears.



3. Select rotation angle matching your actuator orientation, and validate with **OK**, then go to **Save** and validate it.

Angle values are counter-clockwise.

The confirmation screen appears.



4. Select **YES** then validate with **OK**.
   The display turns accordingly.

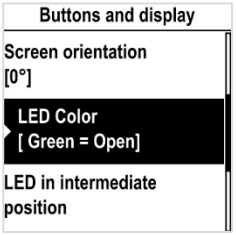
5.8 Set LEDs configuration

Your LEDs configuration can be adjusted according to the standard of your country.

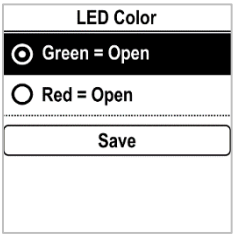
How to set LEDs configuration

1. Enter the menu, then go to **Settings** > **Buttons & Display.**

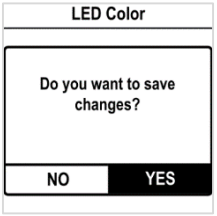
   The **Buttons & Display** screen appears.
   Go down in the menu to **LED color**.



2. Validate with **OK**. The LED color screen appears.



3. Select corresponding setting then validate with **OK**.
4. Go to **Save** and validate it. The confirmation screen appears.



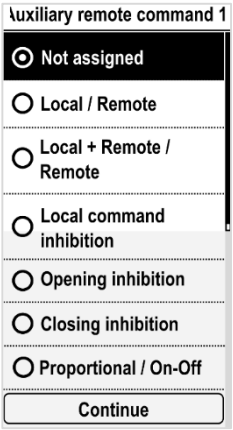
5. Select **YES** and validate.

5.9 Set Remote commands inputs

5.9.1 Set Auxiliary Remote commands

To set Auxiliary Remote commands, go to **Settings** > **Digital inputs - Remote Commands.**

The following settings are available:

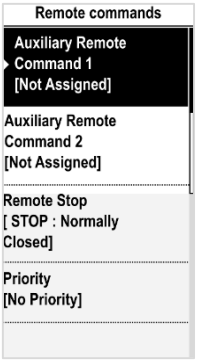


5.9.2 Set Priority for remote commands

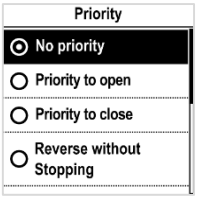
Priority allows to reverse the direction of travel when an operation is in progress without having to stop actuator.

How to set priority for remote command

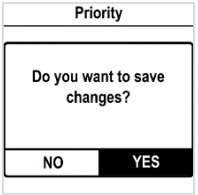
1. Enter the menu then go to **Settings** > **Remote commands**.
   The **Remote Commands** screen appears.



2. Go down in the menu list, then select **Priority** with **OK**.
3. Select the priority action in the list then validate it with **OK**.



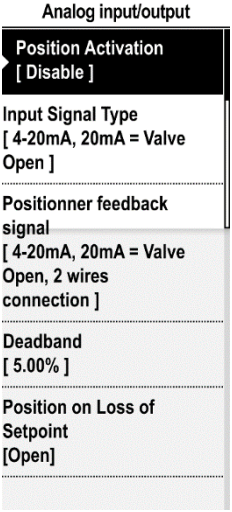
4. Go down to **Save** and validate with **OK**.
   The confirmation screen appears.



5. Select **YES** and validate.

5.10 Set Analog Input / Output (OPTION)

To set analog input/ouput, go to **Settings** > **Analog input/output** and set the different options necessary.

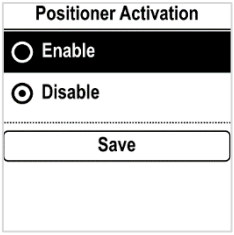


5.10.1 Activate positioner

If present, the actuator can operate as a positioner using a proportional command, such as a 4-20 mA analogue signal.

How to activate positioner

1. From **Analog Input/Output** menu, enter **Positioner Activation**.
2. The **Positioner Activation** screen appears.

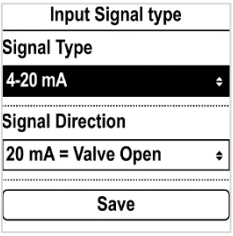


3. Select Enable then validate with **OK**.
4. Go to **Save** then validate with **OK**.
   The **Positioner Activation** confirmation screen appears.
5. Select **YES** then validate with **OK**.
   You go back to **Analog Input/Output** menu.

