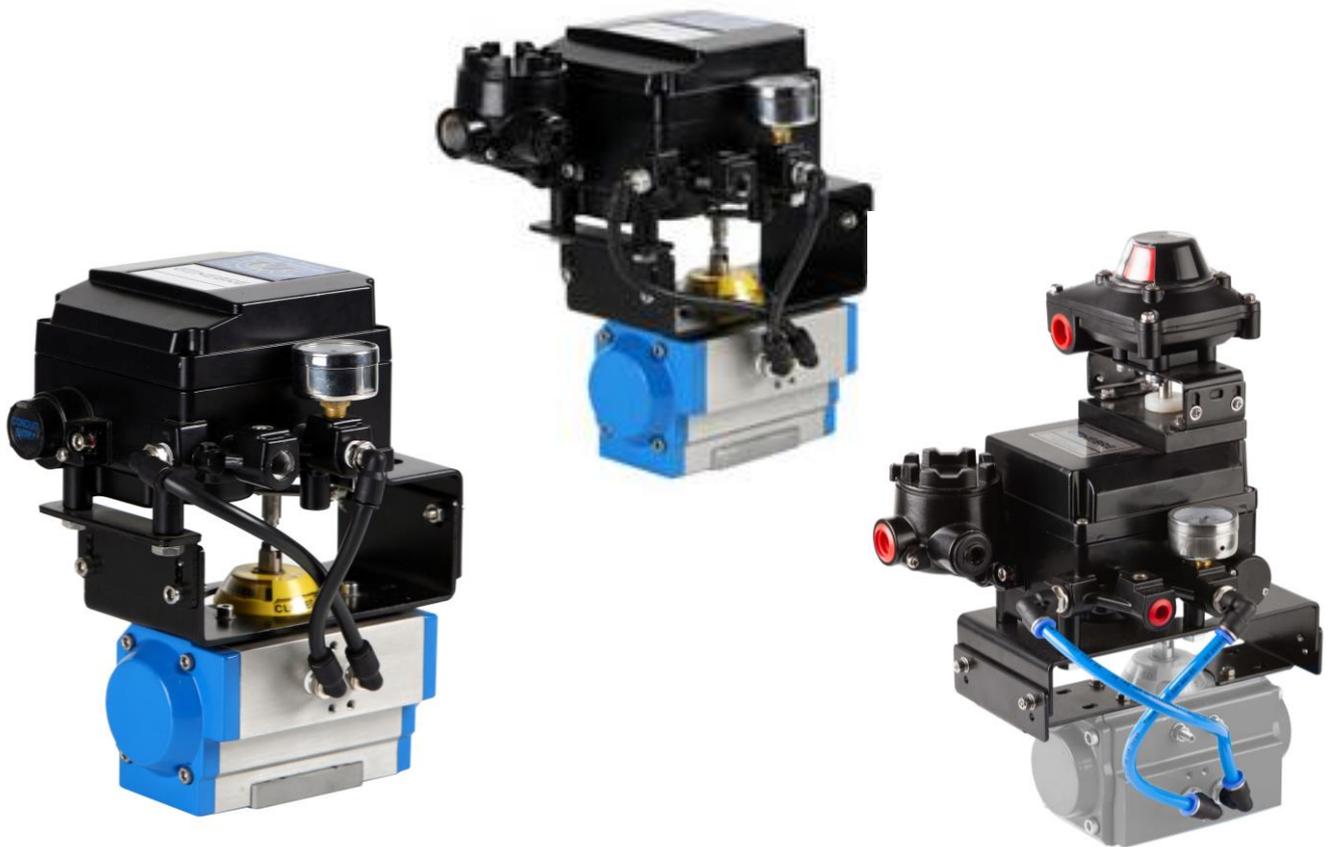


## INSTALLATION, OPERATION AND MAINTENANCE MANUAL

### Electro-Pneumatic Positioner for Rotary Actuators



GENEBRE Ref: 5951 00 – 5951 04 – 5951 06

## INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

1. Product Description.....	3
2. Data and Technical Features.....	3
3. Security Instructions.....	4
4. Transport and Storage Conditions .....	5
5. Preliminary Checks .....	5
6. Positioner Installation.....	5
6.1 Installation of the Support and the Positioner on the actuator .....	5
6.2 Mounting of the Cam .....	6
6.3 Air Connection.....	7
6.4 Electrical Connection (transmission signal).....	8
7. Exploded view.....	9
8. Starting Up (Settings).....	9
8.1 Zero Setting.....	9
8.2 Span Setting.....	10
8.3 Auto / Manual Switch.....	10
8.4 Seat Adjustment.....	11
8.5 Air throttle in pilot valve .....	11
8.6 Transmitter regulation (article 5951 04 only) .....	12
9. Maintenance .....	13
10. Cleaning the A / M Switch.....	14
11. Safety Instructions .....	14

## 1. Product Description.

The electro-pneumatic positioner is used for rotating operation of valves with pneumatic actuators by means of an electric controller or a control system with an analogical output signal of 4 – 20 mA.

It can be used with double effect or single effect actuators. Easy setting of zero and of the trajectory. Easy switching of direction (clockwise / counter-clockwise).

Low air consumption and easy connection to air ducts.

## 2. Data and Technical Features

<i>Description</i>	<i>Values</i>
<i>Input signal</i>	4 – 20 mA
<i>Impedance</i>	250 ±15Ω
<i>Supply pressure</i>	1.4 ~ 7 bar (20 ~ 100psi)
<i>Stroke</i>	0 - 90°
<i>Air connection</i>	G 1/4"
<i>Gauge connection</i>	G 1/8"
<i>Protection</i>	IP66 (5951 00/04) IP65 (5951 06)
<i>Ambient temperature</i>	-20°C ~ 70°C
<i>Linearity</i>	± 1,5 % F.S. (Full Scale)
<i>Hysteresis</i>	± 1,5 % F.S. (Full Scale)
<i>Sensitivity</i>	± 0.4 % F.S. (Full Scale)
<i>Air consumption</i>	3 LPM (Sup = 1.4 bar, 20psi)
<i>Flow capacity</i>	80 LPM (Sup =1.4 bar, 20psi)
<i>Material</i>	<i>Aluminum Alloy</i>
<i>Weight</i>	2,7 Kg.

Technical Features - Transmitter (Art. 5951 04)	
Connection type	2 wire
