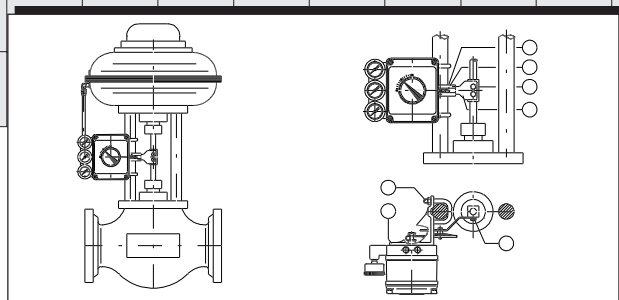
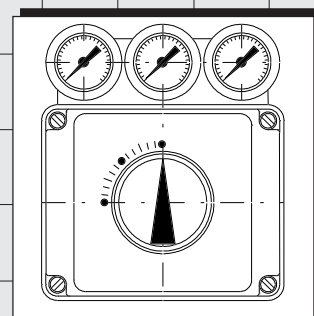
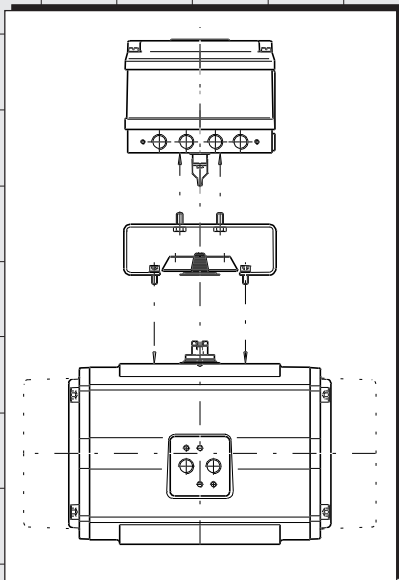
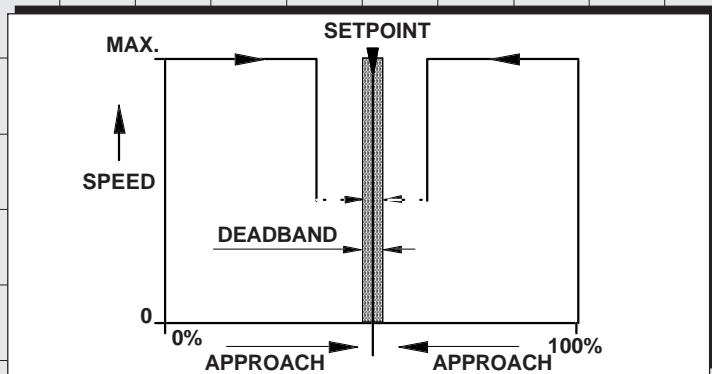
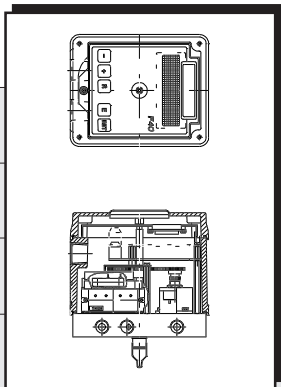


Installation and Operation

Electro-Pneumatic Positioner F40



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General Specification:**Metric****Imperial**

Linearity	: 0.6%	
Air flow	: 5000 NI/h. (at 6 bar)	: 2.9 SCFM (at 87 psi)
Air consumption	: \cong 0 NI/min. (at 6 bar)	: \cong 0 SCFM (at 87 psi)
Min. volume actuator	: 0.5 L	: 30.5 in ³
Temperature	: -20° to +60° C	: -4° to +140°F
Enclosure	: IP 54 (option IP65).	: NEMA 3 (option NEMA 4)
Mounting	: VDI/VDE 3845 or IEC 534/6	
Air Entry	: G 1/4"	: 1/4"NPT
Air Supply	: 1.4 to 8.6 bar.	: 20 to 125 psi
Electric Entry	: 2x PG 13.5 (option M20 x 1.5)	: 1/2"NPT
Failure mode	: Close or open	

Media

- : Non-lubricated instrument air, filtered at 25 micron.
- : Dew point should be 10°C (18°F) below environmental temperature.
- : Air quality class 3-2-3 accord. to ISO 8573-1

The F40 is a truly “smart” positioner, it provides the ultimate in quick, simple setups.

To initialize the positioner just connect the mA signal and then press the INIT button, that's all - everything else happens automatically.

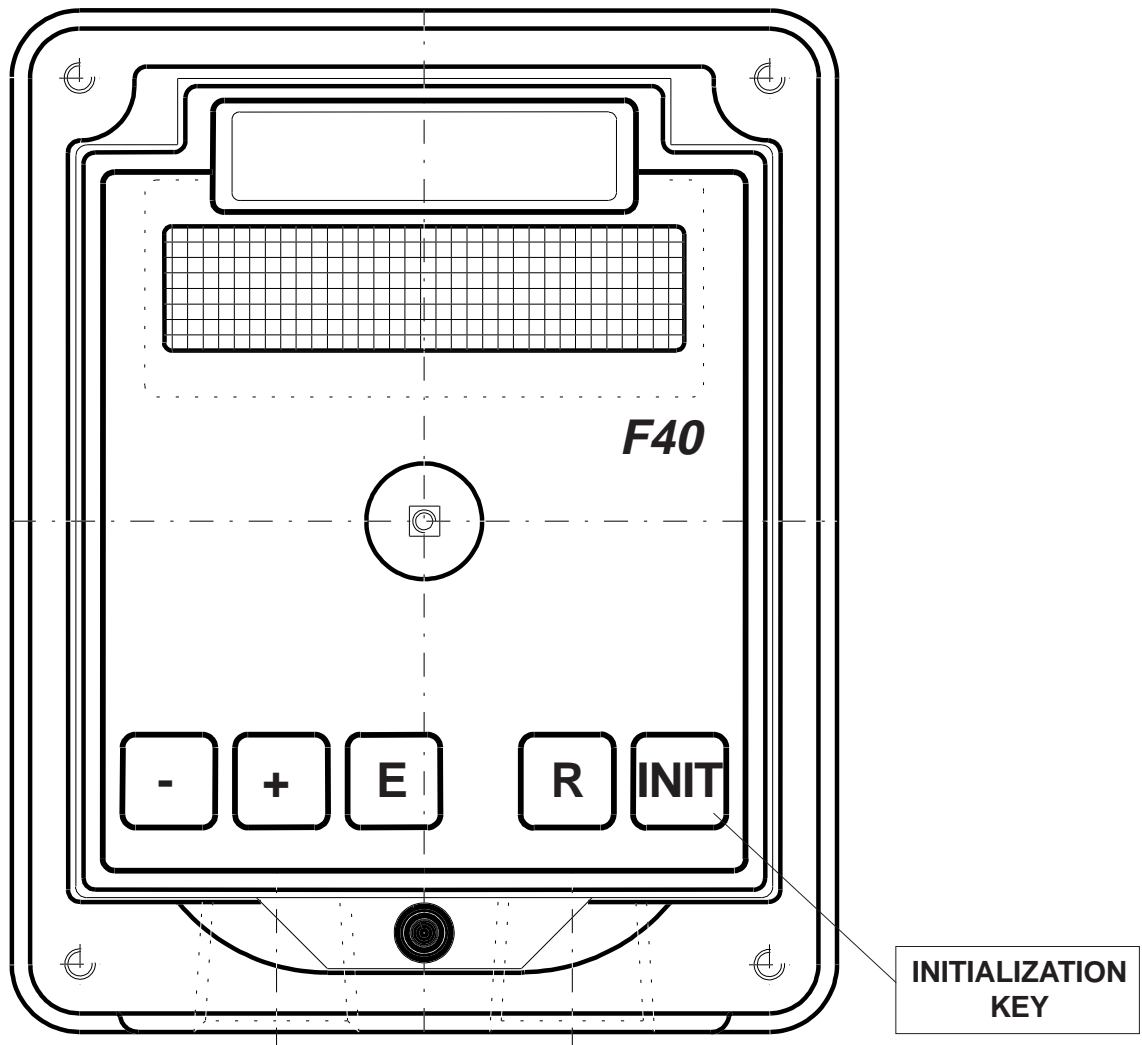
During initialization the positioner carries out a number of operating cycles and electronically sets all the basic functions such as zero, range, speed and sensitivity. See page 10 for a further explanation of this.

When installed on small actuators (less than 0.5 litre - El-o-matic types E25, E40 and E65), you may need to use two dampers with integrated adjustable throttles as speed controller, mounted at the two "Exhaust" ports from the positioner.

Quick Start Setup Procedure

1. Check that the positioner is properly installed on to the actuator (see pages 4 - 6).
2. Connect a 4 - 20 mA signal to terminals 1 and 5 (if 3 or 4 wire see page 5)
3. Set the signal to 20 mA.
4. Press the INIT button.

The quick start setup is used for the majority of applications, that is for direct action with a linear control function. For other applications, see further on in this book.



Product Description

El-o-matic POSIFLEX positioners are the most advanced positioners of their type on the market today, this latest version is made possible by a combination of the newest developments in micro processor technology together with a electric interface for the pneumatic control.

The basic version is a true 2 wire instrument: An industry standard 4 to 20 mA. signal provides both the controlling signal and the power supply for the electronics. As such the positioner is plug compatible with what has become the industry standard over the last 30 years.