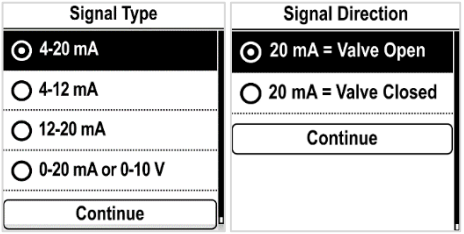
5.10.2Set Input signal

How to set Input Signal

1. From **Analog Input/Output** menu, enter **Input Signal Type**.
   The **Input Signal type** screen appears.



2. For **Signal Type** and **Signal Direction** settings:
   a. Select the setting to adjust and validate with OK.
      The corresponding setting screen appears.



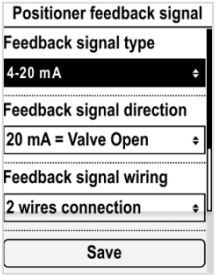
   b. Select the desired value and validate with OK.
   c. **Continue** button is highlighted, validate with **OK**.
   d. The display goes back to **Input signal type** screen.
3. Go to **Save** then validate with **OK**.
   The **Input Signal Type** confirmation screen appears.
4. Select **YES** then validate with **OK**.
   You go back to **Analog Input/Output** menu.

5.10.3 Set Positioner feedback signal

How to set Positioner Feedback signal

1. From **Analog Input/Output** menu, enter **Positioner feedback signal**.

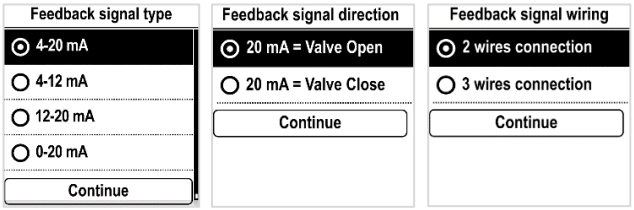
   The **Positioner feedback signal** screen appears.



2. For **Feedback Signal Type**, **Feedback Signal Direction** and **Feedback Signal Wiring** settings:

   a. Select the setting to adjust and validate with OK.

   The corresponding setting screen appears.



   b. Select the desired value and validate with **OK**.

   c. **Continue** button is highlighted, validate with **OK**.

   The display goes back to **Input signal type** screen.

3. Go to **Save** then validate with **OK**.

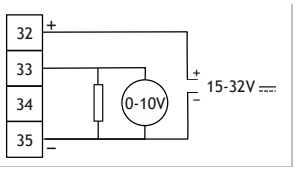
   The **Input Signal Type** confirmation screen appears.

4. Select **YES** then validate with **OK**.

   You go back to **Analog Input/Output** menu.

The 0-10V signal can be obtained using a 0-20mA combined with a 500 ohm (or 499 ohm 1%) resistor.

The power supply will be 15 to 32V.



5.10.4Set Deadband

The deadband value is the maximum allowable difference between the signal and the actuator position when no action occurs. This setting is made at the factory, but it is possible to adjust it.

- If the deadband is too narrow, the actuator could hunt, moving back and forth around the expected position without stabilizing;
- If the deadband is too wide, positioning operations are less precise.

Default deadband is 1%.

How to set Deadband

1. From **Analog Input/Output** menu, enter **Deadband**.
   The **Input Signal type** screen appears.



2. For each digit
   a. Select the digit to adjust.
   b. Adjust the digit with ↓ or ↑.
   c. Validate with **OK**.

   When the last digit is validated, **Save** is highlighted.
3. Validate with **OK**.
   The **Deadband** confirmation screen appears.
4. Select **YES** then validate with **OK**.
   You go back to **Analog Input/Output** menu.

5.10.5Fail-Safe position

When a 4-20 mA input signal is used, it is possible to set up a fail-safe position for use if the control signal is lost.

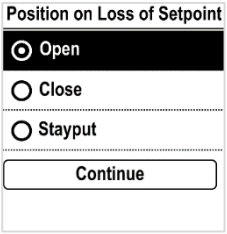
> This function cannot be used with 0-20 mA signals, as the system cannot discern a lost signal and a 0 mA value.

This function is active in the standard configuration, and the actuator remains in position if the signal is lost.

How to set Position on Loss of Setpoint

1. From **Analog Input/Output** menu, enter **Position on Loss of Setpoint**.

   The **Position on Loss of Setpoint** screen appears.



2. Select the desired setting then validate with **OK**.

   The **Position on Loss of Setpoint** confirmation screen appears.