Output signal	4 – 20 mA DC
Impedance	0 – 600 Ohm
Power supply voltage	15 – 30V DC
Noise range	50m V pp
Temperature range	-20°C / 60°C ( -4 / 140°F)
Linearity	+ - 1% F.S
Hysteresis	+ - 0.2 F.S
Sensitivity	+ - 0.2% F.S

### 3. Security Instructions

The goal of this manual is to allow users with technical skills to install, turn on, operate and inspect Genebre's electro-pneumatic positioners. Qualified personnel must be familiar with all notices and warnings described in these instructions. Not complying with these notices and warnings may cause serious personal injury and material damages.



**Certain parts of the positioner are subject to mechanical movement which may cause injury.**

**Work on the system or electric equipment must only be performed by qualified technicians or by trained personnel under the control and monitoring of said technicians, according to the security rules and guidelines, as well as other applicable national laws.**



**Negligent use may cause serious damage to the parts, installation and people, as well as to the equipment itself. Under no circumstance can any part or component of the positioner be modified or altered. Such alterations or modifications automatically invalidate the designed use of the positioner.**

## 4. Transport and Storage Conditions

- The positioners are shipped from the Genebre, S.A. headquarters in appropriate packaging to prevent damage.
- Any slings, ropes or chains used to lift or transport motorized valves must **NOT** be attached to the positioner under any circumstances.
- The positioner's supports are designed to withstand the action efforts but **NOT** the total weight of the valve, or any other type of burden or effort.
- Do **NOT** bang the positioner against walls, floors or other machines. That could cause severe damage to the positioner or its parts.
- Store in a dry and well-ventilated place, safe from bad weather conditions. Avoid placing them straight on the floor. Use pallets, shelves or wood bases.
- Genebre, S.A. recommends to visually examine the possible damages suffered during transportation and storage. Visual inspection must include the interior of compartments.