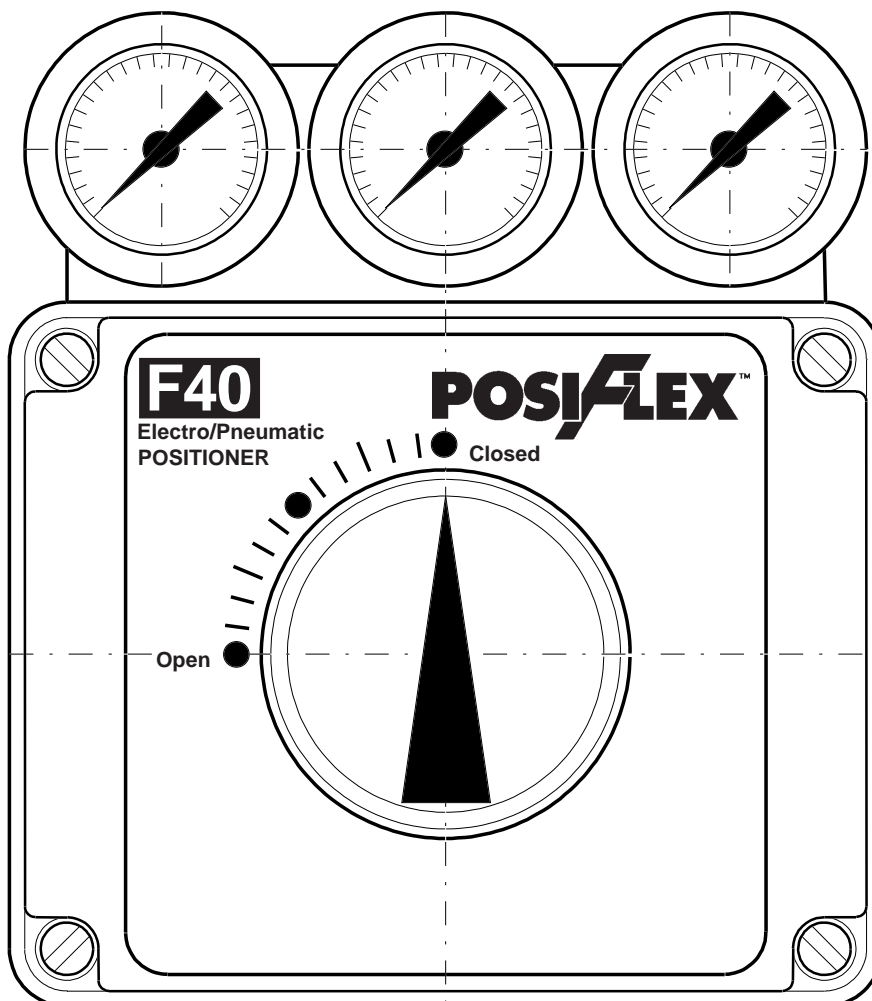
The use of a micro processor control provides the ultimate in quick, simple setups. An auto-initialisation routine automatically sets the basic functions such as zero, range, speed and sensitivity, all at the touch of a button. This means that if the valve/actuator has a mechanical stroke of 60° or 90° or 180°, then the positioner will automatically set it's range to that stroke.

Automatic performance monitoring ensures optimum performance even during widely changing process conditions and provision is made for all the usual functions: split range, reverse action, for single and double acting actuators.

There are two basic versions, one for rotary and one for linear positioners. The difference being with the mounting methods and mechanical stroke. Both types have provision for double acting and spring return actuators.

The standard feedback provides a linear relationship between the input signal and the output movement, but optional settings are built in for quick opening and equal percentage, a custom curve option allows for more than 1,000 individual variations on the basic control characteristics. All are easily resetable using the built-in five button key board and LCD display.

Basic functions and custom settings are stored in EPROM (erasable program read-only memory) so they remain set even after signal failure.



The positioner provides the means for a pneumatic actuator to be positioned to any point between full open and full closed position. The actuator's movement is accurately controlled in proportion to a 4-20 mA incoming signal.

The actuator's movement is monitored by the feedback potentiometer and both these analog signals are converted into digital form so that they can be used by the micro processor on the main positioner board.

During normal operation these two signals are continuously compared by the comparator logic part of the circuit. Providing these two signals are equal there is no output signal and the actuator remains in its present position, that is at its "Set point".

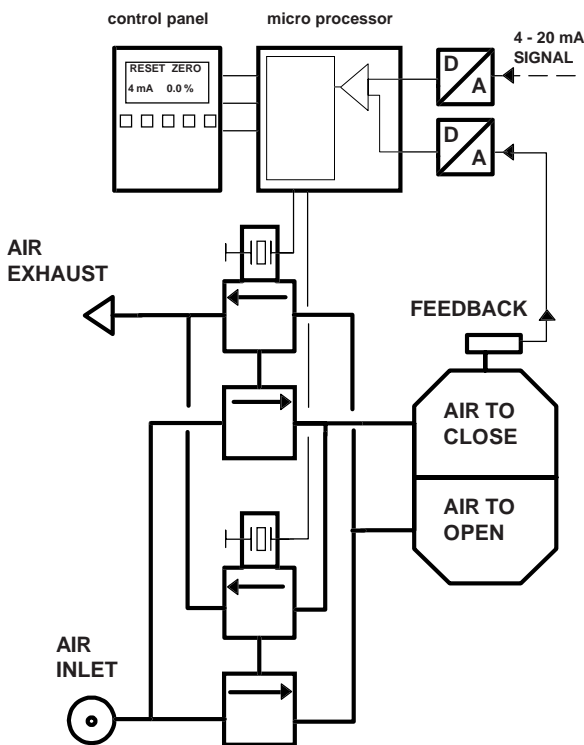
When a difference in the two signals is sensed then a command is sent to one or the other of the pneumatic control valves, this causes movement towards the new set point.

On reaching the set point the signal to the pneumatic control valve stops and the actuator is halted in that position.

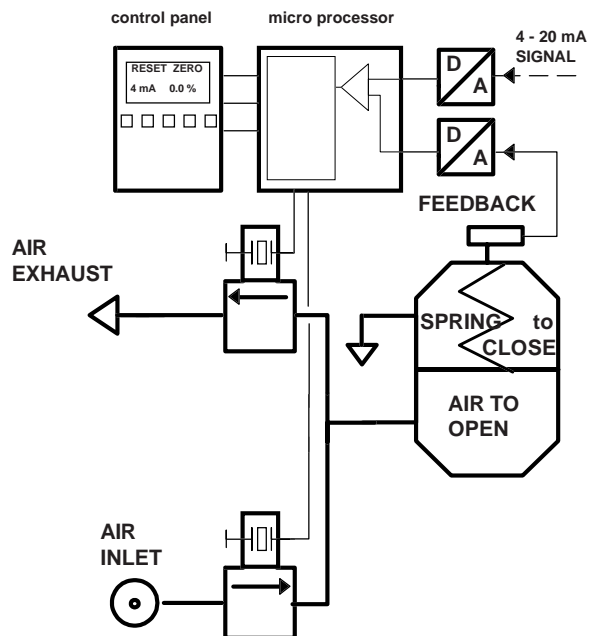
If there is a change in the input mA. signal or the actuator's position is changed, then a new command is generated and is maintained until the new set point is reached.

The pneumatic control valves incorporate electric pilot elements, these provide an ultra sensitive electro/pneumatic interface on which the systems accuracy depends.

The speed at which the positioner approaches the set point changes depending on how far it has to go. For large changes in position the first part of the movement is at the fastest rate, but as the set point is approached the pneumatics are switched to a pulsing mode. This pulsing progressively changes so as to slow the actuator's final movement into the stop position. This achieves a more accurate final position without overshooting.



Double acting actuator



Spring return actuator

Installation - Rotary Actuators

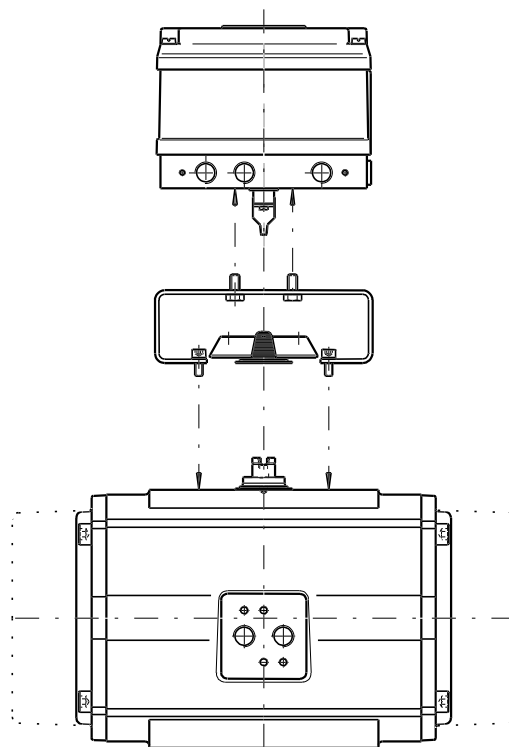
Mechanical Installation

The positioner is mounted on to the top surface of the pneumatic actuator using an appropriate mounting kit.

The positioner's mounting configuration is to the VDE/VDI 3845 standard, if the actuator is to the same standard, a standard NAMUR mounting kit can be used, otherwise a special mounting kit will have to be obtained.

Assuming the installation will use the standard NAMUR mounting kit, proceed as follows:

1. Fix the bracket to the top surface of the actuator using the 4 screws provided.
2. Check that the spring clip is securely in place on the bottom of the positioner shaft.
3. Locate the positioner in place on top of the bracket, making sure that the spring clip locates properly into it's slot in the actuator spindle. Use a set screw for centring.
4. Fix the positioner to the bracket using the 4 screws provided.



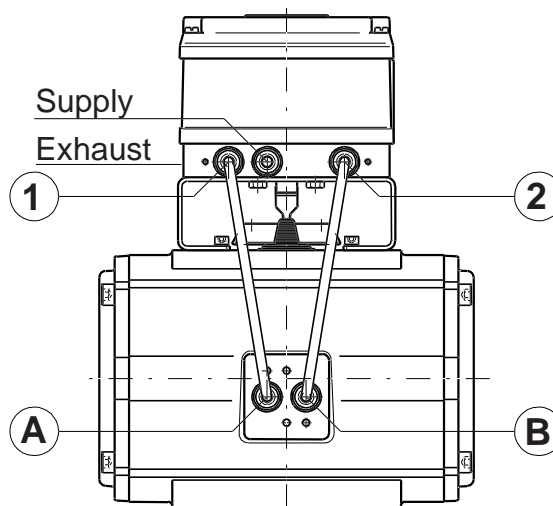
Single acting

Pneumatic Connections - Double acting

Assuming a standard (direct acting) installation with an increasing signal to open the valve in a CCW (counter clockwise) direction.

Before connecting any air supply make sure that the air available is clean dry instrument air filtered to at least 25 microns.

1. Connect an appropriate piece of air tubing between the port 1. on the positioner to the "A" port on the actuator. (The "A" port is the one that when air is applied to it, rotates the actuator in a counter clockwise direction).
2. Connect an appropriate piece of air tubing between the port 2. on the positioner to the "B" port on the actuator. (The "B" port is the one that when air is applied to it, rotates the actuator in a clockwise direction).
3. Connect an air supply to the positioner port "SUPPLY" (**warning**; actuator/valve might move at this stage).
4. If the positioner is required to meet enclosure rating IP54, be sure that the supplied dampers are in place at the "Exhaust" ports.



Double acting

Note: For a reverse acting assembly, use the same procedure but remember that the setup must be changed to "Reverse acting". This will not effect the failure mode. When installed on small actuators (less than 0.5 litre), you may need to use two dampers with integrated adjustable throttles as speed controller, mounted at the two "Exhaust" ports from the positioner.