3. Select **YES** then validate with **OK**.

   You go back to **Analog Input/Output** menu.

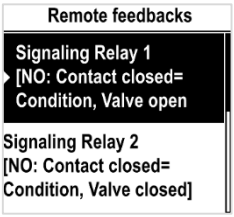
5.11 Set Relays configuration

Available relays can be configured for specific functions.

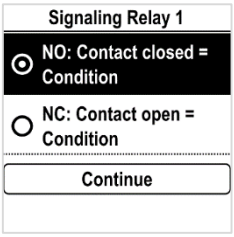
How to set relays configuration

Following procedure runs through the procedure for the 3 standard relays installed. Apply the same procedure for optional relays.

1. Enter the menu then go to **Settings** > **Remote feedbacks**. The **Remote Feedbacks** screen appears.



2. To set a signaling relay, select it and validate with **OK**.
3. The **Signaling Relay** screen appears.
4. To set the condition, select **Contact closed** or **Contact open** option then validate with **OK**



5. Validate **Continue** with **OK**. **Signaling options** screen appears.



6. Select an option in the list

   For standard relays, options available are:

Relay 1	Relay 3	
• Valve open	*Information*	*Faults*
Relay 2	• Valve open • Valve closed • Torque limiter opening direction • Torque limiter closing direction • Actuator is opening • Actuator is closing • Actuator is running • Intermediate position indication • OFF mode • Local mode • Remote mode	• Stopped in intermediate position • Motor thermal overload • Jammed valve • Phase loss • Power on • Handwheel action • Relay operated by Fieldbus
• Valve closed		

7. You can select several option by navigating to the option then ticking it with **OK**.
8. Go to **Save** and validate it. The confirmation screen appears.



9. Select **YES** and validate.

5.12 Setting Forced local mode in Remote mode

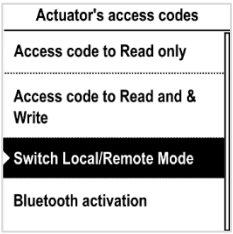
You need 2 steps to be able to use Forced local mode:

1. Allowing switch to Local mode with Local control
2. Switch to Local mode with App

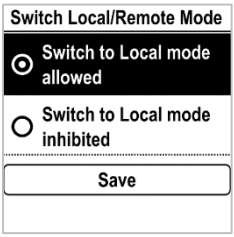
5.12.1 Allowing / Inhibit switch to Local control

How to allow or inhibit switch to Local control

1. Enter the menu with **Access code to Read and Write**
2. Go to **Settings** > **Actuator's access codes >**
   The **Actuator's access codes** screen appears.
   Go down in the menu to **Switch Local/Remote Mode**.



3. Validate with **OK**. The **Switch Local/Remote Mode** screen appears.



4. To allow switch to Local control, select **Switch to Local mode allowed** else select **Switch to Local mode inhibited**, then validate with **OK**.

5. Go to **Save** and validate it. The confirmation screen appears.



6. Select **YES** and validate.

5.12.2Switching to Local control with App

You can only proceed to this operation if **Control selector** is on **Remote** on the actuator and actuator set on **Switch to local mode allowed**.

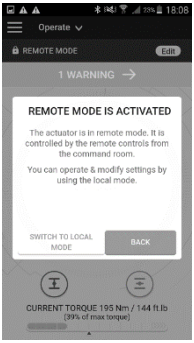
How to switch to Local control with App

1. Ensure you are on **Operate** screen.



If the switch is inhibited, an **Info** button replaces the **Edit** button.

2. Tap on **Edit**. The App asks for confirmation.



3. Tap on **Switch to Local Mode**.

   Remote mode becomes **Local mode**.



   You can now operate your actuator as if it is set on **Local mode**.

To get back to **Remote mode**, simply tap again on the **Edit** button.

6 OPERATION

6.1 Emergency handwheel operation

AQ actuators feature a handwheel for emergency operation.

To avoid potentially harmful turning protruding parts during electrical operation, AQ handwheels feature a foldable handle: you can fold it during electrical operation and unfold it if you need to operate the actuator manually.