## 5. Preliminary Checks

- Verify that the characteristics of the positioner match those required before proceeding to install and turn on the device. That data can be found in the data plate.
- Should there be any deviation or non-conformance, please contact Genebre, S.A.



**Make sure the supply air to be used is Dry, Clean and Filtered, since bad quality supply air may seriously damage the positioner.**

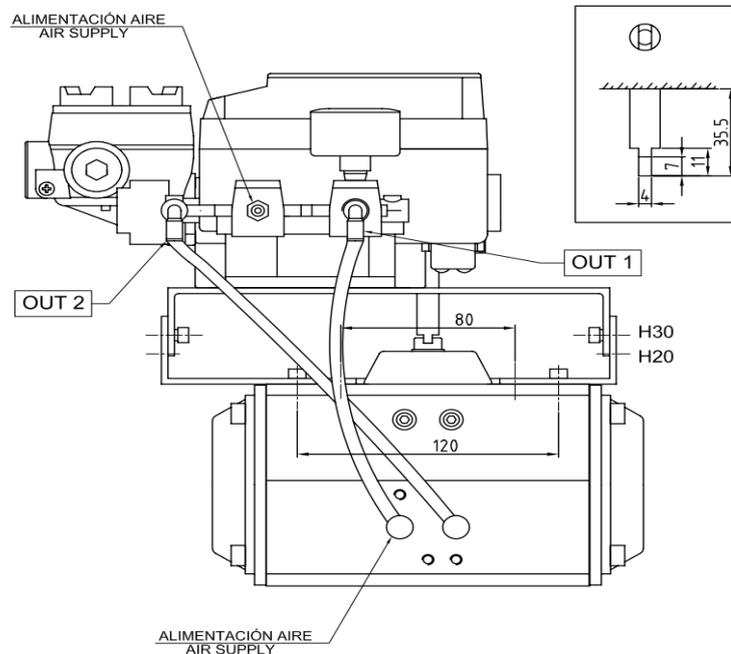
- **Maximum pressure of air supply 7 kgf/cm<sup>2</sup> (100 psi)**

## 6. Positioner Installation

### 6.1 Installation of the Support and the Positioner on the actuator

- Connection to the fixing of the output shaft in which the position of the positioner's output shaft and the main shaft of the rotating actuator are concentric. Type C connection (see figure) is Namur, direct connection to the actuator.

- The positioner's support is designed to be mounted on actuators with a shaft height of  $H=20$  or  $H=30$ , as well as fixing holes at 80 mm or 130 mm according to Namur regulations.



## 6.2 Mounting of the Cam



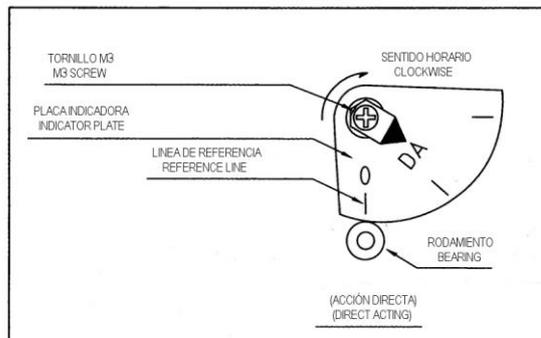
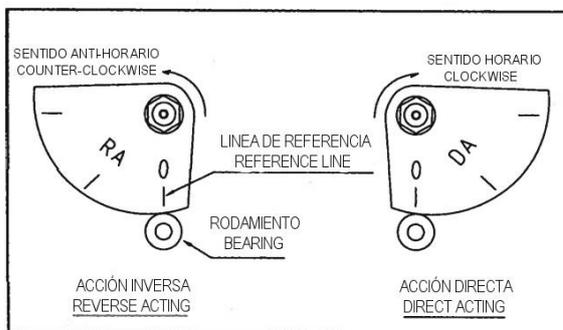
**Attention: Do not supply air to the equipment during this operation. It may be highly dangerous.**

**Note: The positioner leaves the factory with the cam mounted on the shaft and the indicator plate in the position “RA” (counter-clockwise/reverse acting).**

In case you need to switch the direction (clockwise/direct acting) proceed as follows:

- Lift the cover of the positioner.
- Remove the clamping screw from the indicator plate and remove the plate.
- Remove the clamping nut from the cam.
- Remove the cam and turn with the side marked as “DA” facing up.
- Mount the cam on the ledge of the output shaft.
- Set the actuator on the initial position.

