INSTRUCTION MANUAL

# CVS 1200 Pneumatic Positioner

## Linear and Rotary

## Introduction

The CVS 1200 Pneumatic Positioner is available in both Linear and Rotary configurations.

Valve stroke is accurately controlled through pneumatic input air pressure signal from 3-15 psi or 6-30 psi.


Rotary Linear

**CVS 1200 Valve Positioner**

## Features

- Easily Maintained
- Zero and Span are simple to adjust, providing precise calibration
- Simple Feedback connection
- Fast and Accurate response
- Low air consumption
- Simple to convert from direct acting to reverse acting, or vice versa
- Split range control easily adjusted without the need to change parts
- Vibration resistant design
- Restricted pilot valve orifice kit for small actuators to protect from hunting
- NAMUR mounting dimensions
- Versatile tubing connection in any direction

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# Specifications

| CVS 1200 Positioner | Linear | Rotary |
|---|---|---|
| Input Signal | 3-15 psi/6-30 psi (0.2 – 1.0 kgf/cm$^2$ ) | |
| Supply Pressure | 20 – 100 psi (1.4 – 7.0 kgf/cm$^2$) | |
| Stroke | 10 – 150 mm | 0 – 90 degrees |
| Air Connection | 1/4 NPT | |
| Gauge Connection | 1/8 NPT | |
| Protection | IP67 | |
| Ambient Temperature | -40$^0$C – 70$^0$C | |
| Linearity | ± 1% F.S. | ± 2% F.S. |
| Hysteresis | 1% F.S. | |
| Sensitivity | ±0.2% F.S. | ±0.5% F.S. |
| Repeatability | ±0.5% | |
| Air Consumption | 3 LPM (Sup = 20 psi, 1.4kgf/cm$^2$) | |
| Flow Capacity | 80 LPM (Sup = 20 psi, 1.4kgf/cm$^2$) | |
| Housing Material | Aluminum Alloy | |
| Approx. Weight | 3.7lb (1.7kg) | |


CVS 1200 Linear Positioner

## Installation

**Linear:**

1. Mount bracket with two 5/16”x1” bolts to actuator. Leave bolts loose at this point.

2. Mount positioner to bracket with two 8mmx1-1/2 bolts and spacers. Leave bolts loose at this point

3. Install threaded shaft into connecting block.

4. Apply air to actuator until valve is at 50%.

5. Using link bearings and link, connect from threaded shaft to positioner travel arm.

Note: Travel arm is metric.

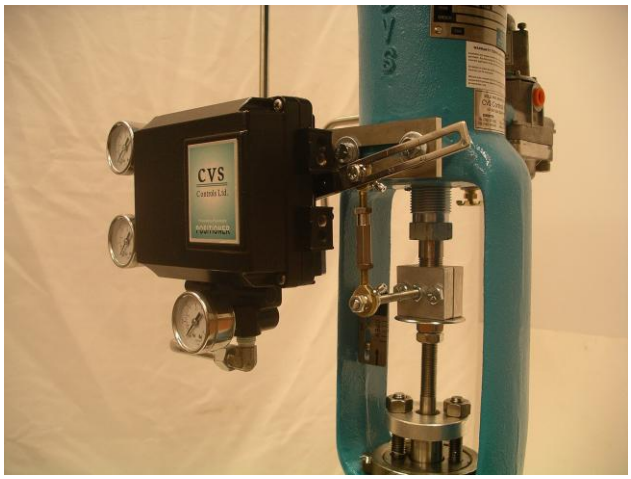
6. Tighten link bearings to travel arm with ¼” bolt and nut. Adjust nuts on threaded shaft until link is parallel with actuator. Then tighten.

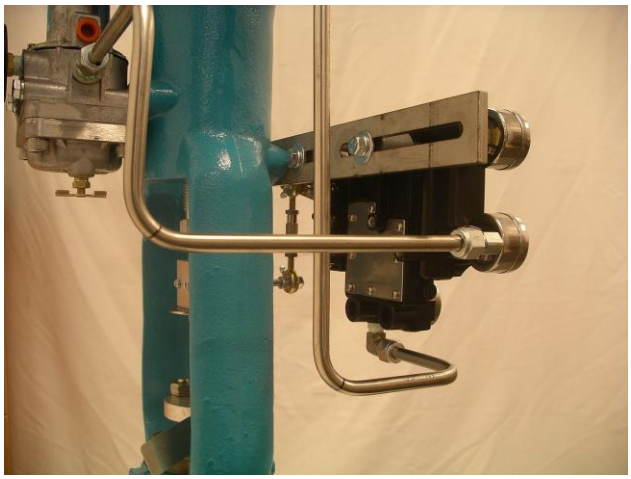
7. Slide positioner until link is parallel with actuator stem. Tighten bolts.

