



## TECHNICAL REPORT

**VERSION:** 1.0  
**DATE:** 13.10.06  
**ISSUE:** RPC remote position controller assembly instructions for 480 series.

### SCOPE

- Assembly the RPC (Remote position controller) kit on a 480 series quarter-turn electric actuators, models 480.015 to 480.110

### SAFETY INSTRUCTIONS



- When handling electric equipment, the health and safety standards (EN 60.204, 73/23/EEC directives) and any other national legislation applicable must be observed. As electric device, during electrical operation certain parts inevitably carry lethal voltages and currents (ELECTRICAL RISKS).
- Works 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.
- Electric actuators are powerful apparatus. A negligence handling might cause severe damages to valves, people, and actuator as well. 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.
- This maintenance task can only be executed when main power supply and control supply has been disconnected or removed from actuator.
- After any assembly routine, it is necessary to verify the correct operation of the actuator.

### MATERIAL AND DOCUMENTATION

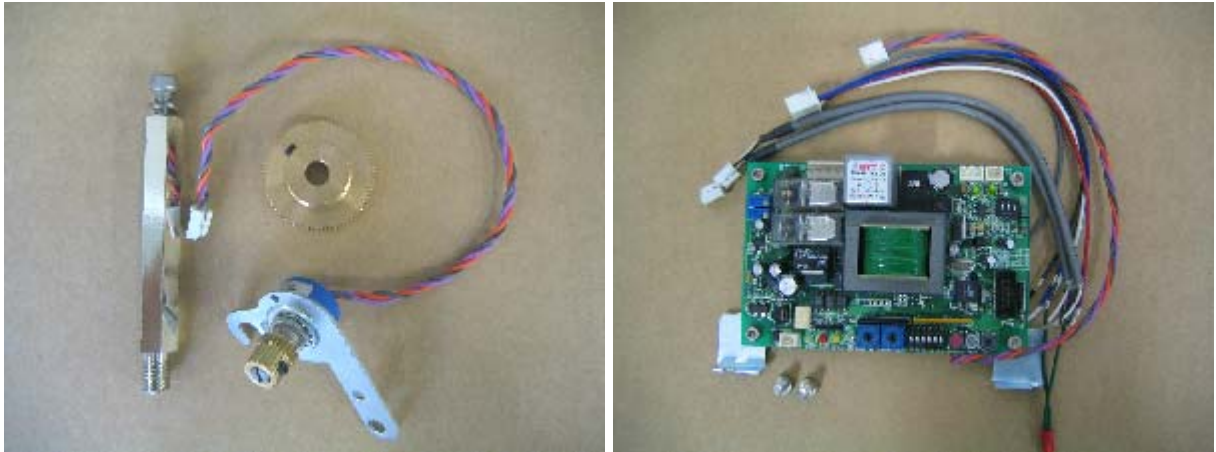
#### 1 Material required

- RPC kit
- Tool kit (See CENTORK recommended tool list)
- Quarter turn electric actuator, serie 480.

#### 2 Documentation

- Correct wiring diagram of the electric actuator (With its optional elements, when proceed)
- Correct wiring diagram of the electric actuator (With its optional elements, with RPC)
- Quarter-turn electric actuator user manual

Models 480.006, 480.007 and 480.010, due to actuator' dimensions, the RPC electronic board is mounted on a external box, fixed to the actuator. See pictures.



For 480. series, models 480.015 to 480.110

Material required:

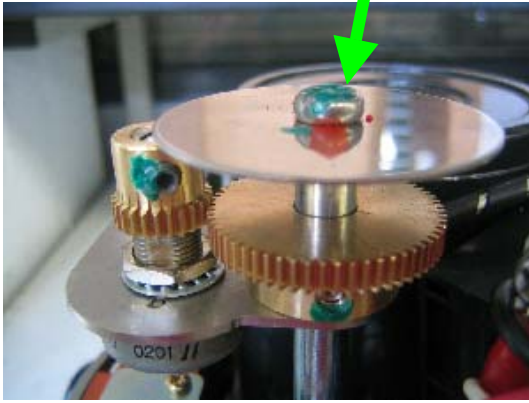
- RPC kit (Right picture):
  - o RPC Electronic board
  - o Plate with 4 plastic separators (washers) and M4 bolts
  - o Output wire (mA feedback current)
  - o Input wire (4-20 mA current INPUT)
  - o Power and signal wires
  - o Potentiometer wire.
- Potentiometer kit for RPC (left picture).
  - o Hexagonal column
  - o Metallic plate
  - o Potentiometer with wire
  - o M6 DIN912 bolt with DIN7980 washer
  - o Pinion with pin
  - o Wheel with pin.