- Fix the cam using the upper nut so that the reference line "0" is tangent to the bearing.

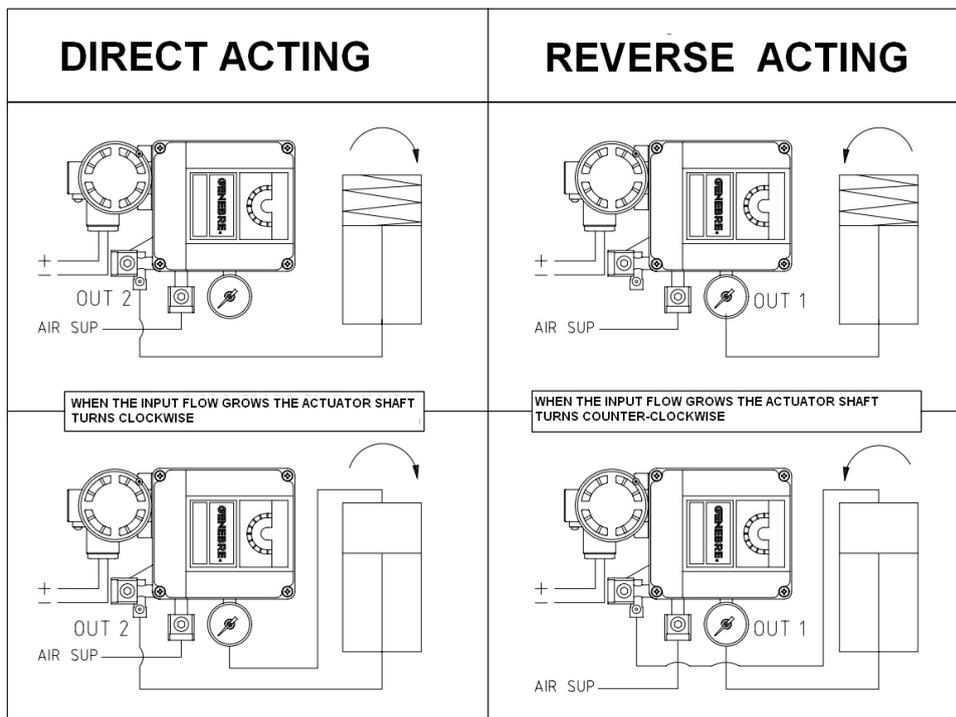


- Once the cam is mounted, place and fix the indicator plate to the main shaft using the M3 screw so that the reference lines for the cam and the indicator match up.

### 6.3 Air Connection.



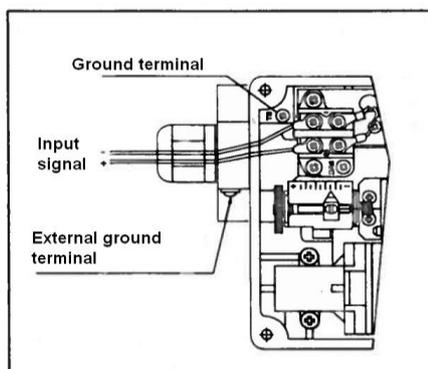
**Attention: Make sure the supply air to be used is Dry, Clean and Filtered.**



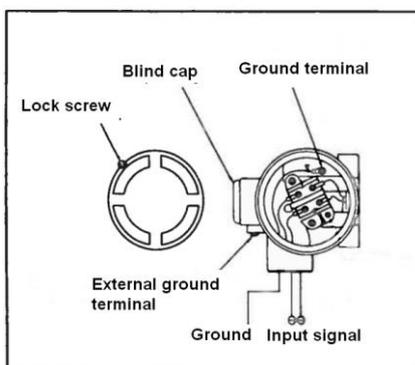
1. Use a regulator with a filter to constantly maintain the supply air pressure (optimum supply pressure of 6 bar to operate the actuator).
2. Purge the air circuit completely to avoid strange particles.
3. In applications with single effect actuator (spring return) close output OUT1 or OUT2 as appropriate.