8. Adjust link so that the travel arm forms a right angle to the actuator. Tighten bolts.

9. Apply air to actuator until travel is 100%. Inspect to ensure travel arm is not touching stopper on back side of the positioner. If so, adjust link bearing bolt on travel arm accordingly.

10. Remove air from actuator and inspect down travel stop. Adjust accordingly.



**Rotary:**

The CVS 1200 Positioner comes with standard NAMUR bracket, optional brackets available. The bracket may be used for Fork Lever, or NAMUR bracket.

Standard actuator stem height is 20, 30, or 50mm. After checking stem height assemble with bracket as required.

Attach bracketed CVS1200R to the actuator using hex-head bolts. Bracket mounting hole is 6mm. Use lock washer on fasteners for firm attachment to the actuator, so the CVS 1200 positioner will not shake from vibration or any other impact. The direction of the bracket is determined by the operating condition.

Set rotation position of the actuator stem at zero point, “0%”. Single acting actuator stem will be at zero point when there is no supply pressure. If a double acting actuator is being used, check the actuator stem rotation (clockwise, or counter clockwise) by supplying pressure.

Install the fork lever after setting the actuator stem at zero point. Check the direction of the actuator stem – clockwise or counterclockwise. Installation angle of the fork lever should be 45 degrees based on the linear shaft. For NAMUR shaft the angle does not matter.

Upon setting fork lever position, tighten lock nuts which are assembled on bottom of fork lever.

Attach CVS 1200R to the bracket. Fix the clamping pin on the main shaft of the positioner and insert connection bar onto the fork lever slot so that it may be locked to the fork lever spring. This sets the alignment of the main shaft of the positioner and the center of the actuator stem. Poor alignment of the actuator stem may lower durability of the CVS 1200 due to excessive force on the main shaft of the positioner.

Tighten positioner base and bracket with hex head bolts and lock washer. It is recommended to tighten four bolts after verifying the CVS 1200’s position.

**Pneumatic Input Adjustment Procedure:**

Factory setting for input is 3-15 psi. The CVS 1200 Positioner is easily changed to 6-30 psi.

1. Ensure air supply is removed from unit.

2. Using a 7mm wrench, loosen lock nut on threaded shaft.

3. Using pliers, remove spring from zero adjust post.

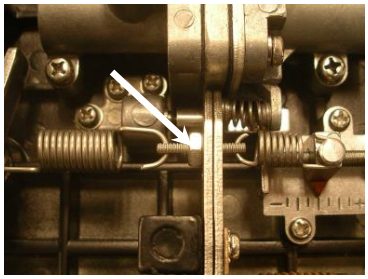
4. Remove span spring from threaded shaft.

5. Using the zero spring, turn the threaded shaft one full rotation clockwise.(towards span adjuster)

6. Reattach zero spring to post, and span spring to shaft. Tighten jam nut on threaded shaft.
Continue with calibration.

**Note:** Should additional span adjustment be required, another turn on the threaded shaft may be achieved.

**2.**



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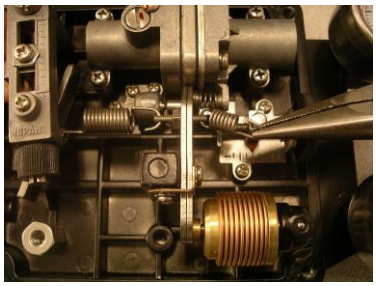

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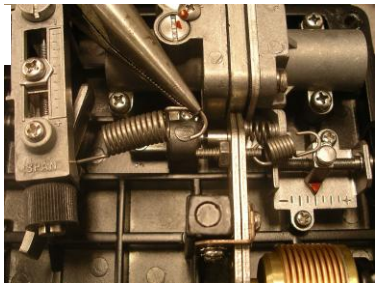

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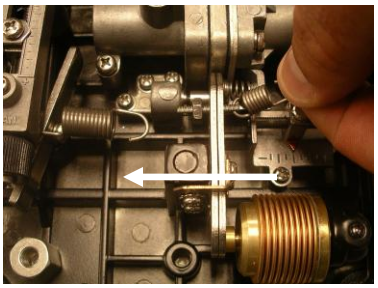