Pneumatic Connections - Single acting

Assuming a standard installation, direct acting with an increasing signal to open the valve in a CCW (counter clockwise) direction.

Before connecting any air supply make sure that the air available is clean dry instrument air filtered to at least 25 microns.

1. Connect an appropriate piece of air tubing between the port 1. on the positioner to the "A" port on the actuator. (The "A" port is the one that, when air is applied to it, rotates the actuator in a counter clockwise direction).
2. Connect an air supply to the positioner port "SUPPLY" (**warning**; actuator/valve might move at this stage).
3. If the positioner is required to meet enclosure rating IP54, be sure that the supplied dampers are in place at the "Exhaust" ports.

Note: For a reverse acting assembly, use the same procedure but remember that the

Electrical Connection - 2 wire

1. Connect the 4-20mA signal to the terminals (1) and (5).
2. Check if the jumpers are correctly placed. Correct if necessary.

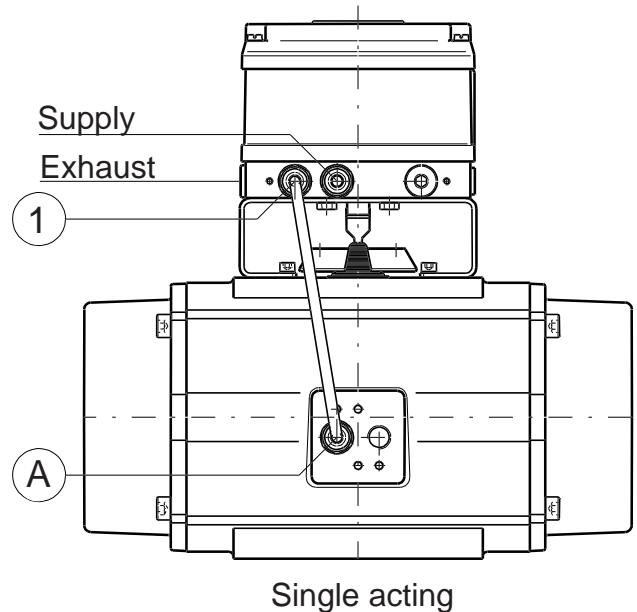
Note : In case of 2-wire signal, not lower than 3.7mA

Electrical Connection - 3-wire

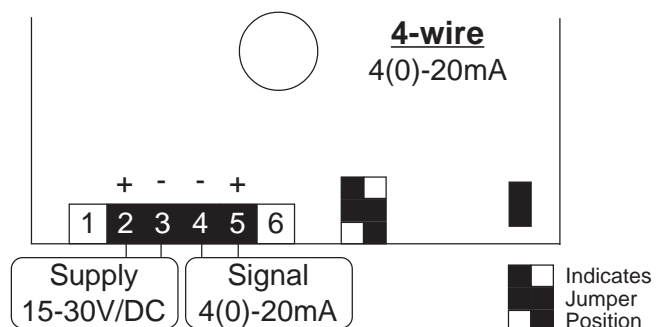
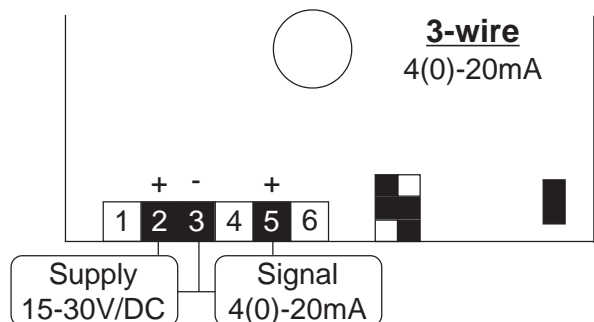
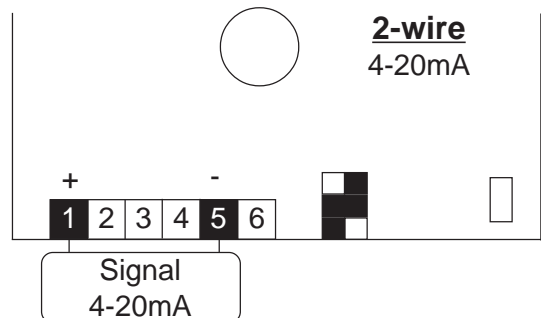
1. Connect the 4-20mA signal to the terminals (3) and (5).
2. Connect the +15-30V/DC supply to terminal (2).
3. Check if the jumpers are correctly placed. Correct if necessary.

Electrical Connection - 4 wire

1. Connect the 4-20mA signal to the terminals (4) and (5).
2. Connect the 15-30V/DC supply to terminal (2) and (3).
3. Check if the jumpers are correctly placed. Correct if necessary.



setup must be changed to "Reverse acting". This will not effect the failure mode. When installed on small actuators (less than 1 litre), you may need to use a one way speed controller at the actuator "A" port.



Installation - Linear Actuators

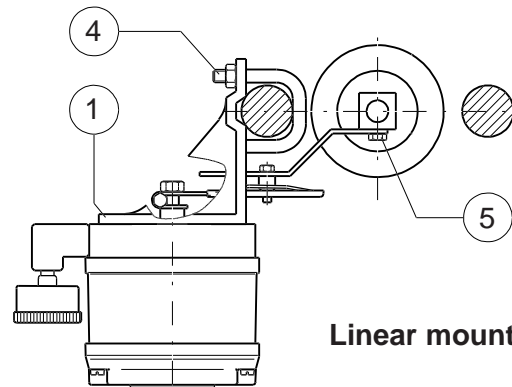
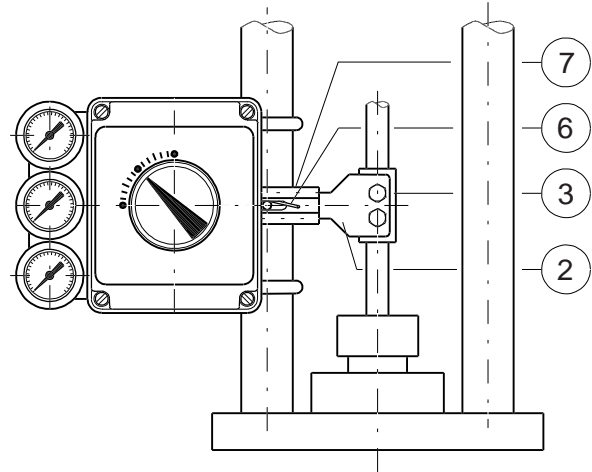
Mechanical Installation - Linear Actuators

The mountings for linear positioners will vary dependent on the type of control valve.

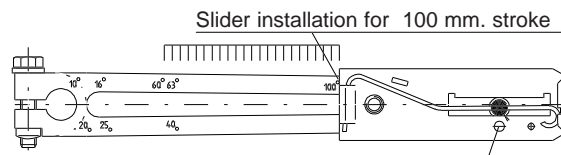
The simplest assembly is where the control valve yoke is to the standard IEC 534-6 and has type "C" (Pillar) yoke design. A standard mounting kit is available for this and will provide a suitable mounting for most valves in this category.

Typical installation for a direct acting assembly. (Increasing signal opens the valve with a rising spindle).

1. Fix the bracket (1) to the positioner base, using the four bolts provided.
2. Move the valve spindle into a mid-stroke position.
3. Fix the lever (2) to the valve connection block (3) using the two M6 bolts. The carrier bolt (5) should be positioned loosely in the lever (2).
4. Assemble the slider on the feedback lever (7). Use assembly "a" (below) for strokes 60 to 100 mm. or assembly "b" for strokes 10 to 40 mm.
5. Locate the positioner, together with the bracket (1) on the left-hand pillar using the "U"-bolt clamps (4). (Use the right-hand pillar for revers acting assemblies). pass the carrier bolt (5) through the feedback lever slot, taking care to keep the anti-backlash spring (6) in it's correct position.
6. Slide the positioner up or down the pillar until the lever (2) and the feedback lever (7) are parallel. Fix in position.
7. Adjust the linkage to the correct stroke by moving the slider until the appropriate position on the feedback lever is indicated. Then tighten the carrier bolt (5).
8. Let the actuator make a full stroke and check that the linkage moves freely within the bracket.
9. Move the actuator to it's "zero" position. Turn the positioner shaft counter clockwise (CCW) to the end of stroke. Fasten the feedback lever to the positioner shaft

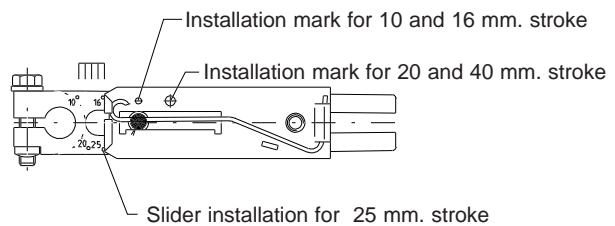


Linear mounting



Installation mark for 60 and 100 mm. stroke

a) Lever for 60 and 100 mm. Stroke



b) Lever for 10 and 40 mm. Stroke

Pneumatic Connections - Double acting

Assuming a standard installation, with direct acting an increasing signal to open the valve (rising spindle).

Before connecting any air supply make sure that the air available is clean dry instrument air filtered to at least 25 microns.

1. Connect an appropriate piece of air tubing between the port 1. on the positioner to the "A" port on the actuator. (The "A" port is the one that, when air is applied to it, opens the valve).
2. Connect an appropriate piece of air tubing between the port 2. on the positioner to the "B" port on the actuator. (The "B" port is the one that when air is applied to it, closes the valve).
3. If the positioner is required to meet enclosure rating IP54, be sure that the supplied dampers are in place at the "Exhaust" ports.
4. Connect an air supply to the positioner port "SUPPLY" (**warning**; actuator/valve might move at this stage).

Note: For a reverse acting assembly, use the same procedure. Then change the setup to "Reverse acting". This will not effect the failure mode.

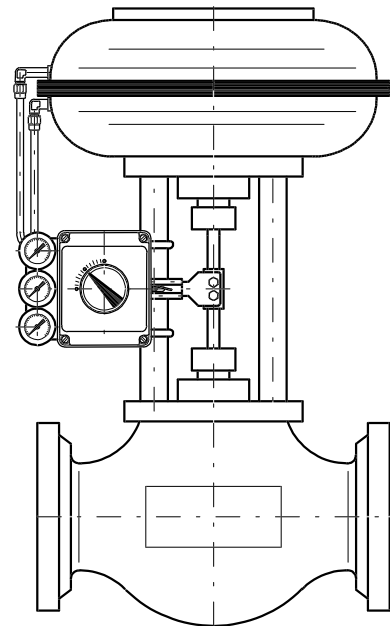
Pneumatic Connections - Single acting

Assuming a standard installation, with direct acting an increasing signal to open the valve (rising spindle).