## 6.4 Electrical Connection (transmission signal).

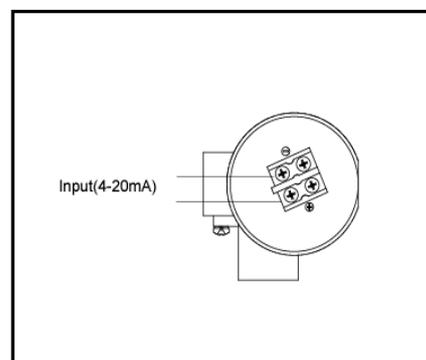
Connect the power-supply terminals (+) and (-) to input terminals (+) and (-) of the positioner or transmitter, accordingly.



Art. 5951 00

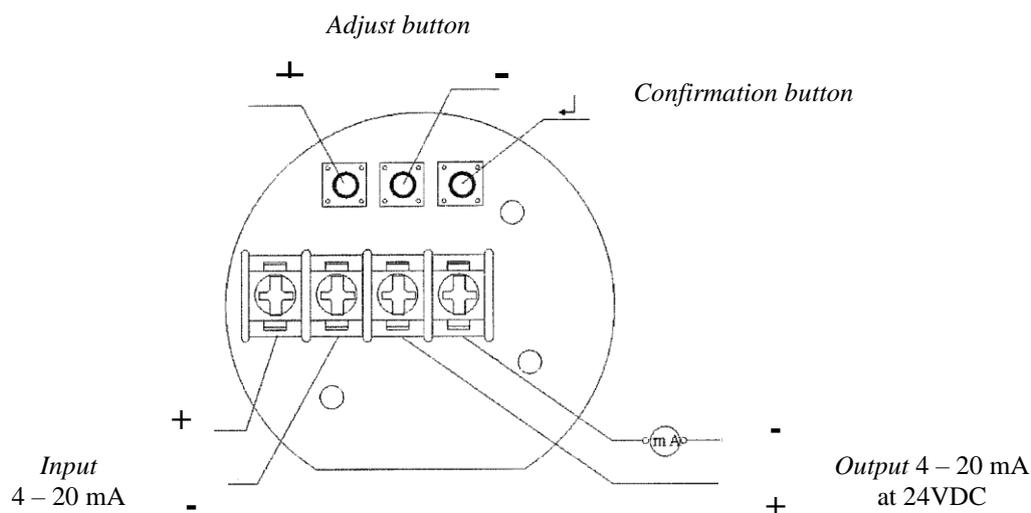


Art. 5951 04



Art. 5951 06

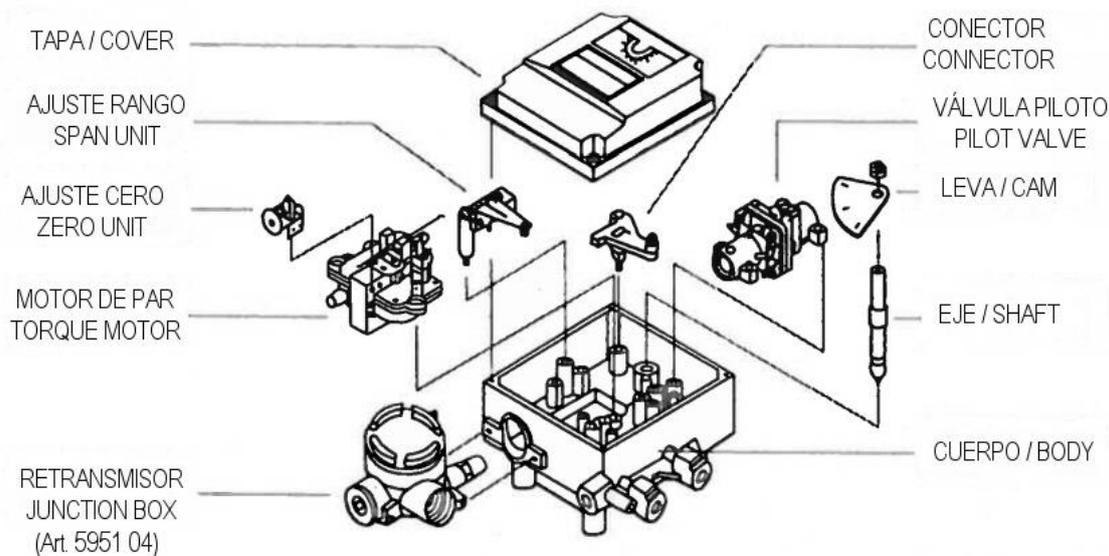
### Detail of connection to the transmitter Art. 5951 04



