



Electric quarter turn actuator CENTORK 480 Series



**Installation and maintenance
user's manual**

INTRODUCTION

centork electric actuators are a high value devices. In order to prevent damage in their handling, setting and use it is essential to follow and observe all the points in this user manual, operate under actuators' designated use, and observe the health and safety rules, standards and directives.

centork electric actuator must be handled with care and caution.

Each actuator is delivered, by **CENTORK Valve Control S.L.**, with the following documentation:

- Quarter turn electric actuator
- Installation and maintenance quarter turn electric actuator user manual
- Wiring diagram

In case any of this documentation is not available, contact with your distributor or **CENTORK Valve Control S.L.**, **CENTORK** address is printed on the covers of this manual.



This pictogram advises and remarks activities, procedures and notes related to safety or a correct operation of this quarter turn actuator. Non-observance of these notes might lead to consequential damage.

IMPORTANT NOTE

This work and the information it contains are property of CENTORK Valve Control S.L.. The information it contains will not be reproduced or disclosed, in whole or in part, without the prior written consent of CENTORK.

The contents in this manual are subject to change due to the quality improvement without individual notice.

Index

1	GENERAL DESCRIPTION	5
1.1	Quarter turn electric actuator	5
1.2	Standard Features	5
2	SAFETY INSTRUCTIONS.....	6
3	TRANSPORT AND STORAGE	6
3.1	Transport and actuator handling	6
3.2	Storage and commissioning.....	6
4	PRE-INSTALLATION INSPECTION	7
5	ACTUATOR MOUNTING	7
6	ELECTRICAL CONNECTIONS.....	8
7	PRELIMINARY TEST and settings.....	8
7.1	Sense of rotation	8
7.1.1	Actuator-Valve sense of rotation:.....	8
7.1.2	Motor sense of rotation.....	9
7.2	Handwheel and Declutching	9
7.3	Mechanical Travel Stop Adjustment	9
7.4	Limit Switch Setting	10
7.5	Torque Switch Setting.....	10
7.6	Counter-Clockwise to Close Setting	10
7.7	Mechanical Position indicator Setting	10
7.8	Potentiometer setting (Optional element)	11
7.9	TPS 4-20 mA transmitter setting (Optional element)	11
8	REMOTE POSITIONER CONTROLLER RPC SETTING (OPTIONAL)	12
8.1	Setting input signal.....	12
8.2	Setting fail position	12
8.3	Delay time	12
8.4	Dead band.....	13
8.5	RPC auto-setting.....	13
8.6	RPC setting and calibration (CH2).....	13
8.7	Led signal alarms and information	14
9	LOCAL CONTROL UNIT (OPTIONAL)	15
10	CENTRONIK, ELECTRONIC CONTROL UNIT (OPTIONAL)	15
11	MAINTENANCE.....	16
11.1	Lubrication.....	16
11.2	Tools for installation and maintenance tasks	16
12	TROUBLE SHOOTING.....	17
12.1	Actuator does not respond	17
12.2	Actuator is being powered but it does not operate	17
13	AFTERSALES SERVICE.....	17
14	SPARE PARTS.....	18
15	ANNEXE	19

1 GENERAL DESCRIPTION

1.1 Quarter turn electric actuator

Quarter turn electric actuators series are designed to provide reliable and efficient operation of 90-degree quarter turn valves. Other applications should be consulted CENTORK before. CENTORK is not liable for any possible damages resulting from use in other than designated applications. Such risk lies entirely on the user.

Actuator torques range from 80Nm to 1.100Nm.

1.2 Standard Features

Enclosure Rated	Weatherproof IP67 according to EN60.529. IP68 optional.
Enclosure	High grade aluminium alloy, corrosion coated
Power Supply	110/220VAC 1 PH 50/60Hz 380/440VAC 3PH 50/60Hz, 24 VDC
Control Power supply	110/220VAC 1 PH 50/60Hz, 24 VDC
Duty Cycle (ON-OFF)	S2, 20-50% Máx 30 min, according to EN60034-1.
Duty Cycle (Modulating)	S4, 30-50%, 300-1200 starts/hour, according to EN60034-1.
Motor	Squirrel caged induction motor
Limit Switches	Open/close SPDT, 250VAC 10A rating
Auxiliary Limit Switches	Open/close SPDT, 250VAC 10A rating
Torque Switches	Open/close SPDT, 250VAC 10A Rating (Not available in 480.007 and 480.010 models)
Stall Protection	Built –in thermal protection, high 150°C / low 97°C ±15°C
Travel Angle	90° ±5°
Indicator	Continuous position indicator
Manual Override	Declutchable manual override
Self Locking	By means of worm gear
Mechanical Travel Stops	2 x external adjustable mechanical travel stops
Space Heater	5W (110/220V AC) anti-condensation heater.
Conduit Entries	2xM25 (except 480.007: 2xM20). NPT, PG optional)
Lubrication	Grease moly EP
Ambient Temperature	-20° C to + 70° C
External Coating	Dry powder polyester.
Dielectric strength	1500 V AC (1 min)
Terminal block	Screw and lever push type

Notes:

- *Features of some OPTIONAL elements are described in specific chapters. Elements such as potentiometers, transmitter, RPC positioner, LM2 local control...*
- *For 480.007 and 480.010 models, some features have small differences. Check technical datasheets for such models.*

2 SAFETY INSTRUCTIONS

The scope of this manual is to enable a competent user to install, operate, adjust and inspect a CENTORK quarter turn electric actuator. These instructions must be observed, otherwise a safe operation of the actuator is no longer warranted.