6.2 Local control operation

To use:

- Local control mode with Control panel
  ➔ see §4.3
- Local control mode with Smartphone
  ➔ see §4.4
- Forced Local control mode from Remote mode, with Smartphone:
  ➔ see §5.12 - how to allow modes switch then switch modes, and §4.4 to use Local mode with Smartphone

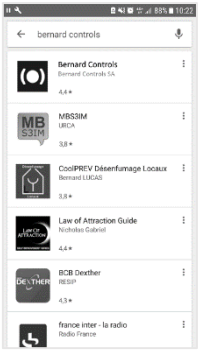
APPENDIX

I. Starting with BC App

Installing the application

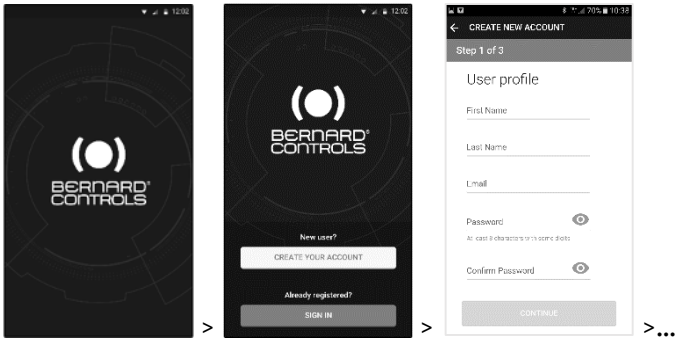
An Internet connection is required on your smartphone.

1. Go to your app store and search for **“Bernard Controls”.**



2. Once retrieved, download and install **BC App**.

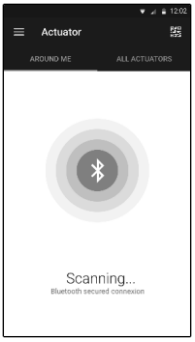
   Once installed, start the App. Log in or follow free account creation screen sequence if it is your first start.

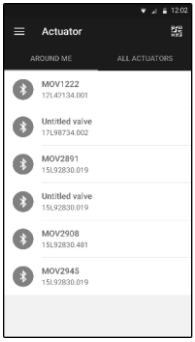


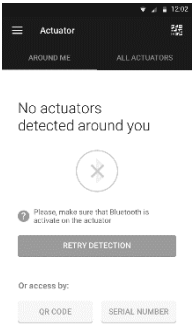
Connecting to your actuator

Once account is confirmed, your smartphone is ready to connect to your actuators. Connection to actuators is achieved with Bluetooth®.

1. Start the App and log in your account.
2. Once logged, App will start to scan for actuators nearby.
3. If the desired actuator is found, select it.
   If not, retry or scan the actuator QR code on the sticker (see § 2.1.1) or enter its serial number.

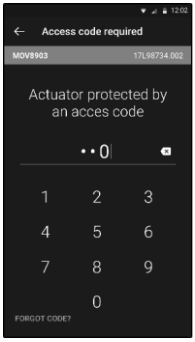


>


or


4. Check that you are connected to the correct actuator (the 2 LEDs in front of the actuator should blink and the Bluetooth icon on the screen has between +), then enter Access code.



>


II. Alarm and Settings menu tree (options not detailed)

Level 1		Level 2	Level 3
Alarm & Warnings			
Settings		Valve tags	Valve tag Location and process
		Actuator commissioning	Set closing direction Closing & Opening Type Set torque limits Set closed position Set open position
		Remote commands	Auxiliary remote commands 1 Auxiliary remote commands 2 Remote stop
		Remote feedbacks	Signaling relay 1 Signaling relay 2 Signaling relay 3
	OPTIONAL	Analog input/output	
		Profibus	
		Modbus	
		Devicenet	
		Hart	
		Foundation fieldbus	
		Buttons and display	Language Units Screen orientation LED Color LED in intermediate position Button mode
		Actuator's Passwords	Password to Read only Password to Read & Write Bluetooth Local/Remote security Bluetooth activation
		Factory data	Actuator type Mechanical features Motor features Electrical features Firmware

III. Alarms and warnings list

System alarms (Fault Relay)	Warnings
Locked motor in open direction	Overtravel
Locked motor in close direction	Activity memory fault
Torque sensor fault	Excessive number of starts
Position sensor fault	Auxiliary power supply fault for external circuits
Abnormal rotation direction in Opening	Local Button fault
Abnormal rotation direction in Closing	Selector Off activated
Configuration memory fault	Selector Local activated
Lost phase (3-phase motor)	Position fault (<-10% and >110%)
Thermal overload	Auxiliary command 2 internal error
Valve jammed	Actuator hunting action detected
Lost signal 4-20mA	Handwheel action
Communication fault between main board and HMI	
Communication Fieldbus fault	
Loss of main power	
Communication between the Main board and the Fieldbus board	

NOTES

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