

Electro Pneumatic Positioner DSR-500



General

- **Housing Material:** Polyamide
- **Ground Plate Material:** KTL-coated Aluminum
- **Wiring:** 4-wire logic
- **External Supply Voltage:** 24VDC \pm 10%
- **Current Consumption:** 300mA max
- **Signal Input:** 4-20mA
- **Voltage of Working Resistance:** 3.5V @ 20mA
- **Stroke:** Linear, rotary
- **Actuator Action:** Fail-safe close
- **Manual Jog:** Push button
- **Temperature:** -4°F to 167°F
- **Pneumatic Port:** G1/8"
- **Conduit:** M16x1.5
- **Protection Class:** IP65

Special Note

All standard DSR 500 Positioners are programmed for fail-safe to close logic. These standard units can be reprogrammed by GF Piping Systems for fail-safe to open logic with special request. DSR 500 units can be built and programmed specifically for double acting logic with special request but this requires additional internal components, therefore all air-spring units cannot be converted to a double acting unit in the field.

Sample Specification

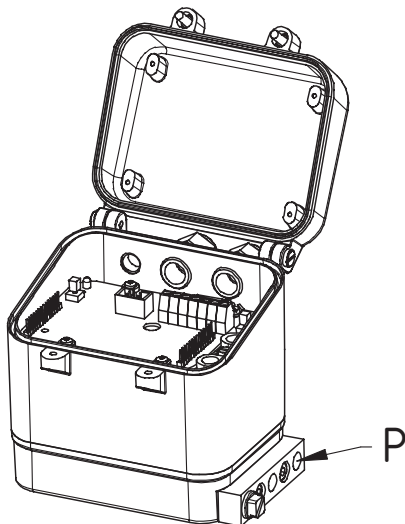
The DSR-500 shall be an electro-pneumatic positioner with versions suitable for both rotary and linear strokes. The housing shall be polyamide with a KTL-coated Aluminum base plate. The input signal shall be either 4-20mA or 0-10V and manually spanned with the aide of push buttons on the positioner's display board.

Optional Features

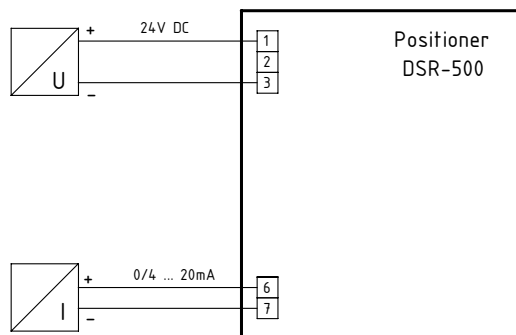
- **Input Signal:** 0-10V
- **Actuator Action:** Fail-safe open, double acting
- **Protection Class:** Explosion proof
- **Position Feedback:** 4-20mA
- **Wiring:** 2-wire logic
- **Controller:** Integrated PID-process module
- **Optical:** With digital display

Technical Data

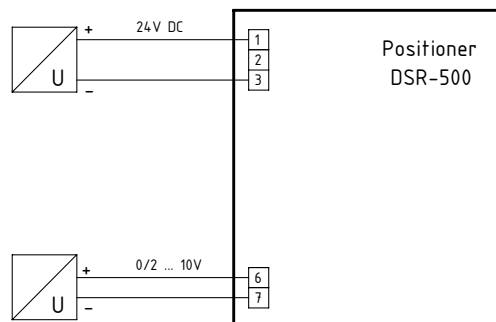
Fail-safe to Close Control Medial Input



4-20mA Wiring



Optional 0-10V Wiring



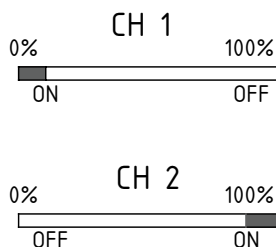
Optional Features Technical Data

Feedback Module

- **Supply Voltage:** 24VDC $\pm 10\%$
- **Feedback:** Two limit signal transmitters
- **Switch Capacity of Transmitters:** 24VAC/DC, 70mA
- **Output Signal:** 4-20mA
- **Max. adm. Working Resistance:** $< 700 \Omega$
- **Switch Range:** Adjustable 0-100%
- **Hysteresis:** Approx. 2.5%
- **Temperature:** -4°F to 167°F