As electric device, during electrical operation certain parts inevitably carry lethal voltages and currents (ELECTRICAL RISKS). Work on the electrical system or equipment must only be carried out by a skilled electrician himself or by specially instructed personnel, in accordance with the applicable electrical engineering rules, health and safety Directives and any other national legislation applicable.



Under no circumstances should any modification or alteration be carried out on the actuator as this could very well invalidate the conditions which the device was designed.



Under operation, motor enclosure surfaces can reach high temperatures (up to 100°C). Protection measures should be taken into account in order to prevent people and goods from it.

3 TRANSPORT AND STORAGE

3.1 Transport and actuator handling

- **CENTORK electric actuators must be transported in sturdy packing.** During transport measures should be adopted in order to prevent impacts, hits. CENTORK delivers its actuators ex-work.
- **Hits or impacts against wall, surfaces or objects might cause severe damage on Electric actuator.** In these cases, after such events, a technical inspection must be done by CENTORK technicians.
- **Do not attach to the handwheel ropes or hooks to lift by hoist.**
- The valve-actuator unit cannot be lifted/manipulated employing any lifting point of the actuator; Actuator has been designed and sized in order to motorize industrial valves, and withstand the torque required.
- **Covers have to be properly closed (Tight) and sealed. Cable entries on electrical connection cover must be sealed. Do not manipulate the protection plugs: Metallic protection plug are sealed with PTFE tape.**
- Each Actuator is delivered with a set of technical documentation (User manual, datasheet, diagrams...), which has to be carefully stored.



3.2 Storage and commissioning

Despite of their high degree of protection (IP67 as standard, and IP68 optional) condensation – presence of water- can occur inside the electric actuators by incorrect and negligent handling of the actuators. This may damage sensitive internal parts during the storage. This problem can be avoided by observing the following points.

- Verify the actuator to insure correct model number, torque, options and special components, voltage and enclosure type, and the actuator control before installation or use. It is important to verify that the actuator is appropriate for the requirements of the valve and the intended application. If there is any discrepancy, please contact with your local distributor, or CENTORK, to solve that discrepancy. Once the electric actuator has been set up, CENTORK decline any responsibility related to discrepancies.

- While commissioning, **CENTORK recommend a visual inspection in order to detect any anomaly caused during the transport, handling or during the storage; Checking should include a visual inspection of the switching and signalling unit compartment.**
 - Check that the painting work of the actuator is not been damaged. Retouch it when damaged.
 - Check that actuator cover is correctly closed and tight. Check that protection plugs for the cable entries are correctly closed and tight. **Protection plug must be sealed with PTFE tape.**
 - If damages like shocks, cracks, hits or others due to an improper handling, or humidity inside the equipment due to improper storage appear, contact CENTORK or your nearest distributor.
 - **CENTORK quarter turn electric actuators are packed in sturdy packing: Store in a clean, cool, dry and ventilated place. Protect against humidity from the floor. Use pallets, wooden frames, cage boxes or shelves. Do not store the actuator directly on the ground! Cover it to protect it from dust and dirt. Cover the machined parts with suitable protection against corrosion. Do not employ plastic bags, as they can cause condensation.**
- Each Actuator is delivered with a set of technical documentation (User manual, datasheet, diagrams...), which has to be carefully stored.

4 PRE-INSTALLATION INSPECTION

- Verify the actuators nameplate to insure correct model number, torque, operating speed, options and special components, voltage and enclosure type before installation or use.
- It is important to verify that the output torque of the actuator is appropriate for the torque requirements of the valve and that the actuator duty cycle is appropriate for the intended application.
- If there is any discrepancy, please contact with your local distributor, or CENTORK, to solve that discrepancy. Once the electric actuator has been set up, CENTORK decline any responsibility related to discrepancies.

5 ACTUATOR MOUNTING



- **Do not lift the actuator by the handwheel. Do not attach to the handwheel ropes or hooks to lift by hoist.**
- The actuator may be mounted in any position
- The CENTORK quarter turn electric actuator Series are supplied with a female drive output. ISO5211. Bolt patterns are provided for actuator mounting. The actuator drive bush is removable for ease of machining (except for 480.007). To remove the drive bush, just take out the 2 fixing screws bolts DIN912.
- It is mandatory that the actuator be firmly secured to a sturdy mounting bracket or directly mounted to the valve's ISO mounting pad. High tensile bolts or studs with spring locking washers must be used.
- When required, the actuator output flange can be rotate 45°, in this case, it is necessary to release the 8 bolts (DIN912) that fix the flange to the actuator housing, and then, rotate the flange.
- The valve output shaft must be inline with the actuator output drive to avoid side-loading the shaft. To avoid any backlash no flexibility in the mounting bracket or mounting should be allowed.
- Reserve the space for maintenance routines and tasks.

6 ELECTRICAL CONNECTIONS

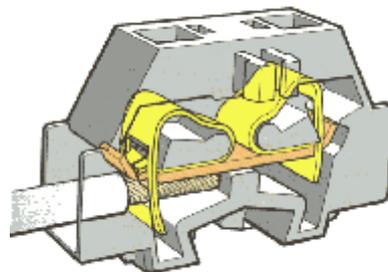
! Safety instructions on chapter 2 must be observed. Work on electrical system or equipment must only be carried out by skilled electrician.

Wiring diagram is enclosed inside the quarter turn electric actuator (Electric compartment) Just in case the wiring diagram is missing, contact with your distributor or CENTORK Valve Control. Observe the max. allowable current/voltage values of electric devices (Microswitches, heater, transmitter...)