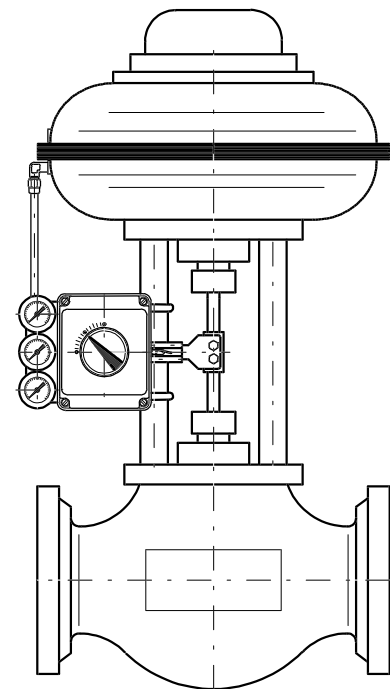
Before connecting any air supply make sure that the air available is clean dry instrument air filtered to at least 25 microns.

1. Connect an appropriate piece of air tubing between the port 1. on the positioner to the "A" port on the actuator. (The "A" port is the one that when air is applied to it, opens the valve).
2. If the positioner is required to meet enclosure rating IP54, be sure that the supplied dampers are in place at the "Exhaust" ports.
3. Connect an air supply to the positioner port "SUPPLY". (**warning**; actuator/valve might move at this stage).

Note: For a reverse acting assembly, use the same procedure but remember that the setup must be changed to "Reverse acting". This will not effect the failure mode. For air saving on single acting plug the matching exhaust port. Example: Fail close - plug port 2 and exhaust port 2.



Double acting



Single acting

Electrical Connections - See page 5

Failure Modes

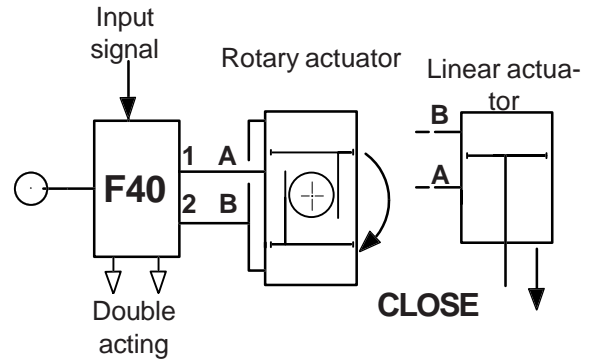
In General

The standard setup for double acting or spring return actuators is so that an increasing input signal opens the valve. Signal failure, then, moves the valve to the closed position. This may be changed to "Open on signal failure" by changing the air connection and/or actuator mounting code.

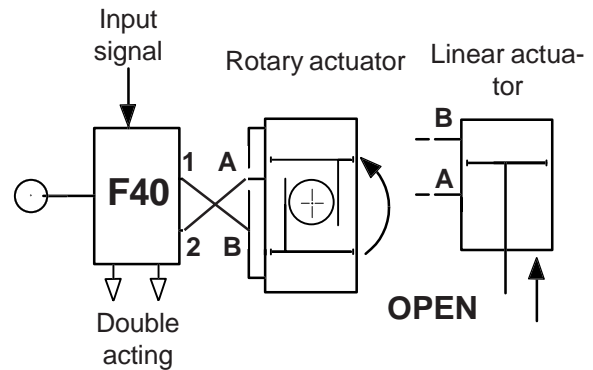
**On signal failure, the port-configuration is always;
Port 1 is exhausted.
Port 2 is pressurized.**

The effect of signal and air failure depends on the type of actuator:

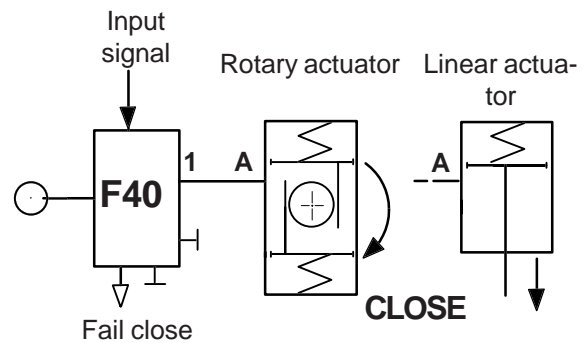
Double Acting actuators - Fail Closed			
Actuator	Action	Air Failure	Signal Failure
Double acting	Direct	Position not defined	Closed
	Reverse		Closed



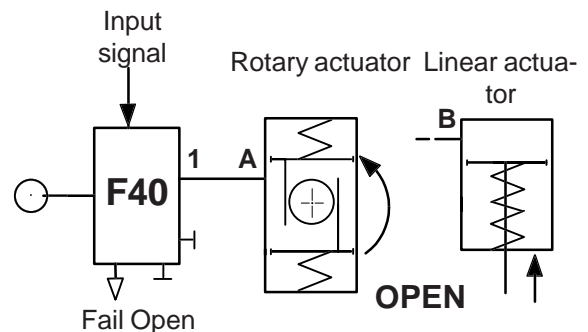
Double Acting actuators - Fail Open			
Actuator	Action	Air Failure	Signal Failure
Double acting	Direct	Position not defined	Open
	Reverse		Open



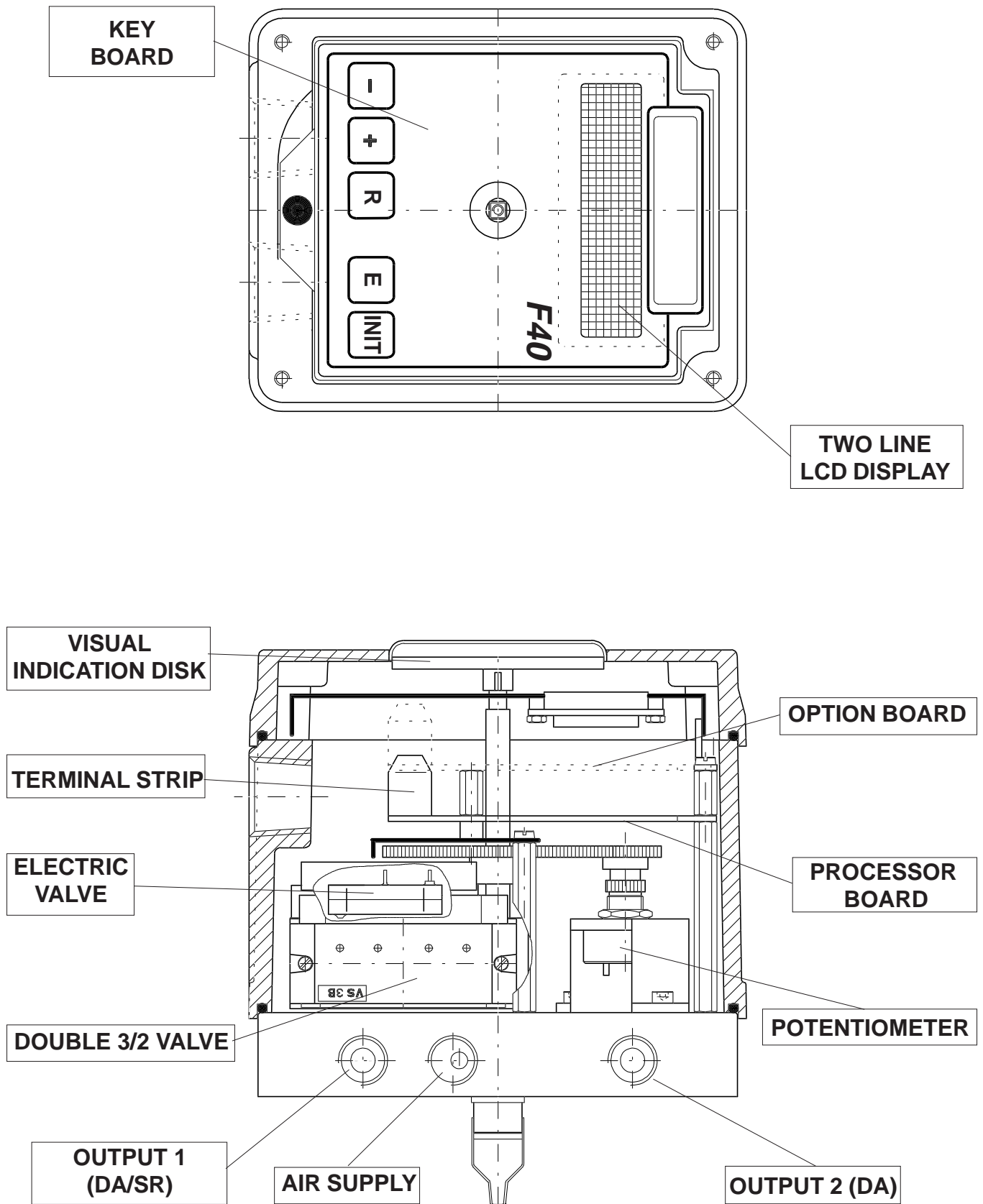
Spring Return actuators - Fail Closed			
Actuator	Action	Air Failure	Signal Failure
Spring Return	Direct	Closed	Closed
Fail Close	Reverse	Closed	Closed



Spring Return actuators - Fail Open			
Actuator	Action	Air Failure	Signal Failure
Spring Return	Direct	Open	Open
Fail Close	Reverse	Open	Open



Lay out of components

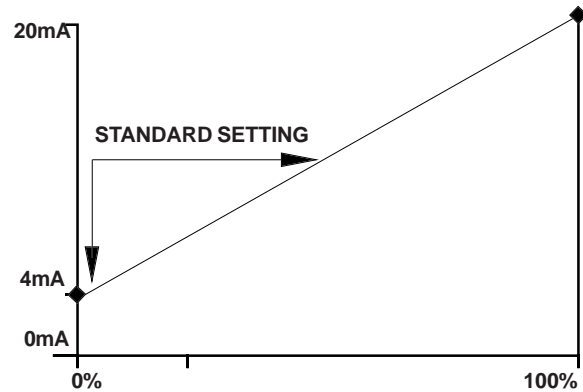


Initialization

The auto initialization sequence is used to provide the positioner with an initial range of settings that will allow the operation of positioners on most applications.

To initialize the positioner just connect the mA signal, set to a current between 8 and 20 mA and then press the INIT button for 7 seconds, that's all - everything else happens automatically.