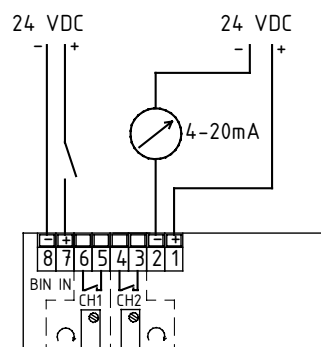


Feedback Module Switch Function



A feedback card can be added to any version of the DSR-500 product family. It is not certified to be used in explosion proof environments. If this card is installed on an ATEX certified DSR-500, the explosion proof rating of the positioner assembly is negated.

Feedback Module Wiring



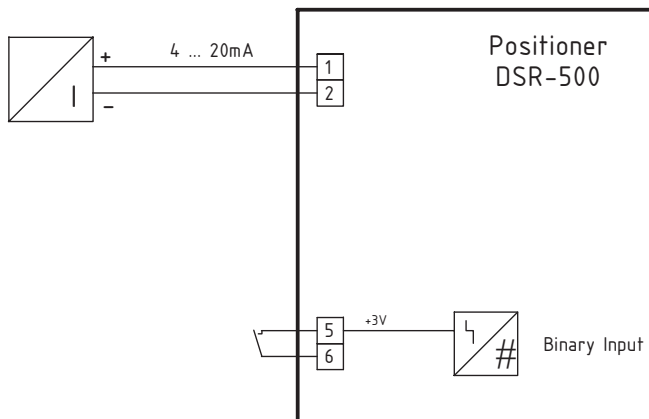
Optional Features Technical Data

The following features are available on DSR 500 rotatory units and those assembled with a 5-Series DIASTAR Valve

With Digital Display

- **Housing Material:** Polyamide
- **Ground Plate Material:** KTL-coated Aluminum
- **Wiring:** 2-wire logic
- **Signal Input:** 4-20mA
- **Voltage of Working Resistance:** 6.4V @ 20mA
- **Drive:** Linear, rotary
- **Actuator Action:** Fail-safe close, fail-safe open
- **Manual Jog:** Push button
- **Temperature:** -14°F to 167°F
- **Protection Class:** IP65