## **STEP 1: MOUNTING THE POTENTIOMETER**

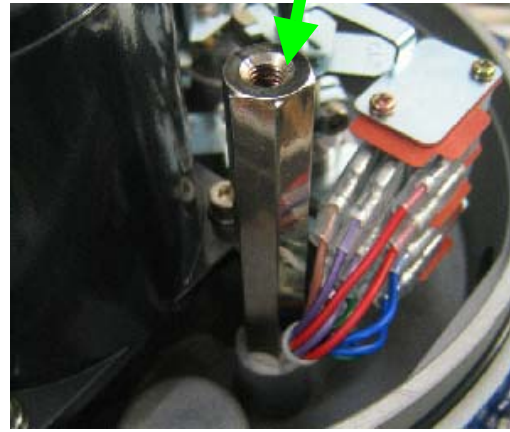
- Move the actuator to fully close position, by mean of manual device (handwheel), according to instructions described on QUARTER-TURN ELECTRIC ACTUATOR USER MANUAL
- Open the actuator cover (Picture 1)
- Dismount the visual disc indicator. Keep in a safe place the M5 bolt, the disc and washer (Picture 2)
- Mount the hexagonal column on its place, on the actuator housing. The column can be tightened or screwed by mean of a hex n°17 tool (Picture 3)
- Then, fix the plate with the potentiometer in the column, by mean of the M6 DIN912 bolt. Notice the correct alignment/orientation of the plate according to picture 4.



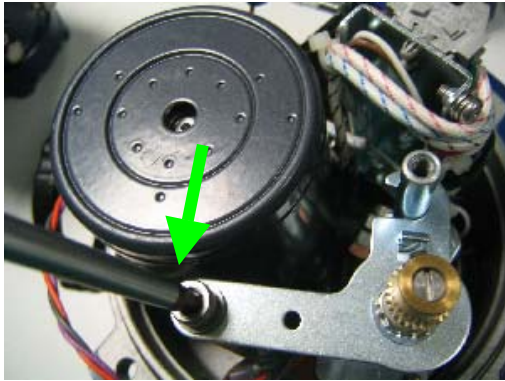
Picture 1



Picture 2



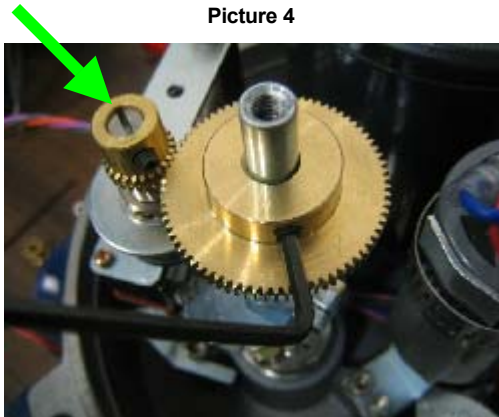
Picture 3



Picture 4



Picture 5



Picture 6



Picture 7

- Mount/insert the wheel on the actuator shaft, according to picture. DO not fix the wheel pin. Then, move the wheel and check that pinion and wheel tooth has enough clearance and they run smoothly. If necessary, increase/reduce the distance between both gears (Pinion and wheel) by mean of the plate position (Picture 4)
- At this point, before tighten both pins of the pinion and wheel:
  - o Check/Verify that valve was fully closed.
  - o Then, with a screwdriver, suitable for the potentiometer slot, turn left until the potentiometer end top, and then, move back slightly in order to give some clearance (Notice that the potentiometer has two end tops which limit the angular travel). Then, fix both pinion and wheel pins (See picture 6 and 7)

## **STEP N°2: CABLES IDENTIFYCATION AND WIRING**

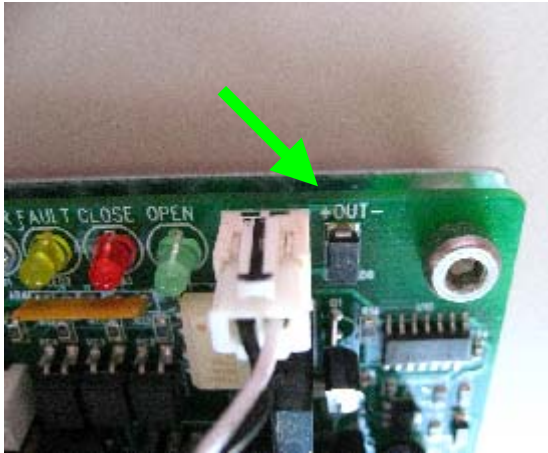
NOTE: Due to differents options and variants, between both wiring diagrams (With RPC and without it) might be small differences on wiring (Mainly the auxiliary switches might be wired in different terminals, in both wiring diagrams)