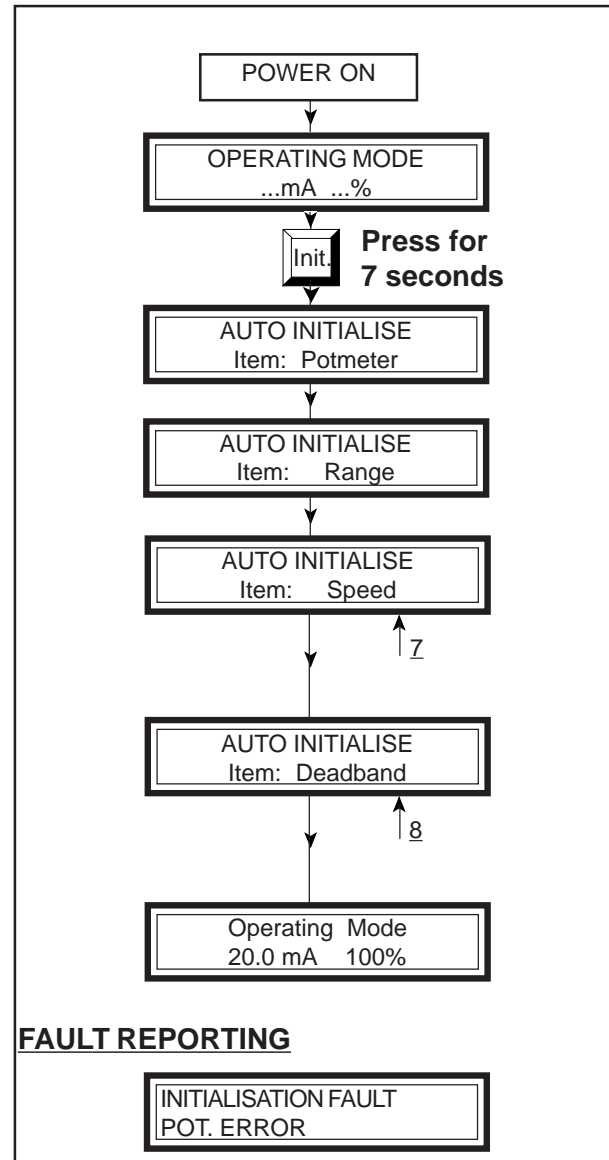
Signal Input	- 4 mA. - 20 mA.
Range	- Auto set: 0% to 100%
Control Function	- Linear.
Deadband	- Optimum.
Approach Speed	- Optimum.
Action	- Direct Acting. (CCW with increasing Signal).



The initialization Sequence

1. Mount the positioner onto the actuator and connect the air supply (**warning**; actuator/valve might move at this stage).
2. Connect the mA. signal and set to 20 mA. Press + or - button for display.
3. If the LCD control panel shows like this, go to 4. If not check the mA. signal and connections.
4. Press the **INIT.** button for 7 seconds. The positioner will now go through it's initialization sequence. First by installing the default settings then the diagnostic settings as below. The LCD will show the status as the sequence proceeds.
5. The actuator opens and closes several times. This mechanically sets the position of the potentiometer.
6. The actuator opens and closes once. This establishes the zero and range settings.
7. The actuator opens and closes once and stops at several positions. This checks the operating time for one stroke and sets the Approach Speed Threshold accordingly.
8. The actuator moves to the mid position and moves backwards and forward through several short strokes. This optimises the deadband for the current application.
9. On successful completion the positioner switches into Operating Mode and is ready for use. The mA. signal may be disconnected and on re connection is again ready for use without further initialization.

If an irreconcilable fault occurs, the fault will be reported as shown. For example;



In Reset Mode the positioner will not respond to a signal change.

Resetting Sequence - Zero

The default values for the closed end of the operational stroke, as installed by the AUTO INITIALIZATION procedure are:

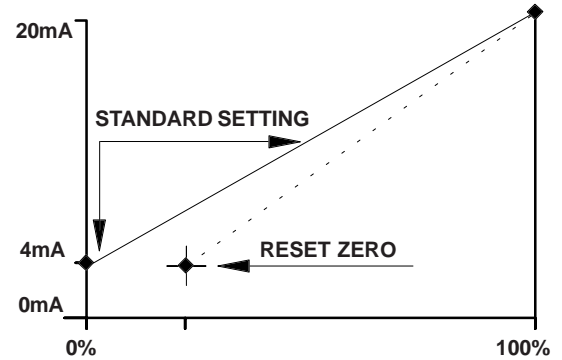
Signal : 4 mA.
Position : 0%

The zero position is reset by pressing the R (reset) button once.

The + or - can then be pressed until the desired value for the zero position is reached. Then press E (Enter) to return to the Operating Mode.

The zero position is normally the closed valve position: This is the position coincident with low signal input (4 mA.) This may be reset to any position between 0% and 100% of the stroke range.

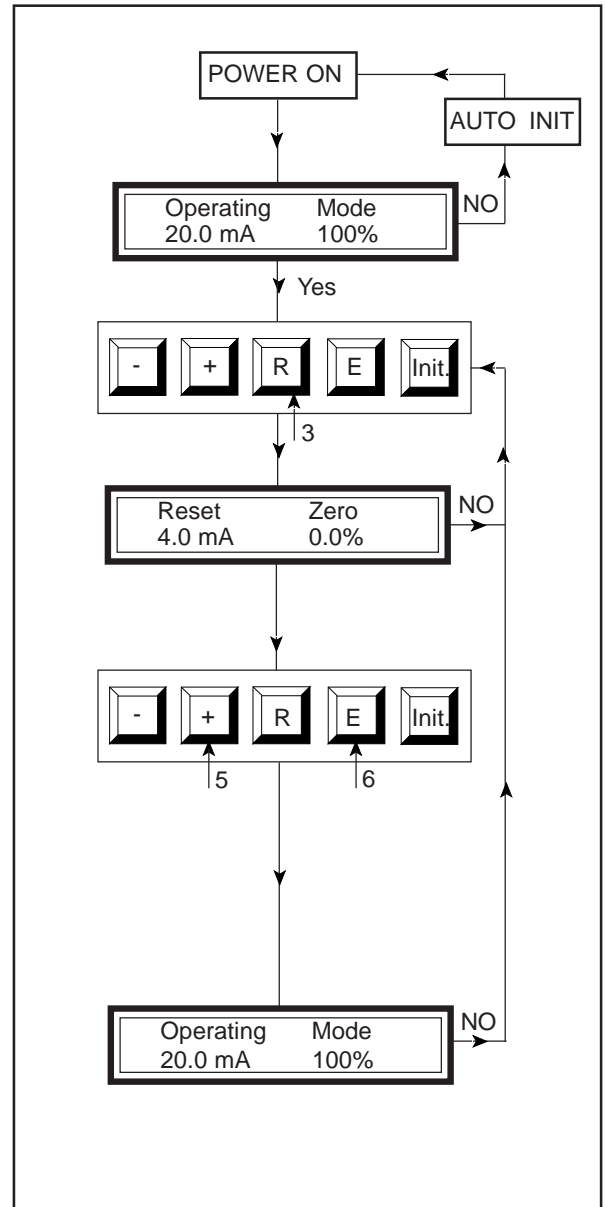
Example: To reset the zero position so that a 4 - 20 mA signal controls the movement 20% - 100%, the zero position needs to be reset from 0% to 20%. The resetting sequence for this is as follows:



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
3. Press **R** (Reset) once to enter the "Reset Zero" mode.
4. If the LCD control panel shows like this, go to 5. If not, repeat the above until it does. Note that the 0.0% is flashing, showing that this is the value to reset.
5. Press the **+** button until the figure for the closed position (0.0%) shows 20%. An over shoot can be corrected with the **-** button. (A single press changes the value by 0.1%. A continuous press causes the value to ramp in increments of 0.1%.
6. Press the **E** (Enter) button to return to the operating mode.
7. If the LCD control panel shows like this, OK. If not, return to stage 3.

Finally test by changing the mA. signal and check if the movement and stability are satisfactory.

Note: zero setting can not be set beyond Range setting



In Reset Mode the positioner will not respond to a signal change.

Resetting Sequence - Range

The default values for the open end of the operational stroke, as installed by the AUTO INITIALISATION procedure are:

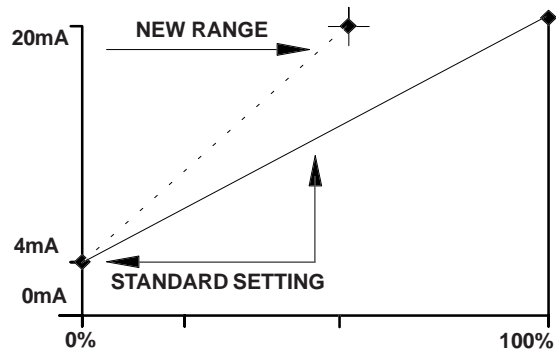
Signal : 20 mA.
Position : 100%.

The positioner range, from 0% (closed position) to 100% (open position), is initially the same as the mechanical stroke of the valve or actuator.

This range is automatically set to the actuator stroke during the auto initialization sequence, but may be reset to any value from 0% to 100%. When the range is reset to, for instance, 60%, then the new maximum open position is at the 60% open position.