- **Standard factory units are anti-clockwise to open!**
- Loosen the screws on the actuator cover and lift it off.
- Make sure that power supply voltage is in accordance with the data on the actuator nameplate

! Use and install proper cable glands and protection plug, according to IP protection degree. Seal properly the cable glands. Warranty is no longer valid if this is not respected.

- Pass cables through cable glands.
- Connect according to the enclosed wiring diaphragm. Employ a proper screw driver in order to release the terminals. Wire should be 8~9 mm maximum.
- Check that all cable glands are correctly tighten
- Clean sealing faces at terminal cover and check whether O-ring is in good condition. Mount cover and tighten cover bolts.



Power Requirements: Consult the nameplate of the actuator for duty cycle and current draw information

Duty Cycle: Duty cycle rated IEC34 – S2 or S4 (See standard features chapter), exceeding the actuator's rated duty cycle may cause thermal overload.

7 PRELIMINARY TEST AND SETTINGS

! Move the valve manually to an half-open position, operate an electrical opening and check that the motor rotates in the right direction (Visual disc indicator or valve shaft could help for this). Stop immediately if NOT. Instructions have been made for standard electric actuators: **CLOCKWISE TO CLOSE**

- Test run the actuator and check that the limit switches work correctly
- Check that all cable glands are correctly tighten.
- Clean sealing surfaces at terminal cover and check whether O-ring is in good condition. Mount cover and tighten cover bolts.

7.1 Sense of rotation

7.1.1 Actuator-Valve sense of rotation:

! Run the actuator manually (See 7.2 chapter) by mean of the handwheel. When turning the handwheel clockwise, valve must close. Also, check that actuator visual indication disc rotates clockwise as well: This means that valve and actuator are **CLOCKWISE-TO CLOSE**.

- In case that turning the actuator handwheel valve opens instead of closing, that means that sense of rotation (valve and actuator) is **COUNTER-CLOCKWISE-TO-CLOSE**. In this case, ACTUATOR needs to be reconfigured as a COUNTER-CLOCKWISE (See 7.6 chapter)

7.1.2 Motor sense of rotation.

- Run the actuator electrically and check if actuator runs to close, visual disc indicator turns CLOCKWISE (For standard sense of rotation). If not, check the power supply cables (U-V-W) in the wiring diagram.

7.2 Handwheel and Declutching

Quarter turn electric actuators are provided with a declutchable manual override system. The override engagement lever returns automatically to auto position when the actuator is operated electrically, this is called “motor priority”.

When handwheel is rotate CLOCKWISE, actuator output shaft turns CLOCKWISE.

For 480.007 models

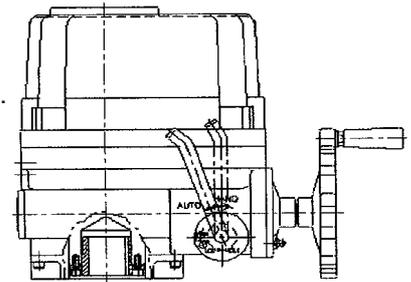
- In order to manually operate the actuator, take the 5 mm Allen key wrench tool (See picture)
- Key wrench tool has to be coupled to hexagonal head hub shaft of the actuator in order to operate it.

Turn clockwise to close and anti-clockwise to open.



For 480.010 models and higher

- In order to manually operate the actuator, pull the manual override
- Engagement lever towards the handwheel until it remains in position.
- Turn the handwheel until the valve reaches the required position
- Turn clockwise to close and anti-clockwise to open



7.3 Mechanical Travel Stop Adjustment

Mechanical travel stops are designed in order to limit the actuator stroke end positions (0-90°) in case that a limit switch failure. Open and close limit switches must be correctly set. It is not recommended operating continuously against these mechanical travel stops, they might be damaged.

Adjust the close travel stop in valve closed position first.

- Loosen both travel stop stud bolt nuts by 3~4 threads
- Manually operated the actuator to valve closed position until its makes trip contact with the closed limit switch.
- Forward adjust travel stop stud bolt until it contacts the worm wheel (In this position the stud bolt should not be able to travel any further).
- Adjust the travel stop stud back one turn and tighten the lock nut



Figure 7.3

Repeat the same setting operation for the open travel stop



ADVISE: both travel stop stud bolts limit the 0-90° travel of the output wheel. If the stud bolt is completely unscrewed or loosen, the output wheel can be disengaged (gear) from worm pinion, at the end positions. In that case, move by means of handwheel to a middle position in order to “engage” the worm pinion and wheel again.

7.4 Limit Switch Setting

Operate the actuator manually to valve closed position

- Using an Allen key, loosen the set screw in the CLOSE limit switch cam (For **480.010** and higher, it is normally marked with a "CLS" indication, see picture). For **480.007** models, with a n°13 wrench tool, loosen the nut and proceed to set the limit switches, both cams are marked with CLS and OLS.
- Rotate the CLS cam towards CW limit switch lever until the switch 'clicks' .
- Tighten set screw with hex wrench
- Lower cam marked CLS



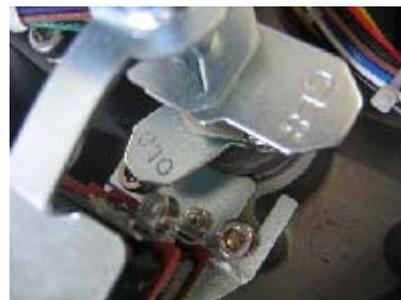
480.007 models



NOTE: Instructions have been made for standard electric actuators: CLOCKWISE TO CLOSE (See 7.1 chapter)

Operated the actuator manually to valve open position

- Using an Allen key, loosen the set screw in the OPEN limit switch cam. (For **480.010** and higher, it is normally marked with a "OLS" indication, see picture).
- Rotate the OLS cam towards CCW limit switch lever until the switch 'clicks'
- Raise cam marked OLS
- Tighten set screw with hex wrench, or nut for **480.007** models.