Wiring: With Digital Display and Explosion Proof



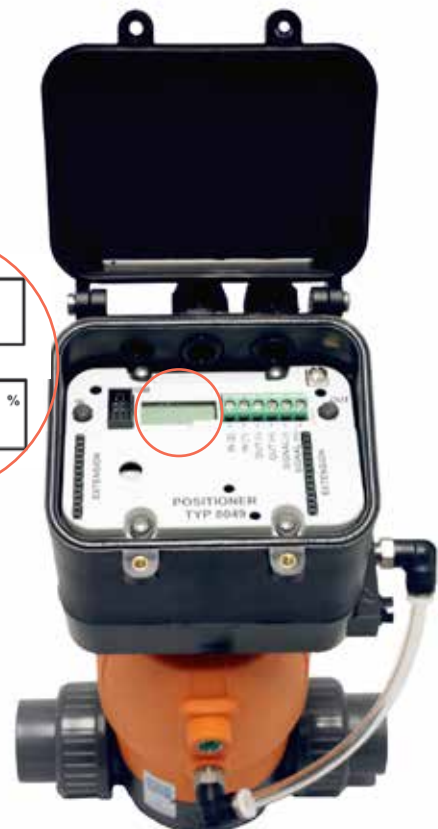
Explosion Proof

- **Housing Material:** Polyamide
- **Ground Plate Material:** KTL-coated Aluminum
- **Wiring:** 2-wire logic
- **Signal Input:** 4-20mA
- **Voltage of Working Resistance:** 14V @ 20mA
- **Max Input Voltage:** 30VDC
- **Max Input Current:** 100mA
- **Max Input Power:** 633mW
- **Drive:** Linear, rotary
- **Actuator Action:** Fail-safe close, fail-safe open
- **Manual Jog:** Push button
- **Specification:** ATEX II 1G Ex ia IIC T3/T4
- **Test Certificate:** BVS 08 ATEX E154
- **IEC Specification:** Ex ia IIC T3/T4 Ga
- **Temperature (T4):** -10°F to 104°F
- **Temperature (T3):** -10°F to 167°F

Key Design Feature

The DSR 500 with Digital Display offers convenient user friendly features that the standard unit does not. It operates with 2-wire logic, meaning the operator only has to hard wire the control signal to the unit versus the conventional 4-wire logic units that require both control signal and power wires to be routed directly to the positioner. The entire DSR eletro-pneumatic positioner family offers simplified setup and trouble shooting but the DSR 500 with Digital Display takes it a step further with a screen that allows an operator to see easy-to-read symbols that communicate the postioner's faults or current status. All DSR 500 units feature a manual jog function that allows an operator to manually open or close a valve directly from the postioner but units with digital display allow an operator to see exactly what degree of stroke the valve is currently oriented.

Display Examples



With Integrated PID Control Module

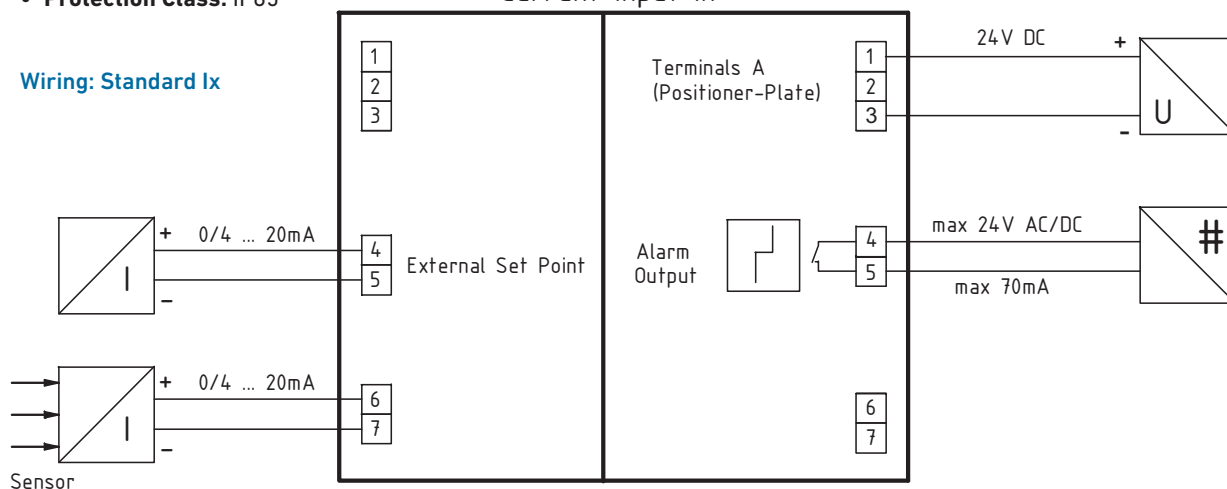
- **Housing Material:** Polyamide
- **Ground Plate Material:** KTL-coated Aluminum
- **Wiring:** 4-wire logic
- **External Supply Voltage:** 24VDC \pm 10%
- **Current Consumption:** 350mA max (including positioner)
- **Process Value:** Pt100 (2 or 3 wire), 4-20mA
- **Set Point:** Internal (keys), external (4-20mA or 0-10V)
- **Control Function:** PID, PI, P or PD
- **Resolution:** \pm 0.12% of measuring range
- **Output Resolution:** \pm 0.1% of end value (100% opening)
- **Accuracy:** \leq 0.5% of end value
- **Sampling Rate:** 50 msec for PI control
- **Refresh of Output Signal:** 1.8sec for D part
- **Input Filter Process Value:** Off, T=20 msec; Pt100: T=200msec, On, T=800msec (suppression line interference 54dB)
- **Drive:** Linear, rotary
- **Actuator Action:** Fail-safe close, fail-safe open, double acting
- **Manual Jog:** Push button
- **Temperature:** -4°F to 167°F
- **Protection Class:** IP65