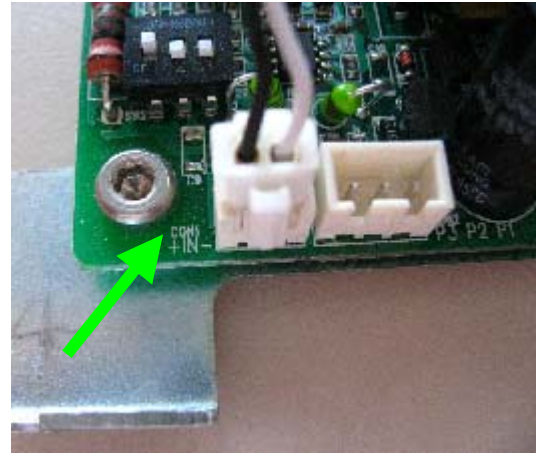
- Identify all wires of the RPC:
  1. Power supply and signals (white connector with 5 wires: Blue, white, red, black and grey)
  2. Input signal (Grey cable with a white connector, 2 wires, black and white wires).
  3. Output signal (Grey cable with a white connector, 2 wires, black and white wires)

**IMPORTANT NOTE:**

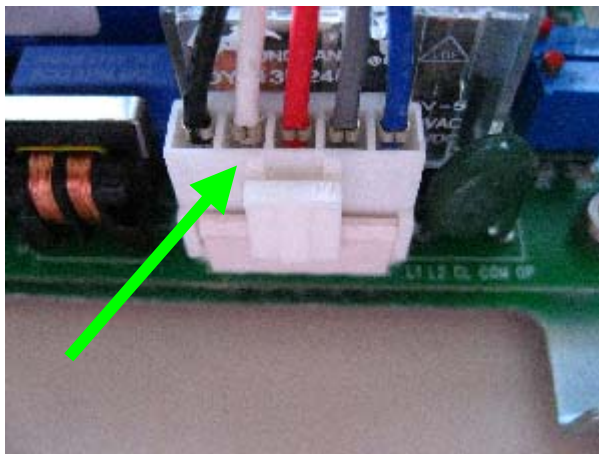
- o Both cables, input and output, are nearly the same, the only difference is:
- o Input and output cables, notice that the black wire is (+) and white (-), on the RPC board is printed "IN" for input (+ and - polarity is marked) and "OUT" for output (+ and - polarity is marked). See pictures.



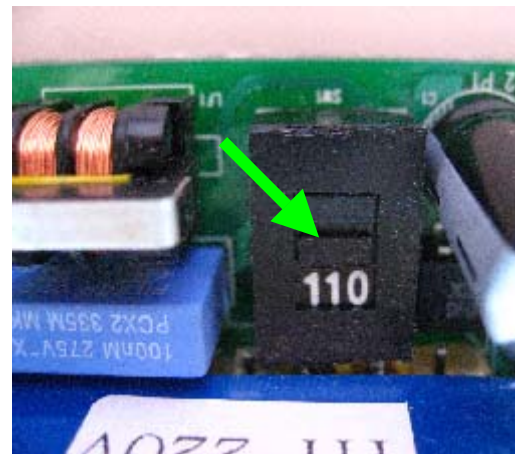
Picture 8



Picture 9



Picture 10



Picture 11

- Connect the INPUT, OUTPUT and Power supply cables in the RPC board connectors.
- Connect the Potentiometer cable in the RPC board connector.
- Configure/select the correct power supply 110V or 220V AC.
- Then, proceed to mount the RPC board and plate in the actuator housing, by mean of the 2 M5 DIN912 bolts. Pay attention on cables, try to led them carefully, avoid any cut or cable been trapped by the plate.