480.010 models and higher

7.5 Torque Switch Setting



The torque switches are adjusted from factory to protect actuator and valve against overloading and should normally NOT be adjusted or modified on site.

Should adjustment be necessary, please contact our factory or distributor before adjusting.

Torque switches NOT AVAILABLE in 480.007 and 480.010 models!

Torque switches bolts has been sealed with a red wax. Warranty would be invalid if broken.



7.6 Counter-Clockwise to Close Setting

Standard factory actuators are normally set to clockwise rotation to CLOSE. **When actuator must be configured as a COUNTER-CLOCKWISE consult CENTORK PREVIOUSLY.** The rotation can be reverse to anti-clockwise to close by simply reconfiguring the wiring as follows:

- Reverse wiring in the main terminal block the limit switches and the power supply.
- Adjust the visual indicator to suit the anti-clockwise rotation.
- When actuator has optional elements such us potentiometer, 4-20 mA transmitter or RPC positioner card, then, reverse the 1 and 3 potentiometer cables.

7.7 Mechanical Position Indicator Setting

- Manually rotate actuator to fully closed position
- Remove actuator cover. Loosen indicator screw.
- Adjust indicator to correct orientation.
- Tighten indicator screw
- Mount and close the cover. Check its O-ring.



7.8 Potentiometer setting (Optional element)

Potentiometer gives a signal proportional to valve position. Potentiometer nominal value (CENTORK standard) is 10 kOhms. For other values, consult CENTORK. Potentiometer has been already set in Centork Facilities, when a new adjustment is required, then:

- Manually rotate actuator to fully closed position
- Remove actuator cover.
- Loosen potentiometer wheel-gear (pinion) screw.
- Turn the pinion in order to reduce the potentiometer signal to its lowest or desired minimum value. **Give some margin (backlash); Potentiometer has to end tops, in case that potentiometer ends reached before the valve end position, potentiometer might be damaged.**



- Tighten wheel-gear (pinion) screw.
- Manually or electrically run the actuator to fully open position. Check potentiometer value.
- Mount and close the actuator cover, check O-ring, and tight it.

7.9 TPS 4-20 mA transmitter setting (Optional element)

TPS Transmitter gives a signal (Current or Voltage) proportional to valve position. Check Voltage supply polarity before!.. For TPS configurations (Current or voltage signal, 2, 3 or 4 wires) consult annexe. **TPS transmitter has been already set in Centork Facilities**, when a new adjustment is required, then:

- Manually rotate actuator to fully closed position
- Remove actuator cover.
- Loosen potentiometer wheel-gear (pinion) screw.
- Turn the pinion in order to reduce the potentiometer signal to its lowest or desired minimum value. **Give some margin (backlash); Potentiometer has to end tops, in case that potentiometer ends reached before the valve end position, potentiometer might be damaged.**



- Tighten wheel-gear screw.
- With a suitable screwdriver turn the “**ZERO**” potentiometer trimmer in order to set the minimum value (4 mA, 0 mA or 0 Volts, depending on configuration chosen). Potentiometer is marked with “**ZERO**” on electronic board or with a label, depending on model.
- Manually or electrically run the actuator to fully open position. With a suitable screwdriver turn the “**SPAN**” potentiometer trimmer in order to set the minimum value (20 mA or 10 Volts, depending on configuration chosen).
- Run the actuator back to the CLOSED position and check the minimum current again. If this is not, readjust it again. The TPS electronic circuit the zero and span adjustment affects each other. Repeat this process until optimum adjustment values (Feedback signal for open and close positions) are reached.
- Mount and close the actuator cover, check O-ring, and tight it.

8 REMOTE POSITIONER CONTROLLER RPC SETTING (OPTIONAL)

CENTORK Remote Position Controller RPC is the local actuator controller (Positioner), using 12bit A/D converter and 8 bits Microprocessor, this electronic device controls actuator operation, moving to open and close direction, according to the input signal from main controller. This device has been designed to control electric actuator for general-purpose industrial valve. Other applications should be consulted CENTORK before. The RPC is an optional element.

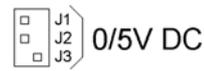
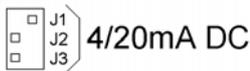
For **480.007** and **480.010** models, due to small actuator dimensions or size, the RPC is fitted in a external box mounted on actuator.



⚠ RPC Devices are normally set and configured in CENTORK facilities. Polarity and proper connection must be done according to wiring diagram.

8.1 Setting input signal

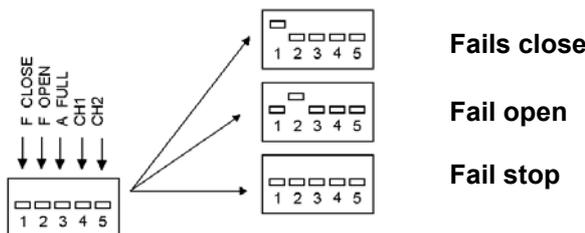
User can select suitable input signal by adjusting DIPSWITCHES as follows. CENTORK already set the signal as 4-20mA.



NOTE: 0/10V configuration is special. Consult CENTORK for proper instructions.