Once you are finished connecting, replace the cover and close using the screws.

For the Output wiring instruction art. 5951 06 you should consult the technical data sheet of the limit switch box art. 5987.

## 7. Breakdown view

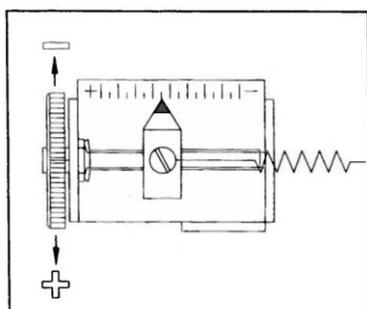


## 8. Starting Up (Settings)

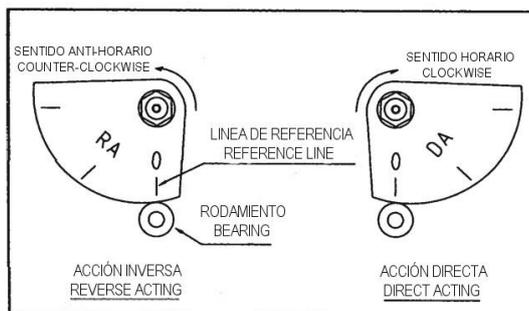
**Note:** The positioner leaves the factory set to position 0° and path 90°. In case you need to establish these settings, proceed as follows.

### 8.1 Zero Setting

- Send a run start signal (4 mA).
- Turn the ZERO setting wheel clockwise or counter-clockwise until the reference lines of the indicator cam and the tangent point of the bearing match.



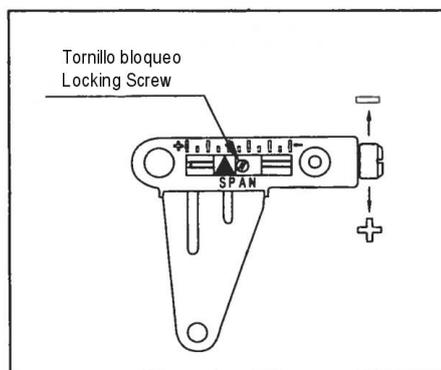
ZERO



- In the case of the single effect actuator, check that it is set to zero point at standard pressure. Otherwise, repeat Zero Setting.

## 8.2 Span Setting

- Set the span so that the actuator stops at position 0% in the run with an input signal of 0% (4 mA), and so that it stops at position 100% with an input signal of 100% (20 mA), respectively.
- Check Zero point and repeat the Span setting as many times as required.
- Once the equipment is set, tighten the Locking screw.

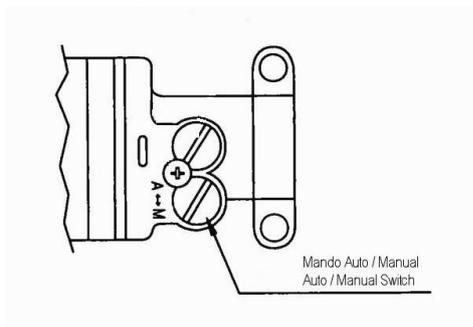


## 8.3 Auto / Manual Switch

This switch is used to switch between Auto and Manual modes. The equipment leaves the factory in Auto mode. To switch to Manual mode, turn the A/M regulator counter-clockwise.