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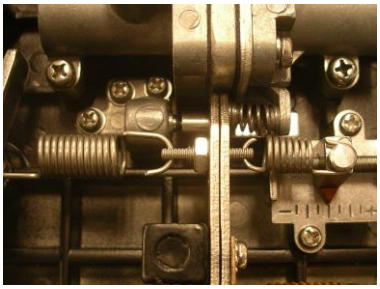
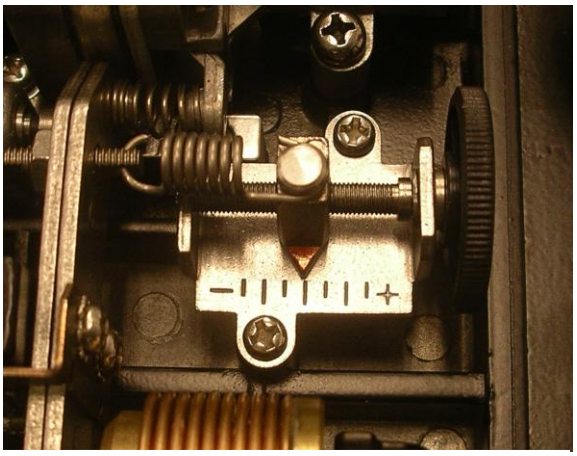


**Linear and Rotary:**
**Zero Adjustment-**

1. Set signal to the stroke starting signal (3 psi) then turn the Zero Adjuster clockwise or counter clockwise accordingly.

2. In the case of a spring actuator, check to see if it is set to standard pressure in zero point. If not, repeat Zero Adjustment.



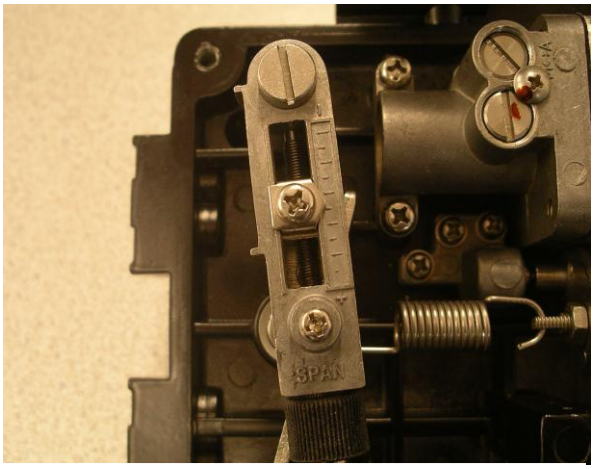
Zero Adjustment – Linear and Rotary

**Linear and Rotary:**
**Span Adjustment-**

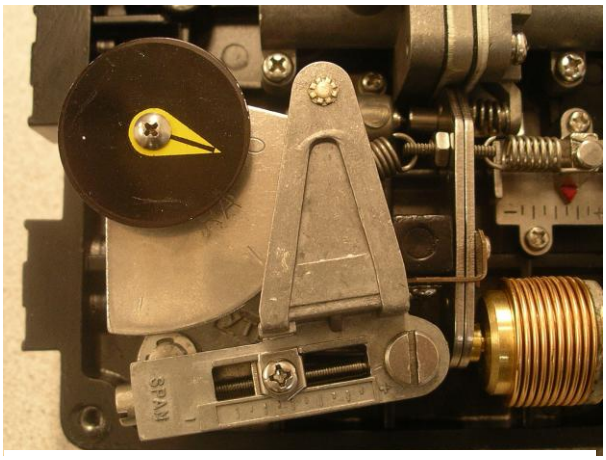
1. Turn and adjust the Span Adjustment Screw, so that the indicator reads at final stroke point by final input signal.