8.2 Setting fail position

In order to prevent serious trouble when input signal is failed, user can set the fail position of actuator by setting of DIPSWITCHES as follows.



8.3 Delay time

This prevents continuous operation of RPC card caused by abnormal INPUT signal due to EMC noise and other foreign frequency or signal.

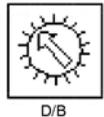
Once INPUT signal is detected, RPC waits for some time, the preset time (Delay time) -RPC doesn't move within the pre-set time-, when the preset time is over, then RPC runs and executes new order (Input signal).



Range: 0.5 ~ 8sec, 1 step: 0.5sec, 0~15 step

8.4 Dead band

This is the tolerance between INPUT signal and the position of actuator. When turn this SETTING TOOL to clockwise, it is getting wider.



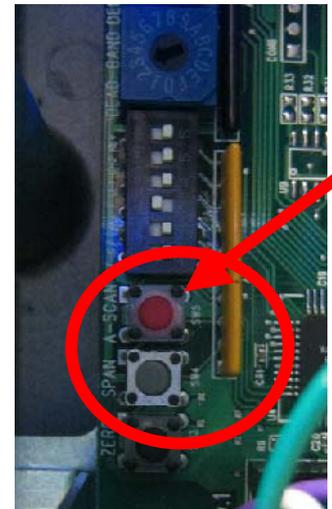
BE careful when turn this to counter-clockwise too much, sensitivity is getting increase, it could be the reason of called “PUMPING” effect: The actuator never finishes to reach the position (Never stops) because is always moving to open and to close. This effect can burn the motor and damage other components

Range: 0.1~4.5%, 1step 0.3%, 0~15step

8.5 RPC auto-setting

It is necessary to calibrate the RPC electronic board prior to operation. The **A-SCAN** function permits to calibrate the RPC automatically.

- Actuator must be correctly wired according to enclosed wiring diagram, specially the RPC board. Check polarity as well. Wire the input and output signal.
- Open and close limit switches must be set before (See 7.4 chapter), potentiometer must be set before.
- Run the actuator to a middle position.
- Generate an input signal, inside of 4-20 mA range, example, 12 mA
- According to actuator wiring diagram, select the REMOTE operation.
- Keep pressing the **A-SCAN** button of the RPC board until the RPC lamps flash in yellow colour, then RPC will start running.



Once the **A-SCAN** button is pressed, the RPC board starts running. It moves open and close in order to detect both ends positions and calibrate in each position the feedback signal (4 mA in close position and 20 mA in open position). This process take some time (A couple of minutes), once it has been correctly done, the RPC will move the actuator according to the INPUT signal value, following the example, 12 mA.

If RPC board cannot achieve this process, the “FAULT” lamp will flash. Check the potentiometer connexion and settings, the wiring and connexion of the INPUT/OUTPUT signal according to wiring diagram.

8.6 RPC setting and calibration (CH2)

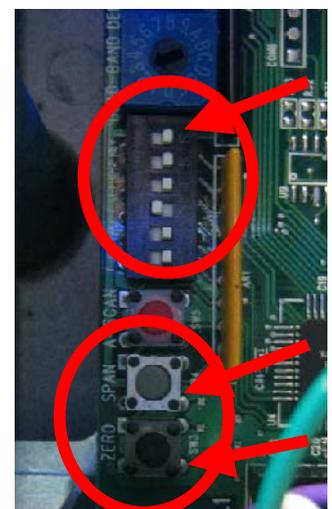
This function allows to set the 4 mA (Close position) and 20 mA (Open position)



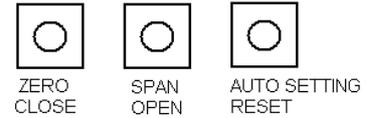
It is necessary to remove (Disconnect on terminals) the 4-20 mA INPUT signal !!!

Close position

- Run the actuator to close position.
- Set the potentiometer to its minimum value (See 7.8 chapter). **Give some margin (backlash); Potentiometer has to end tops, in case that potentiometer ends reached before the valve end position, potentiometer might be damaged.**
- Then put **CH2 DIP SWITCH (N° 5)** “ON” status.

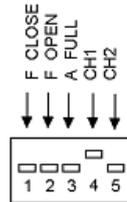


- Push **ZERO** button, for a while, until “Close setting” is done. Notice that the output current signal is “updated” at 4 mA.
- Change the **CH2 DIP SWITCH (N° 5)** to “OFF” status.



Open position

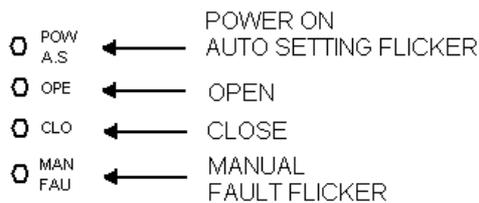
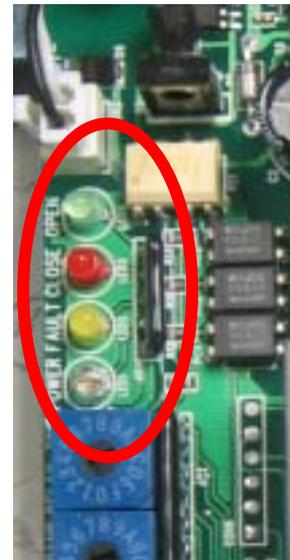
- Run the actuator to open position.
- Then put **CH2 DIP SWITCH (N° 5)** “ON” status.
- Push **SPAN** button for a while until “Open setting” is done. Notice that the output current signal is 20 mA.
- Change the **CH2 DIP SWITCH (N° 5)** to “OFF” status.