The sequence to reset the range to 60% is as follows:

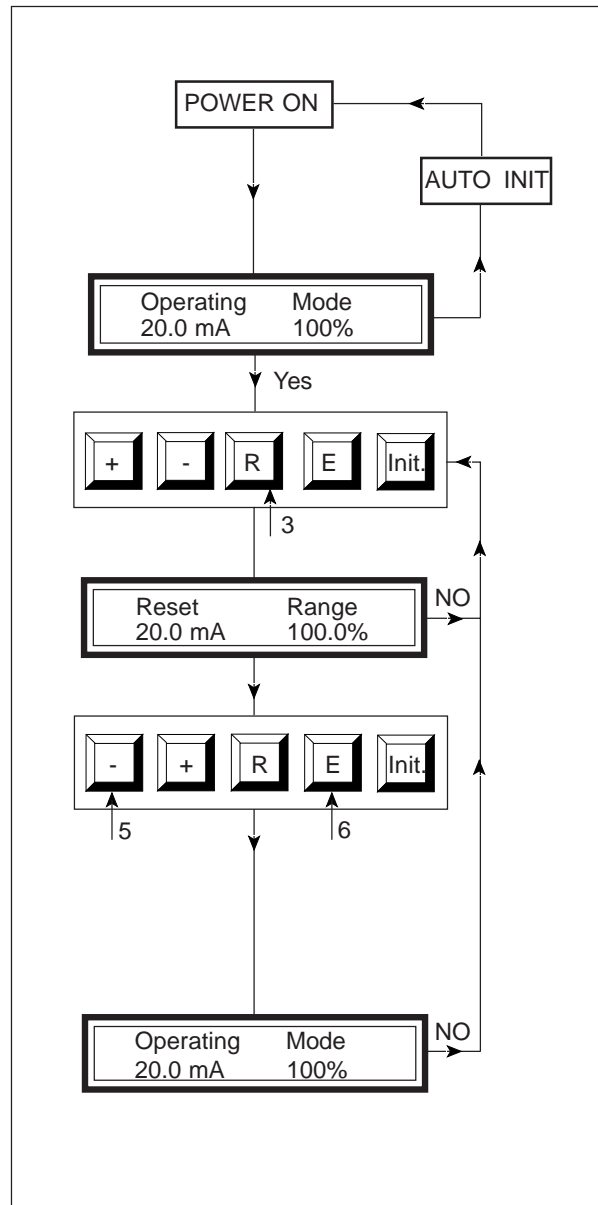
The range is Reset by first pressing the R (reset) button, then the R button again until the display reads "RESET RANGE". The + or - can then be pressed until the desired value is reached. Then press E (Enter) to return to the Operating Mode



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
3. Press the **R** (Reset) button twice to enter the "Reset Range" mode.
4. If the LCD control panel shows like this, go to 5. If not, repeat the above until it does.
5. Press the **-** button until the figure for the open position 100% shows 60% deg. An over shoot can be corrected with the **-** button. (A single press changes the value by 0.1%. A continuous press causes the value to ramp in increments of 0.1%.
6. Press the **E** (Enter) button to return to the operating mode.
7. If the LCD control panel shows like this, OK. If not, return to stage 3.

Finally test by changing the mA. signal and check if the movement and stability are satisfactory.

Note: Range setting can not be set beyond zero setting.



In Reset Mode the positioner will not respond to a signal change.

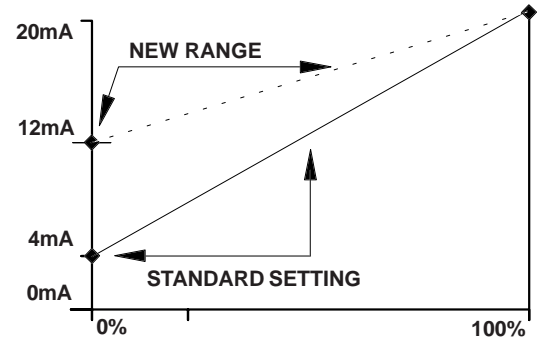
Resetting Sequence - Low Input

The default values for the closed end of the operational stroke, as installed by the AUTO INITIALISATION procedure are:

Input : 4 mA.
Position : 0%

The low input signal may need to be reset for, for instance, split ranging, where the 0% position needs to be reached with a 12 mA. signal. The sequence to reset the low signal to, for instance 12 mA. is as follows:

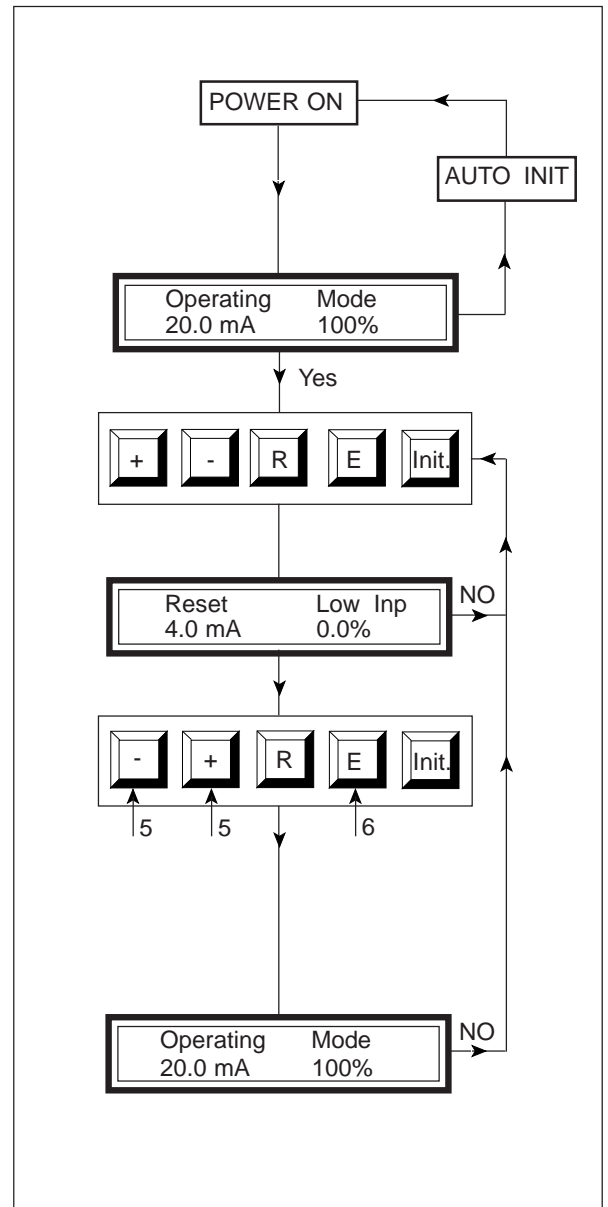
The low input is reset by first pressing the R (reset) button, then the R button again until the display reads "RESET LOW INP." The + or - can then be pressed until the desired mA. value for the zero position is reached. Then press E (Enter) to return to the Operating Mode.



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
3. Press **R** (Reset) button three times to enter the "Reset Low Input" mode.
4. If the LCD control panel shows like this, go to 5. If not, repeat 3. until it does.
5. Press the **+** button until the figure for the low signal (4 mA.) shows 12 mA. An overshoot can be corrected with the **-** button. (A single press changes the value by 0.1 mA. A continuous press causes the value to ramp in increments of 0.1 mA.)
6. Press the **E** (Enter) button to return to the operating mode.
7. If the LCD control panel shows like this, OK. If not, return to stage 3.

Finally test by changing the mA. signal and check if the movement is satisfactory.

Note: Low input setting can not be set beyond high input setting.



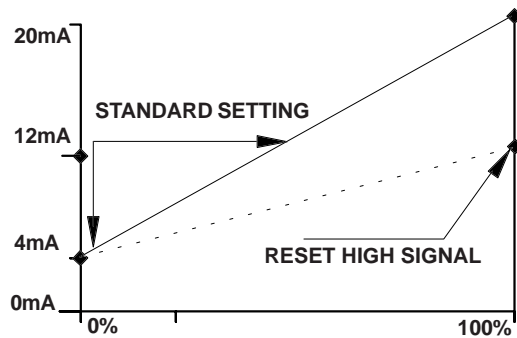
Resetting Sequence - High Input

The default values for the open end of the operational stroke, as installed by the AUTO INITIALISATION procedure are:

Input : 20 mA.
Position : 100%

The high input signal is reset by first pressing the R (reset) button, then the R button again until the display reads "RESET HIGH INP." The + or - can then be pressed until the desired mA. value for the open position is reached. Then press E (Enter) to return to the Operating Mode.

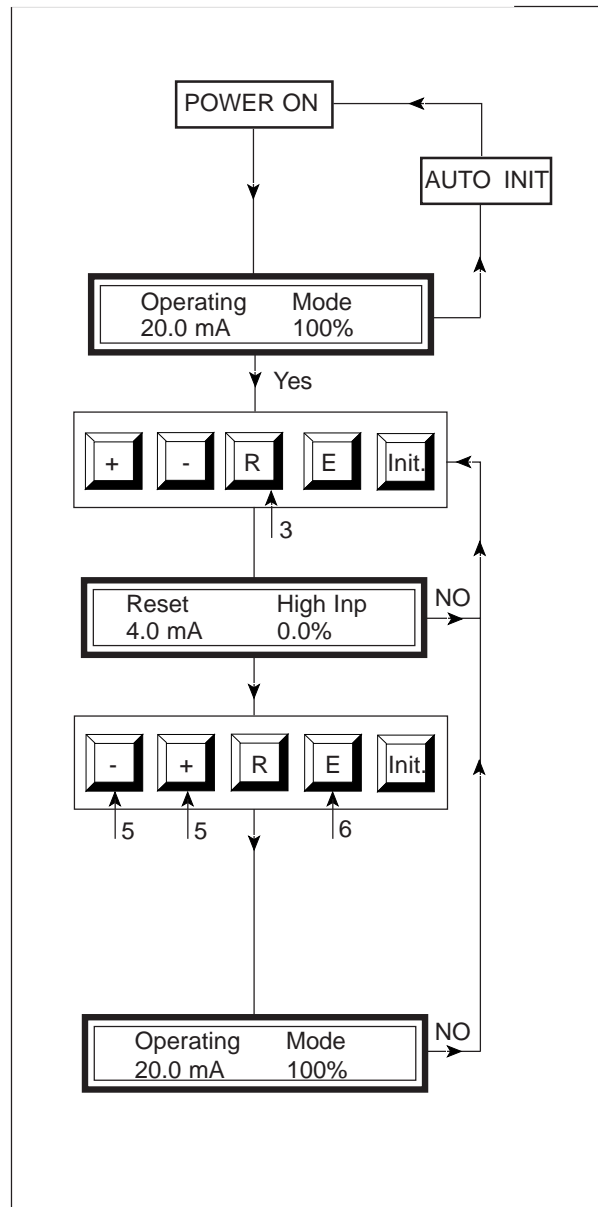
The high signal may need to be reset for, for instance, split ranging, where the 100% position needs to be reached with a 12 mA. signal. The sequence to reset the high input to, for instance 12 mA. is as follows.



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
3. Press **R** (Reset) then again repeatedly (three times) to enter the "Reset High Input" mode.
4. If the LCD control panel shows like this, go to 5. If not, repeat 3. until it does.
5. Press the - button until the figure for the high signal (20 mA.) shows 12 mA. An overshoot can be corrected with the + button. (A single press changes the value by 0.1 mA. A continuous press causes the value to ramp in increments of 0.1 mA.
6. Press the **E** (Enter) button to return to the operating mode.
7. If the LCD control panel shows like this, OK. If not, return to stage 3.

Finally test by changing the mA. signal and check that the movement is satisfactory.

Note: High input setting can not be set beyond low input setting.



In Reset Mode the positioner will not respond to a signal change.