Picture 12



Picture 13



Picture 14



Picture 15

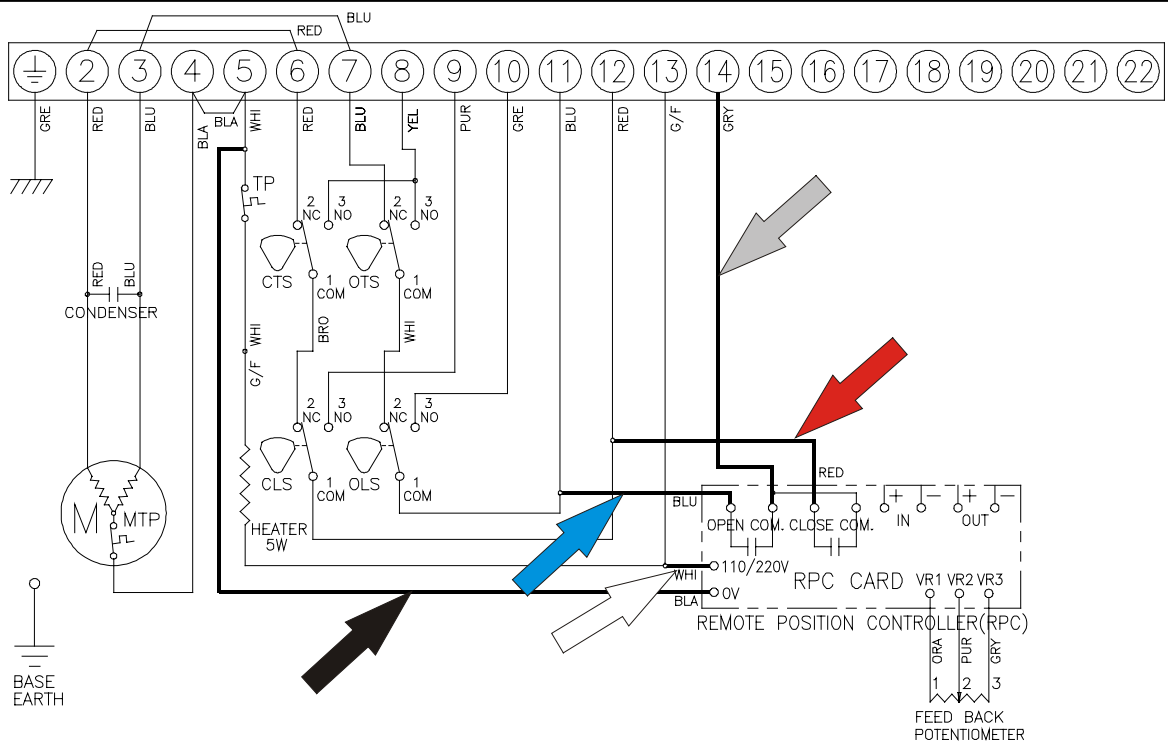
- Finally do the wiring according to the correct wiring diagram.

As example:

- 480.015-480.110, AC single phase main power supply, with standard signalling options, the wiring diagram is : D8002X1
- 480.015-480.110, AC single phase main power supply, with standard signalling options, the wiring diagram is : D8007X1

Wirings:

- Its is necessary to re-wire (move) the ACLS ans AOLS, from 14-to-17 terminals (D8002x1) to 19-to-22 terminats (D8007X1)
- Power supply cable form RPC.
  - White terminal to 13 terminal
  - Blue terminal to 11 terminal
  - Red wire to 12 terminal
  - Black cable to 5 terminal
  - Grey cable to 14 terminal
  - Input cable: Black wire to 15 terminal, white wire to 16 terminal



Sample of diagram (RPC wiring)

### **STEP N°3: FINISHING THE ASSEMBLY**

- Mount the visual disc indicator. Verify the correct indication “Close” and “Open” regarding the glass references on the cover.

### **STEP N°4: SETTING, TESTS AND INSPECTIONS**

- Proceed according to user manual
- Instruments required:
  - o 4-20 mA generator
  - o Polimeter for mA measurement
  - o Electric cabinet/device according to wiring diagram in order to operate electrically the actuator (remote/local and open-stop-close commands)
- Set and adjust the open and close limit switches, according to user manual and the wiring diagram.
- Proceed to set and calibrate the RPC board according to user manual and the wiring diagram.
- Check that feedback signal (Output) is 20 mA in open position and 4 mA in close position. In case that the feedback signals are not correct, check the potentiometer cables 1 and 3, it may be required to reverse both cables 1 (Orange) –3 (Grey) potentiometer wires.