Finally, connect again the INPUT signal and check the operation by remote INPUT signal 4~20mA.

8.7 Led signal alarms and information

Printed	LED colour and situation	Meaning of LED
POW A.S	Yellow on Yellow flicker	Power on Auto setting
OPE	Green on	Open
CLO	Red on	Close
MAN FAU	Red on Red flicker	Manual operation Failure in CT, RPC



9 LOCAL CONTROL UNIT (OPTIONAL)

LP is a local control unit available for quarter turn electric actuators, with the following features:

- Integral starter.
- OPEN-STOP-CLOSE selector.
- LOCAL-REMOTE selector.
- Lamps for REMOTE / LOCAL indication.
- Lamps for OPEN / CLOSE indication.



See wiring diagram enclosed to electric actuator for further information. No special settings are required.

LP units are not available for **480.007** models

n

10 CENTRONIK, ELECTRONIC CONTROL UNIT (OPTIONAL)

CENTRONIK unit is an integral electronic control unit developed for actuators, with the following features:

- On-off or modulating service (Input, 4-20 mA current or 0-5V voltage, 0-10V as an option)
- Reversing contactors for electric motor controls. Thyristor (solid state relays) optional.
- Plug-socket electric connection between actuator and centronik unit
- Customer electric connection with 3 standard options: terminals, crimps and plug socket connectors
- Frontal panel with lockable selector switch and pushbuttons with 5 indication LED,s (non intrusive)
- 2 digital displays
- Power supply module with integrated transformed
- Easily accessible fuses.
- Interface module (I/O) with opto-couplers (EMC protection). 24 VDC Digital output signals. Relays, potential free contacts, as a option.
- Programmable Logic module with microprocessor. DIP switches programming.
- Motor phase control
- Fieldbus board interface available: Modbus RTU and Profibus DP.



480 electric actuators with CENTRONIK unit have its own user manual.

For more additional information, consult CENTORK o suitable technical sheets.

CENTRONIK units are not available for **480.007** models

11 MAINTENANCE

Maintenance, under normal conditions at six month intervals. But when conditions are more severe, more frequent inspections may be advisable.

- Ensure valve actuator alignment
- Insure wiring is insulated, connected and terminated properly
- Insure all screws are present and tight
- Insure cleanliness of internal electrical devices
- Insure conduit connections are installed properly and are dry
- Check internal devices for condensation(Presence of water) / humidity
- Check power to internal heater
- Check enclosure O rings sealing and verify that the O ring is not pinched/damaged between flange
- Verify declutch mechanism
- Visually inspect during open/close cycle
- Inspect identification labels for wear and replace if necessary

11.1 Lubrication

480 Series electric actuator is a totally enclosed unit with a permanently lubricated gear train (Moly EP Grease). Once installed lubrication should not be required. However, periodic preventative maintenance will extend the operating life of the actuator.

11.2 Tools for installation and maintenance tasks

- 1 Set of Metric Allen Keys
- 1 Set of Screwdrivers
- 1 Metric Spanner
- 1 Wrench 200mm
- 1 Wrench 300mm
- 1 Wire Stripper (long Nose)
- 1 Multi Meter (AC, DC, Resistance), and 4-20 mA pocket generator.

12 TROUBLE SHOOTING

The following instructions are offered for the most common difficulties encountered during installation and start-up.

12.1 Actuator does not respond

- Verify the line voltage (Power supply) to the actuator
- Check that the voltage matches the rating on the actuator nameplate
- Check internal wiring against actuator wiring diagram
- Check limit switch cams: Limit switches might not be correctly set
- Check torque switches: Jamming might happen

12.2 Actuator is being powered but it does not operate

- Verify the line voltage to the actuator
- Check actuator torque to see if it's greater than the valve torque: Actuator might be undersized.
- Check limit switches and cams
- Check that the torque switches are not tripped
- Check mechanical travel stop adjustment
- Verify the actuator against valve rotation (standard units are anti-clockwise to open)
- Check internal wiring
- Check for corrosion and condensation.
- Check that motor is not warm (Overheat).
- Verify coupler/bracket are correctly installed and is not causing binding

13 AFTERSALES SERVICE

Each actuator is identified by a serial number located on nameplates. With each actuator the following information is included:

- The nameplates attached to the actuator.
- The electric connection diagram for each actuator, inside of the electric cover.
- This 480 Series electric quarter-turn actuator user's manual.