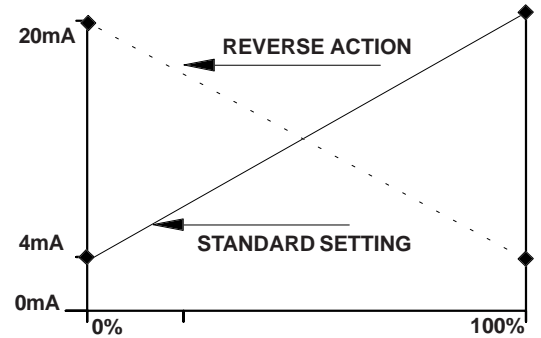
Resetting Sequence - Action

The default action as installed by the AUTO INITIALISATION procedure is Direct Action.

The action is reset by first pressing the R (reset) button, then the R button again until the display reads "RESET ACTION". The + or - can then be pressed until the desired action (REVERSE or DIRECT) is reached. Then press E (Enter) to return to the Operating Mode.

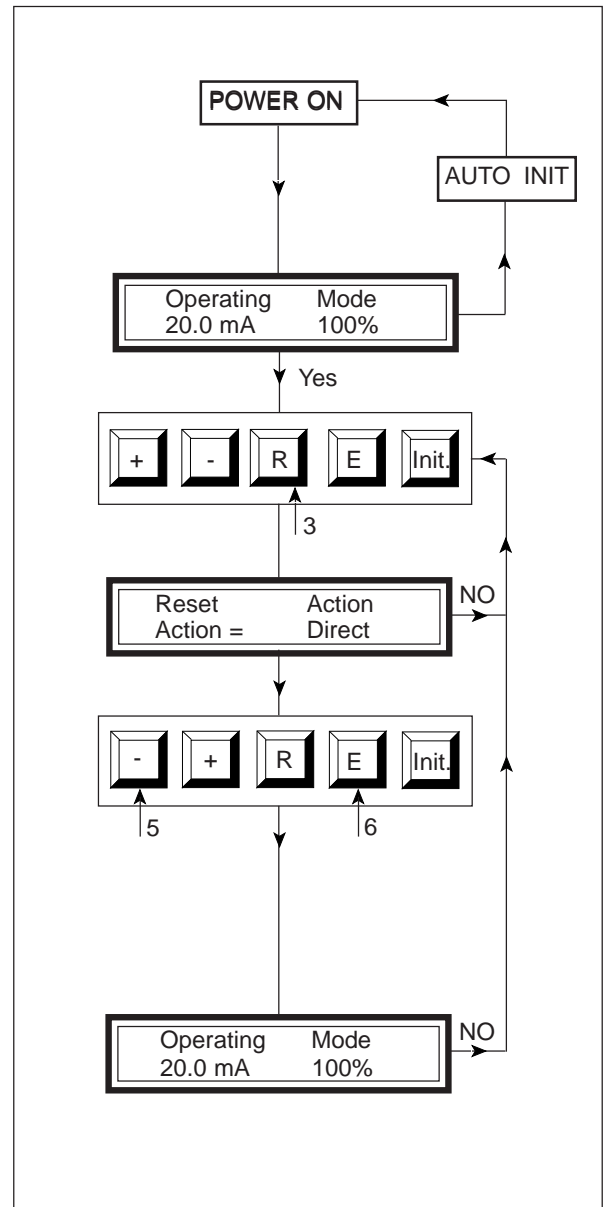
Direct Action is so that the output of the positioner moves in a CCW (Counter clockwise) direction with an increasing mA. signal.

The optional action is the opposite of this, the Reverse Action. Resetting the action will not effect the failure mode. The sequence to reset to Reverse Action is as follows:



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
3. Press **R** (Reset) five times to enter the "Reset Action" mode.
4. If the LCD control panel shows like this, go to 5. If not, repeat 3, pressing R (Reset) repeatedly until it does.
5. Press the - button until the Action = Reversed. (Repeated pressing of the + or - button will toggle between Direct and Reverse).
6. Press the **E** (Enter) button to return to the operating mode.
7. If the LCD control panel shows like this, OK. If not, return to stage 3.

Finally test by changing the mA. signal and check if the movement and stability are satisfactory.



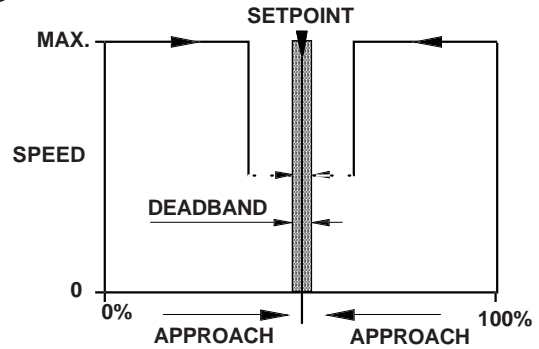
Resetting Sequence - Deadband

The deadband is the amount by which the input signal may change without causing a change in output movement. An optimum value for this is selected during the AUTO INITIALIZATION procedure. It can however, be reset to a fixed value if required.

The deadband is reset by first pressing the R (reset) button, then the R button again until the display reads "RESET DEADBAND". The + or - can then be pressed until the desired value is reached. Then press E (enter) to return to the Operating Mode.

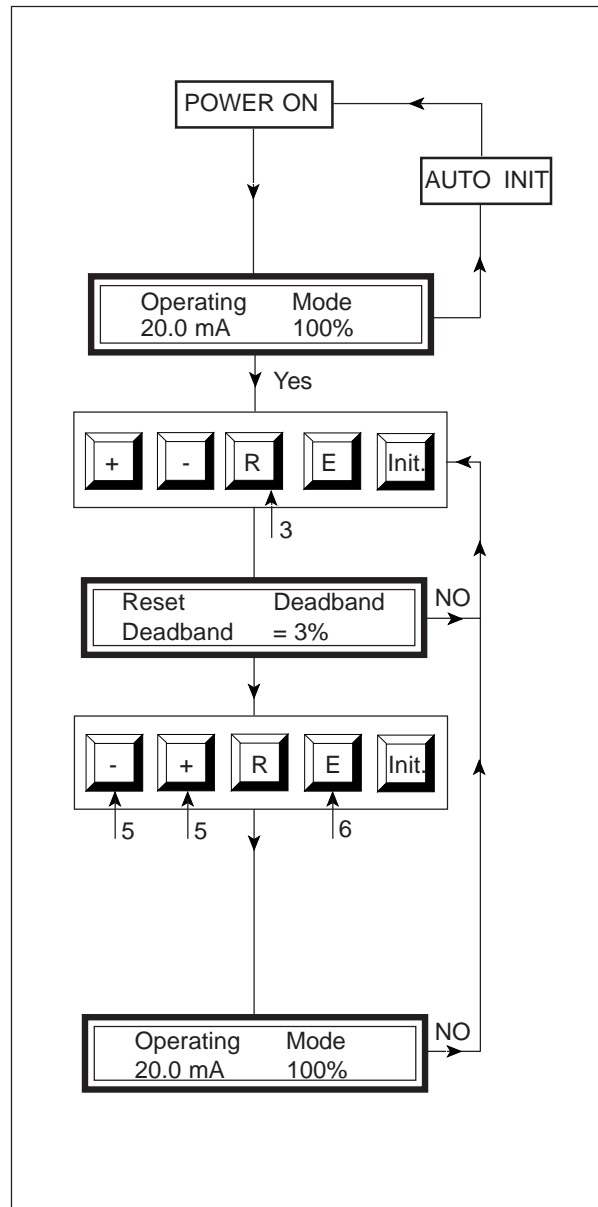
A setting which is too low will cause the positioner to "hunt" with difficulty in establishing a settled output. A setting which is too high causes an output which is sluggish and lacking in response.

The sequence to reset the deadband is as follows:



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
3. Press R (Reset) six times to enter the "Reset Deadband" mode.
4. If the LCD control panel shows like this, go to 5. If not, repeat 3, pressing R repeatedly until it does.
5. Press the + or - button to increase or decrease the deadband. 6. Press the E (Enter) button to return to the operating mode.
7. If the LCD control panel shows like this, OK. If not, return to stage 3.

Finally test by changing the mA. signal and check if the movement and stability are satisfactory.



Resetting Sequence - Approach Speed

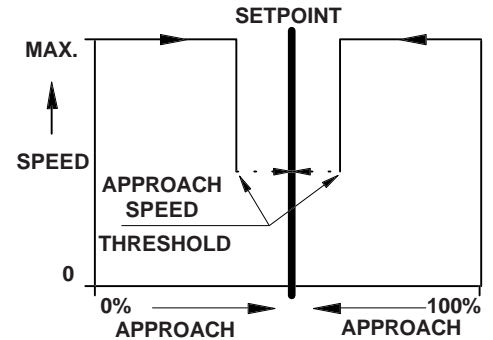
In Reset Mode the positioner will not respond to a signal change.

The approach speed is influenced by the position of the "Approach Speed Threshold". This is the position relative to the set point at which the pneumatic valve switches from continuous to pulsing mode. An optimum value for this is selected during the AUTO INITIALISATION procedure, but changes in operational condition may require this to be reset.

The approach speed is reset by first pressing the R (reset) button, then the R button again until the display reads "RESET APP. SPEED". The + or - can then be pressed until the desired speed is reached. Then press E (enter) to return to the Operating Mode.

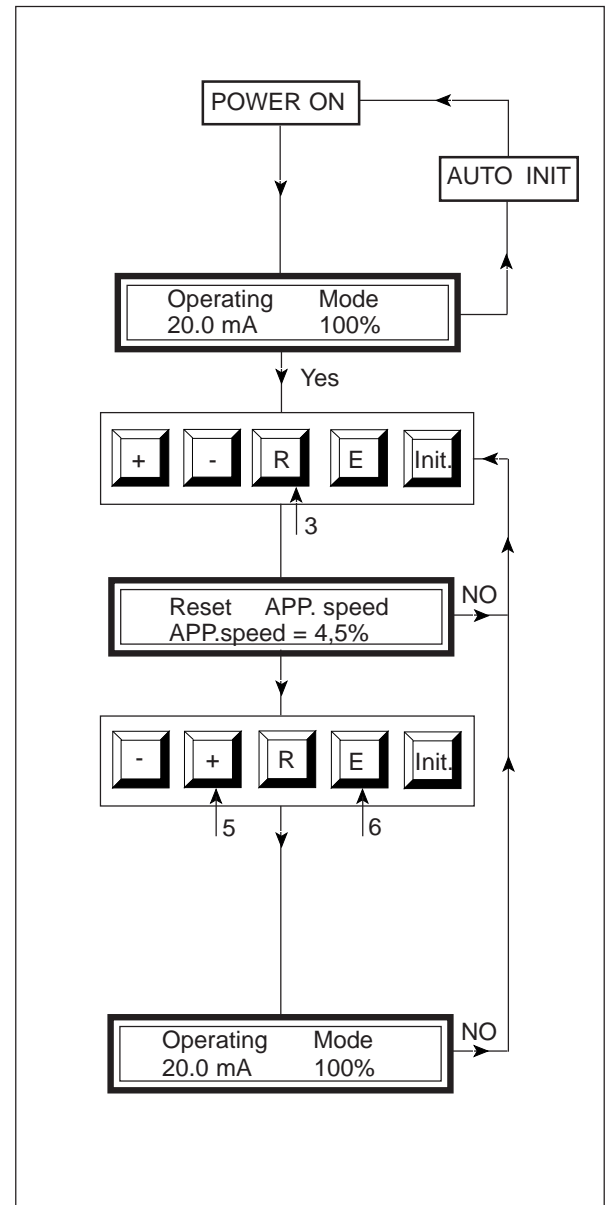
An Approach Speed setting which is too high will slow down the stroking time unnecessarily and a setting which is too low causes the movement to continuously overshoot the set point.