2. Check Zero Point, and repeat Zero Span Adjustment. ½ Split Range can be used by Zero and Span Adjustments.

3. Tighten Lock Screw of Span adjustment after setting.




Span Adjustment - Linear

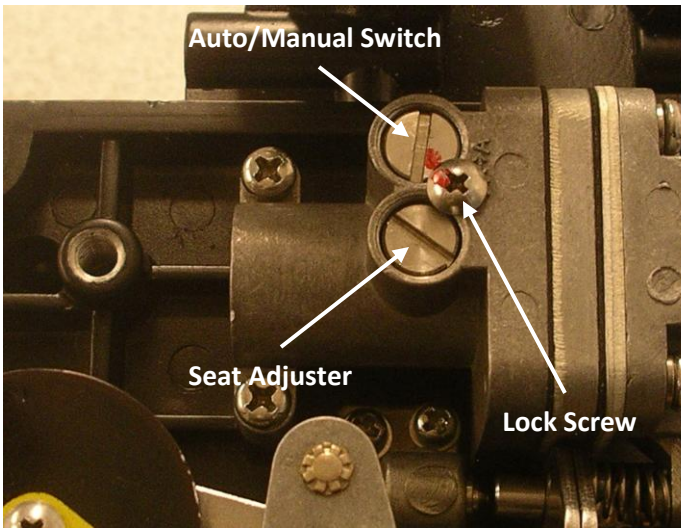



Span Adjustment - Rotary

**Auto/Manual Switch-**

1. Factory setting is Auto. To use manual operation, turn A/M Switch counterclockwise.

2. In manual operation, the pressure of a CVS regulator connects to actuator. After using, return switch to "A".




**Seat Adjuster-**

The Seat Adjuster is adjusted and set prior to shipment for balanced pressure point of output pressure. There should be no need for adjustment.

Seat adjuster is always used for double acting configurations. Should there be a need to change the balanced pressure point, use the seat adjuster.

- Should the sensitivity be poor due to actuator type of load condition, turn the Seat Adjuster Screw clockwise. (The stopper screw is set to avoid the removal of the seat adjuster screw, do not loosen the stopper screw at this time.)

**Pneumatic Piping Conditions-**

- Fully purge the piping from debris.

- Use clean air, fully removed of humidity and dust.

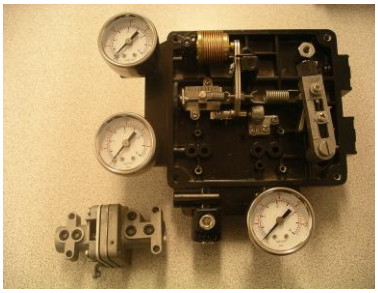
- Use a CVS filter regulator to maintain constant supply pressure.

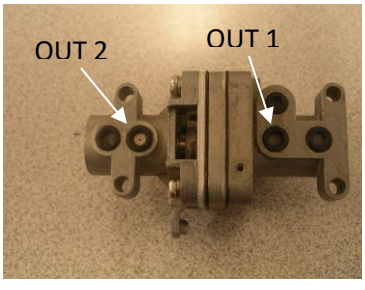
- When using a double action positioner as a single acting type, close off either OUT1 or OUT2 and remove pressure gauge to close its connection.

**Pilot Valve-**

When the positioner is attached to a small capacity actuator, hunting may occur. In this situation a pilot valve with a smaller output orifice may be used for OUT1 and OUT 2. The output orifice is interchangeable.
Using a Phillips screwdriver remove 4 screws and relay. Turn relay upside down.
Upon removing the O-ring from OUT1 and OUT2, place the appropriate orifice in and re install the O-Ring to OUT1 and OUT2. Re install relay.
Ensure that dust and debris does not enter the port hole when installing the output orifice.
Should hunting not be resolved by installing output orifice, contact a CVS Controls Representative.

| Actuator Volume | Output Orifice Diameter | Part Number |
|---|---|---|
| Below 90 $cm^3$ | 0.7 | Contact CVS |
| 90 – 180 $cm^3$ | 1.0 | Contact CVS |
| Over 180 $cm^3$ | N/A | |





## Maintenance and Inspection

Ensure the supply air is clean and free from debris.

Should the pilot valve be disassembled, apply grease to the sliding section.

If the fixed orifice becomes clogged with carbon particles, or similar, remove the pilot valve Auto/Manual changeover screw and clean it using a Ø0.2 wire into the aperture. If it must be removed and replaced with a new one, ensure supply pressure has been relieved and remove the stopper screw of the pilot valve.

Inspect the positioner once a year. Replace excessively worn parts as required. Extreme working conditions may require increased inspection intervals.

## CARE

Large vibrations may cause improper operation of the CVS 1200 positioner.

Extreme conditions outside of the operating temperature range may cause deterioration of the seals, and improper operation.

Ensure supply air is free from dust and humidity.

Should the postioner be on site for long periods of time not operational, consider covering it so as to not let the weather elements get into the positioner.

**NOTES:**

## NOTES:

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