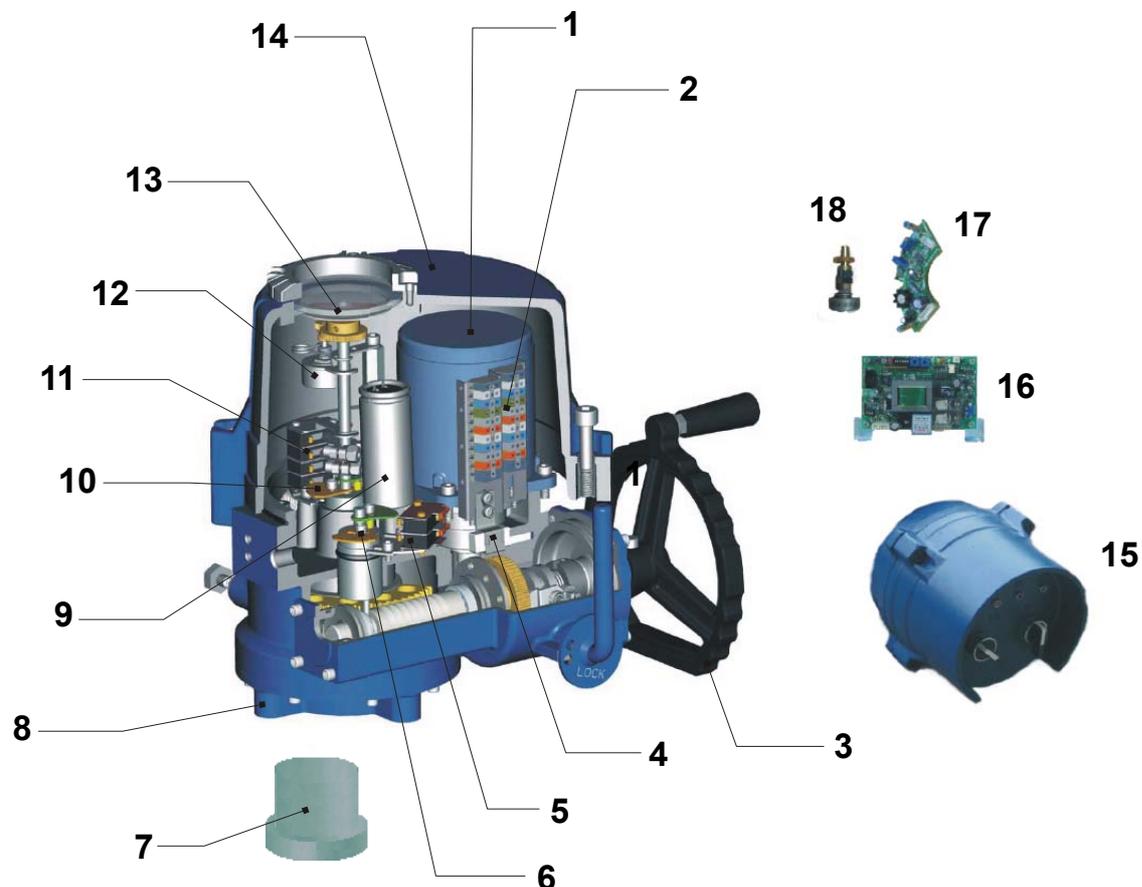
For any claim or information request, the SERIAL NUMBER should be used.

Should user have any further queries, please contact CENTORK through phone, fax or e-mail without hesitation.

CENTORK address can be found on Manual covers.

14 SPARE PARTS

In order to define exactly the proper spare part it is necessary to include the ELECTRIC ACTUATOR SERIAL NUMBER and TYPE, located in the electric actuator nameplates.



N°	Description	QTY	Remark
1	ELECTRIC MOTOR	1	Depends on voltage supply and actuator size
2	TERMINALS	1	
3	HAND WHEEL	1	
4	HEATER	1	Depends on actuator size
5	TORQUE SWITCHES	2	
6	TORQUE CAMS	2	
7	REMOVABLE INSERT BUSHING	1	Depends on actuator size
8	OUTPUT FLANGE	1	Depends on actuator size
9	CAPACITOR	1	Only for AC single phase actuators
10	LIMIT CAMS	4	
11	LIMIT SWITCHES	4	
12	POTENTIOMETER KIT	1	Optional element
13	MECHANICAL INDICATION DISC	1	
14	COVER	1	Depends on actuator size
15	LM2 LOCAL CONTROL	1	Optional element
16	RPC REMOTE POSITION CONTROLLER	1	Optional element
17	4-20 mA TRANSMITTER	1	Optional element
18	POTENTIOMETER KIT	1	Optional element

15 ANNEXE



DECLARATION OF CONFORMITY

CENTORK VALVE CONTROL S.L. declares that the electrical actuators, series:

CENTORK quarter turn electric actuator, 480, 482 and 484 series

are designed and produced to be installed on industrial valves and in compliance with the following European directives (EC):

*98/37/EC Machinery Directive, 22 June 1998
73/23/EC Low-Voltage Equipment Directive, 19 February 1973
89/336/EC Directive on Electromagnetic Compatibility*

Compliance with the Essential health and Safety Requirements has been assured by compliance with

<i>ISO 5210 Sept. 1.991</i>	<i>EN 50081-2:1994</i>	<i>EN 60.204-1 Febr. 1.999</i>
<i>ISO 5211 Febr. 2.001</i>	<i>EN 50082-2:1998</i>	<i>DIN VDE 0100 Ene 1.997</i>
<i>EN 292-1 Abr. 1.993</i>	<i>EN 61000-4:1999</i>	<i>DIN VDE 0530 Dic. 1982</i>
<i>EN 292-2 Abr.1.993</i>		

Centork actuators covered by this declaration of conformity must not be put into service until the equipment into which they are incorporated, has been declared in conformity with the provisions of the Machinery Directive.