Positioner DSR-500

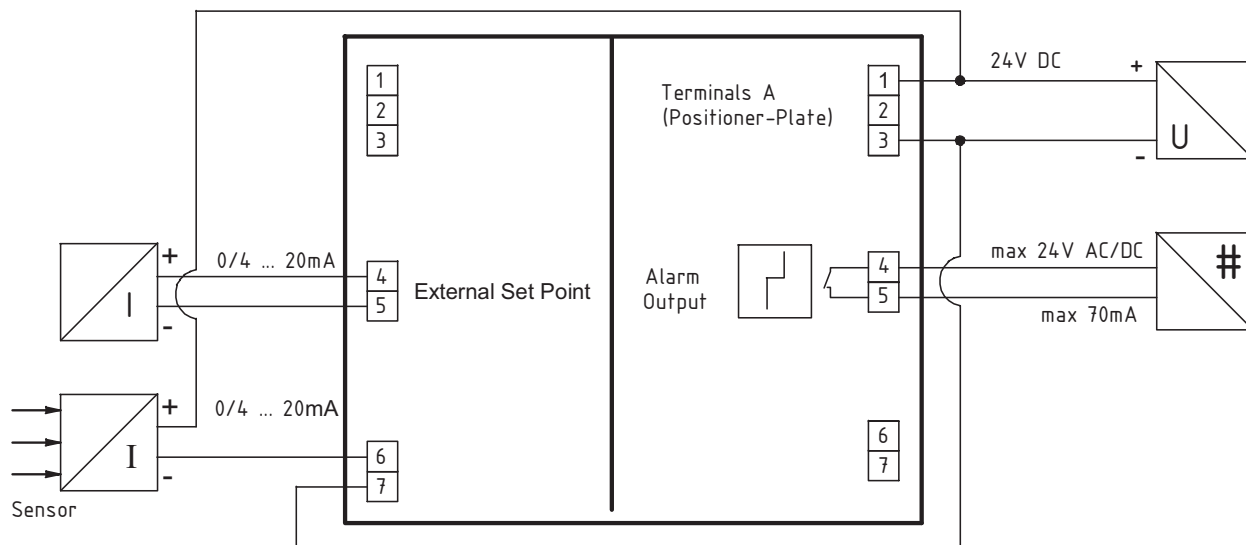
Current Input Ix

Wiring: Standard Ix

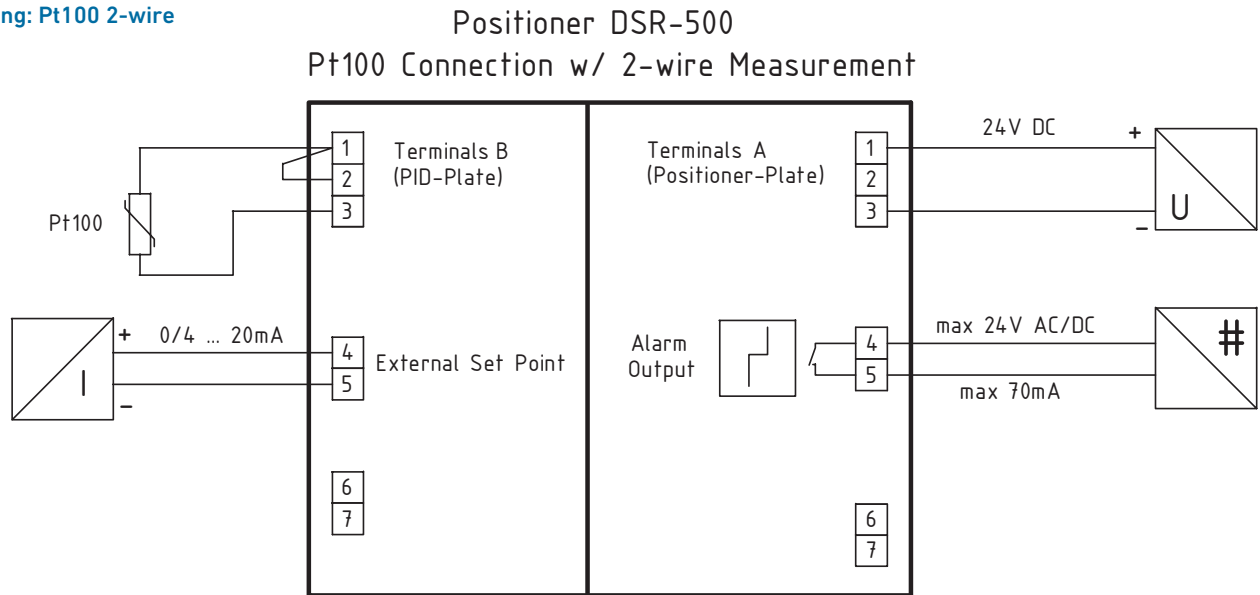