In Manual mode, the network pressure connects directly to the actuator. Return to Auto mode after using.

This option does not apply to the single effect actuator connected to output OUT2.



## 8.4 Seat Adjustment

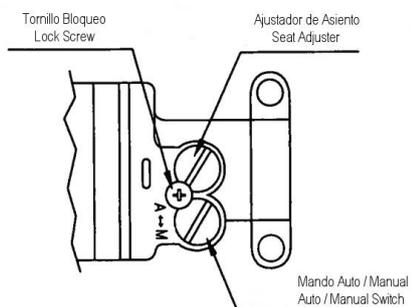


**Attention: This adjustment is done in the factory so it is not necessary to readjust later.**



**ATTENTION! This adjustment must only be performed by qualified technicians. Otherwise the equipment might completely lose its configuration.**

- In case of very low sensitivity due to the actuator working at its maximum load limit, turn the Seat Adjuster clockwise. If the equipment keeps oscillating, turn counter-clockwise until balance is achieved. Be careful not to loosen the Lock Screw since it might come off the Seat Adjuster.
- In case of oscillation due to mounting with a low air capacity actuator, refer to section 8.5.

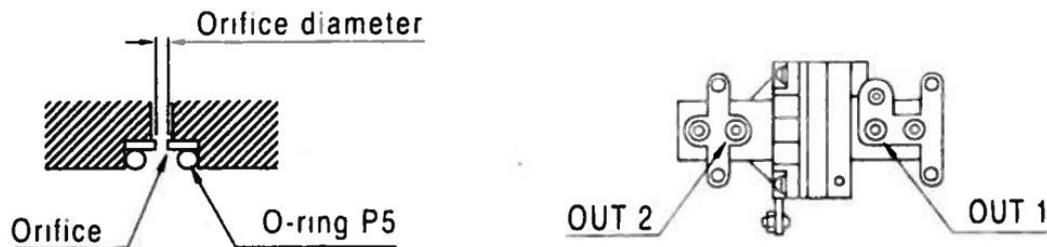


## 8.5 Air throttle in pilot valve

In case of low air capacity actuators, there could be oscillation in the equipment, rendering it inoperative. In such a case, use air throttles in outputs OUT1 and OUT2 of the pilot valve. There are two available measures that come with the equipment:

Actuator Volume	Output Orifice Diameter
Smaller than 90 cm <sup>3</sup>	Ø 0,7
Between 90 ~ 180 cm <sup>3</sup>	Ø 1,0
Bigger than 180 cm <sup>3</sup>	None

- Remove the pilot valve.
- Remove the o-ring, place the throttle and insert the o-ring again. Be careful not to leave any foreign bodies in the orifice of the throttle.
- Perform the same operation on both air outputs (OUT 1 and OUT 2).
- Replace the pilot valve.



If the oscillation persists after performing this operation, please contact Genebre S.A.

## 8.6 Transmitter regulation (article 5951 04 only)

If necessary, the transmission settings should be set so that the output signal settings match the settings of the signal sent (4 / 20 mA).

8.6.1 Connect 24VDC power source, series connect amperemeter convenient for observing the feedback signal's current value.

Observe the value of the amperemeter: it must be between 4mA and 20 mA.

8.6.2 Press the "enter" button until the indicator light comes on, release the "enter" button and the indicator light flashes indicating that regulation begins.

Observe the amperemeter value: the value should be 4 mA, if there is deviation, can press the "+" button or "-" button, adjust the current value.

### 8.6.3 Feedback signal 0% (4 mA) position adjusting

The valve locate in original 0% (4 mA) position. Press the "+" button or "-" button, adjust the current value, then press the "enter" button.

Observe the amperemeter value: if the amperemeter value jump from 4 mA to 8 mA around, means the feedback signal 0% (4 mA) position confirmed. Module waiting for the feedback signal 25% (8 mA) position confirm.

#### 8.6.4 Feedback signal 25% (8 mA) position adjusting

The valve locate in feedback 25% (8 mA) position. Press the “+” button or “-“button , adjust the current value, then press the “enter” button.