Lezo, 10th of January 2.007



Francisco Lazcano
-General manager-

Centork Valve Control S.L.
Pol Ind. 110, Txatxamendi 24-26
LEZO 20.100
(SPAIN)

Remote Position Controller RPC technical information

Model	RPC
Power :	110V/220VAC (10% tolerance), 50/60Hz 4VA Max (Changeable by DIP switch)
Input signal:	4-20mA DC, 2~10VAC, 0~5VAC, 0~10VAC, 1~5VAC Input resistance: 250 Ohm,
Feedback signal:	100 ~ 10Kohm Exaction: 2.3VDC
Output signal:	4~20-mA DC
Load resistance:	750 Ohm Max.
Control output :	Relay contact 250VAC 10A Max (Inductive load)
Number of output contact:	2 (Open and close contact)
Delay time adjustment:	0.5 ~ 8 sec
Dead band adjustment:	0.1 ~ 4.5% (1 step 0.3%, total 15 steps)
Resolution:	Min. 1/1000
Position conversation accuracy:	0.5 ~ 1.5% (Depends on installation)
Ambient temperature:	-10°C ~ +60°C
Ambient humidity:	90% RH Max (Non-condensate)
Dielectric strength:	1500V AC 1Min (Input to output, Power to Ground)
Insulation resistance:	Min. 500VDC 30Mohm
Vibration & Shock (X, Y, Z):	10g (6g based on RMF, Frequency: 0.2 ~ 34Hz, 30Min)
LED signal:	See table

LED	SIGNAL
Yellow on	Power on
Yellow Flicker	Auto setting
Green on	Open
Red on	Close
Red on	Card Manual mode
Red	Flicker Failure in either signal, CT, wiring

4-20 mA TRANSMITTER technical information

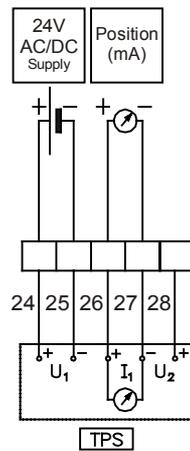
- Max. supply: 30 V AC/DC
- Minimum resistance: 600 Ohms
- Precision <1%
- RL min (Voltage reference): 1.2 k Ohms

$$\text{Max. load } R_{L\text{max}} = \frac{V_{cc} - 18}{20 \times 10^{-3}}$$

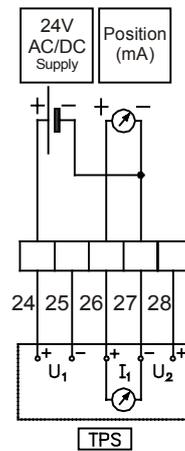
Output signal (Current)

- 2 wires: 4-20 mA
- 3 and 4 wires: 4-20 mA or 0-20 mA

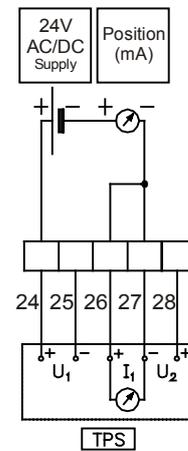
4-Wires configuration



3-Wires configuration

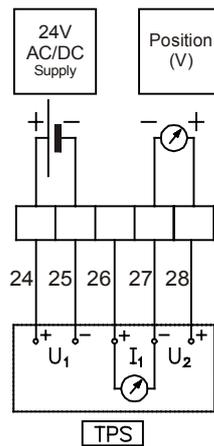


2-Wires configuration

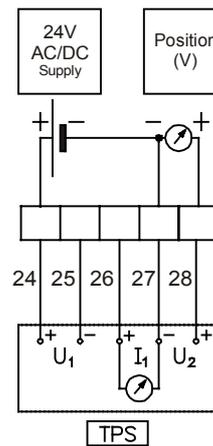


Output signal (voltage)

4-Wires configuration



3-Wires configuration



Note: The TPS transmitter terminals might vary depending on actuator wiring diagram (Options selected). Check and verify technical datasheets and actuator proper wiring diagram.



CENTORK Valve Control S.L.
Pol. Ind. 110 TXATXAMENDI 24-26
LEZO 20.100 - SPAIN
Tfno.: 34.943.31.61.36 - Fax: 34.943.22.36.57
e-mail: actuator@centork.com
http://www.centork.com

480 SERIES. QUARTER-TURN ELECTRIC ACTUATOR TEST AND CONTROL REPORT

Model	<input type="text"/>	
Serial number:	<input type="text"/>	<input type="checkbox"/> IP 67
Voltage supply	<input type="text"/>	<input type="checkbox"/> IP 68

Settings and tests

- | | |
|---|--|
| <input type="checkbox"/> Operating by torque switching (Open and close) | <input type="checkbox"/> Potentiometer operation and settings: PotkOhms |
| <input type="checkbox"/> Operating by limit switching (Open and close) | <input type="checkbox"/> 4-20 mA Transmitter operation and settings |
| <input type="checkbox"/> Operating by manual device (Handwheel) | <input type="checkbox"/> RPC Remote Position Controller operation and settings |
| <input type="checkbox"/> Extra limit switches | <input type="checkbox"/> Local control LM2 |
| <input type="checkbox"/> Extra torque switches | <input type="checkbox"/> Centronik operation and settings |
| | <input type="checkbox"/> ON/OFF |
| | <input type="checkbox"/> ON/OFF + DISPLAY |
| | <input type="checkbox"/> MODULATING |

Documentation and final inspections

- | | |
|---|--|
| <input type="checkbox"/> Cable entries plugs | <input type="checkbox"/> User manual |
| <input type="checkbox"/> Hanwheel and clutch lever | <input type="checkbox"/> Wiring diagram |
| <input type="checkbox"/> Mechanical indication (Disc) | <input type="checkbox"/> Nameplates |
| | <input type="checkbox"/> Test and control report |

Removable bushing

- Machined:.....
 Blank

Painting

- Colour: BLUE, RAL 5003
 Other:

- Adapting flange :

Date:

Signature:

Stamp:



CENTORK Valve Control S.L.

POL IND. 110, Txatxamendi 24-26

Telf.: +34.943.31.61.37

Email: actuator@centork.com

20.100 LEZO (SPAIN)

Fax.: +34.943.22.36.57

<http://www.centork.com>

1497.MANE1480X001

Edition: 07.09