The sequence to reset the approach speed is as follows:



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
3. Press **R** (Reset) seven times to enter the "Reset Approach Speed" mode.
4. If the LCD control panel shows like this, go to 5. If not, repeat 3, pressing **R** (Reset) repeatedly until it does. The actual value shown will vary depending on application setup conditions.
5. Press the **+** or **-** button to increase or decrease the approach speed. (A single press changes the value by 0.1%).
6. Press the **E** (Enter) button to return to the operating mode.
7. If the LCD control panel shows like this, OK. If not, return to stage 3.

Finally test by changing the mA. signal and check if the movement and stability are satisfactory.



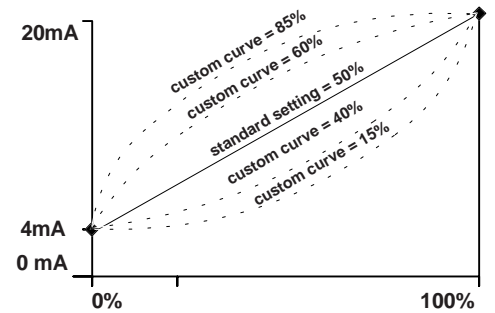
In Reset Mode the positioner will not respond to a signal change.

Resetting Sequence - Custom Curves

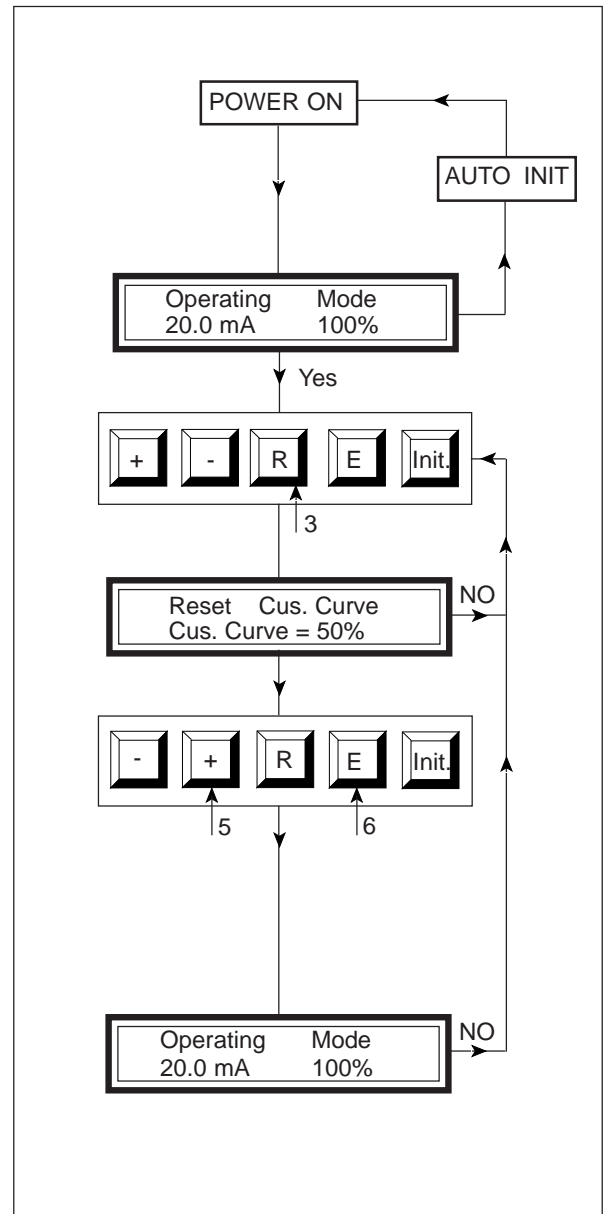
The default Control Function as installed by the AUTO INITIALISATION procedure is "Linear". This is so that the output of the actuator moves in directly proportional relationship to the input mA. signal. Three other possibilities are provided, these are "Equal Percentage", "Quick Opening" and "Custom Curve".

The custom curve function is reset by first pressing the R (reset) button, then the R button again until the display reads "RESET CUS. CURVE". The value for the curve can then be set by pressing the + or - button. Then press E (Enter) to return to the Operating Mode

A Custom Curve is a freely adjustable curve which may be deepened or flattened, in either direction from a directly linear function. Values between 0.0 and 100.0 may be selected, with 50.0 being the directly linear function. 1.0 is a very deep fast opening and 100 very deep equal percentage. The sequence to reset the Control Response to a custom curve is as follows:



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
 2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
 3. Press R (Reset) eight times to enter the "Reset Response" mode. Then press the + or - button until the display shows "Custom Curve". Select this with E (Enter).
 4. If the LCD control panel shows like this, go to 5. If not, repeat 3, pressing R (Reset) repeatedly until it does. (The "50.0" may show another value depending on what control curve has been previously set).
 5. Press the + or - button until the desired value is reached. (The + button will shape the curve towards the fast opening shape and the - button will shape the curve towards the equal percentage curve).
 6. Press the E (Enter) button to return to the operating mode.
 7. If the LCD control panel shows like this, OK. If not, return to stage 3.
- Finally test by changing the mA. signal and check if the movement and stability are satisfactory.



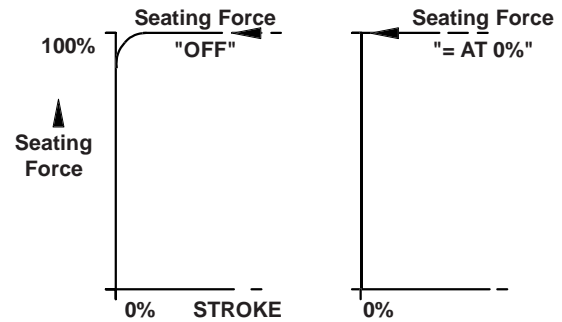
Resetting Sequence - Force Seating

In Reset Mode the positioner will not respond to a signal change.

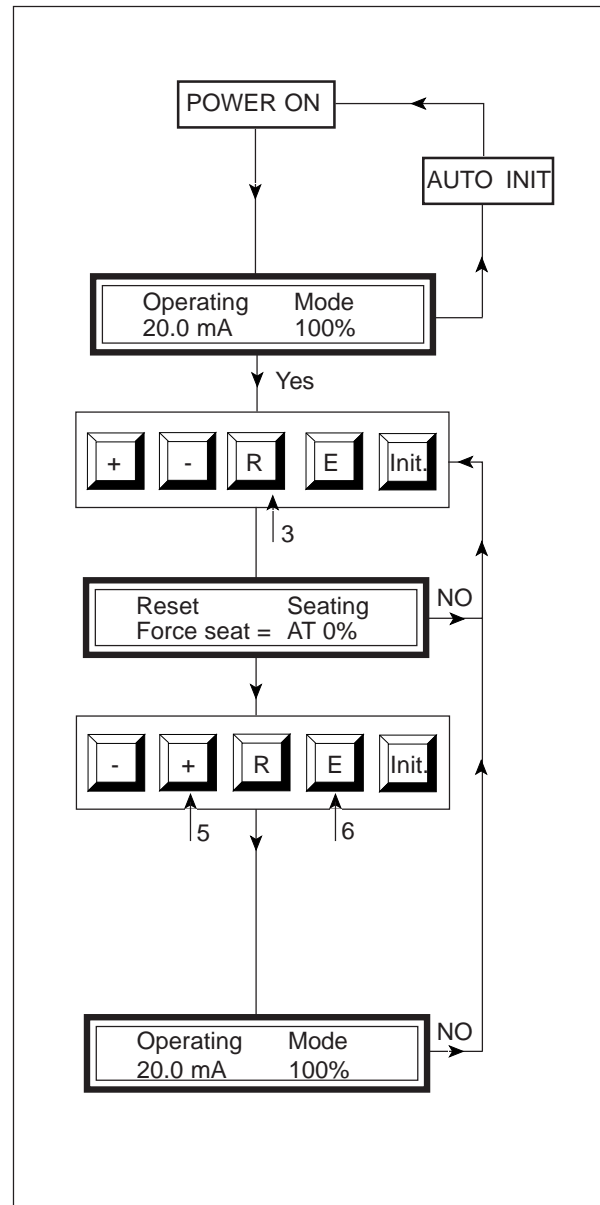
The default Force seated setting as installed by the AUTO INITIALISATION procedure is "Force Seat = OFF".

The Force seating function is reset by first pressing the R (reset) button, then the R button again until the display reads "RESET SEATING". The setting can then be switched "AT 0%", "AT 100%" or "OFF" by pressing the + or - buttons. Then press E (Enter) to return to the Operating Mode.

Torque seated valves however, require a positive torque at this end of stroke position in order to keep the valve in a tight closed position. The "Force Seating = AT 0%" function provides this by switching to full closing torque as soon as the 0% position is signalled. The sequence to reset the force seating setting is as follows:



1. Connect the mA. signal and set to 20 mA. Press + or - button for display.
2. If the LCD control panel shows like this, go to 3. If not, carry out the AUTO INITIALISATION procedure.
3. Press R (Reset) ten times to enter the "Reset Seating" mode (Each time R is pressed the display advances through the "Reset" option list).
4. If the LCD control panel shows like this, go to 5. If not, repeat 3, pressing R (Reset). repeatedly until it does.
5. Press the + button until the "Force Seated = OFF" shows. (Repeated pressing of the + or - button will toggle between "Force Seat = AT 0%" and "Force Seat = 100%")
6. Press the E (Enter) button to return to the operating mode.
7. If the LCD control panel shows like this, OK. If not, return to stage 3.



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