Observe the amperemeter value: if the amperemeter value jump from 8 mA to 12 mA around, means the feedback signal 25% (8 mA) position confirmed. Module waiting for the feedback signal 50% (12 mA) position confirm.

#### 8.6.5 Feedback signal 50% (12 mA) position adjusting

The valve locate in feedback 50% (12 mA) position. Press the “+” button or “-“button , adjust the current value, then press the “enter” button.

Observe the amperemeter value: if the amperemeter value jump from 12 mA to 16 mA around, means the feedback signal 50% (12 mA) position confirmed. Module waiting for the feedback signal 75% (16 mA) position confirm.

#### 8.6.6 Feedback signal 75% (16 mA) position adjusting

The valve locate in feedback 75% (16 mA) position. Press the “+” button or “-“button , adjust the current value, then press the “enter” button.

Observe the amperemeter value: if the amperemeter value jump from 16 mA to 20 mA around, means the feedback signal 75% (16 mA) position confirmed. Module waiting for the feedback signal 100% (20 mA) position confirm.

#### 8.6.7 Feedback signal 100% (20 mA) position adjusting

The valve locate in feedback 100% (20 mA) position. Press the “+” button or “-“button , adjust the current value, then press the “enter” button.

Observe the amperemeter value: the amperemeter value should be reduce at first, after the value stable, it will comeback to 20mA, at the same time, the indicator light on module will flash some times.

After finished step 8.6.7, the module automatic enter normal run state

## 9. Maintenance

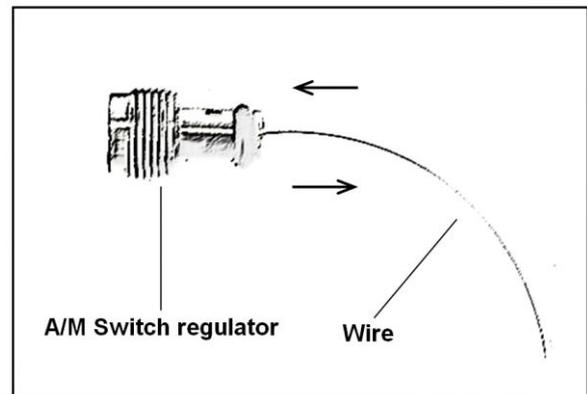
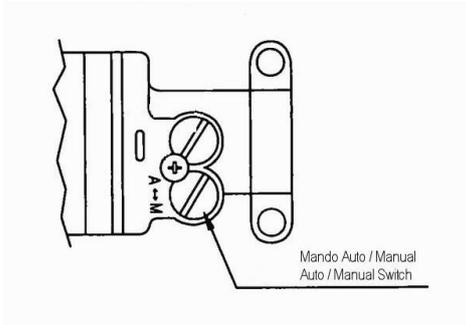
Even though this equipment requires no maintenance, it is recommended to carry out regular inspections, which must include:

- Verifying the mounting / alignment of the actuator and the positioner.
- Verifying the electrical connection of the signal.
- Making sure all bolts are present and tightened.
- Verifying the state of the filters of the air installation to ensure that good quality air reaches the equipment.

## 10. Cleaning the A / M Switch

Whenever the positioner does not respond correctly to the input signals, proceed as described below:

- Turn off any air or power supply.
- Remove the A/M Switch regulator from the pilot valve.
- Insert the wire (included in the inner part of the cover) through the air flow hole located on the A/M regulator to remove any particles that might be left inside.



### Cleaning the A/M Switch

- Finally, clean the A/M Switch regulator using air and place it back in the enclosure. Do not forget to use the Lock Screw.
- The equipment is ready for operation.

*Note: In the event that the positioner does not respond, proceed to change the pilot valve (Ref.P5951).*

## 11. Safety Instructions

When operating any kind of element, you must follow the security instructions and it is recommended to use personal protection gadgets:

- 1) Protect your eyes.
- 2) Wear gloves and appropriate working clothes.
- 3) Wear safety footwear.
- 4) Wear a helmet.
- 5) Have running water at hand.