Wiring: Ix w/ Internal Supply

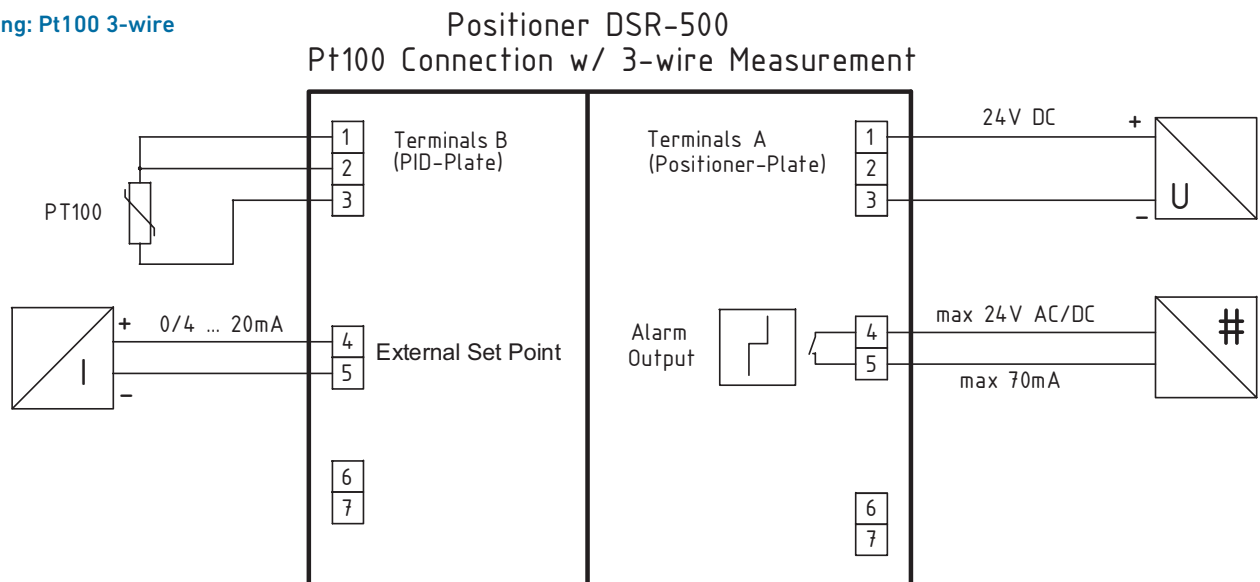
Positioner DSR-500 Current Input Ix with Internal Sensor Supply



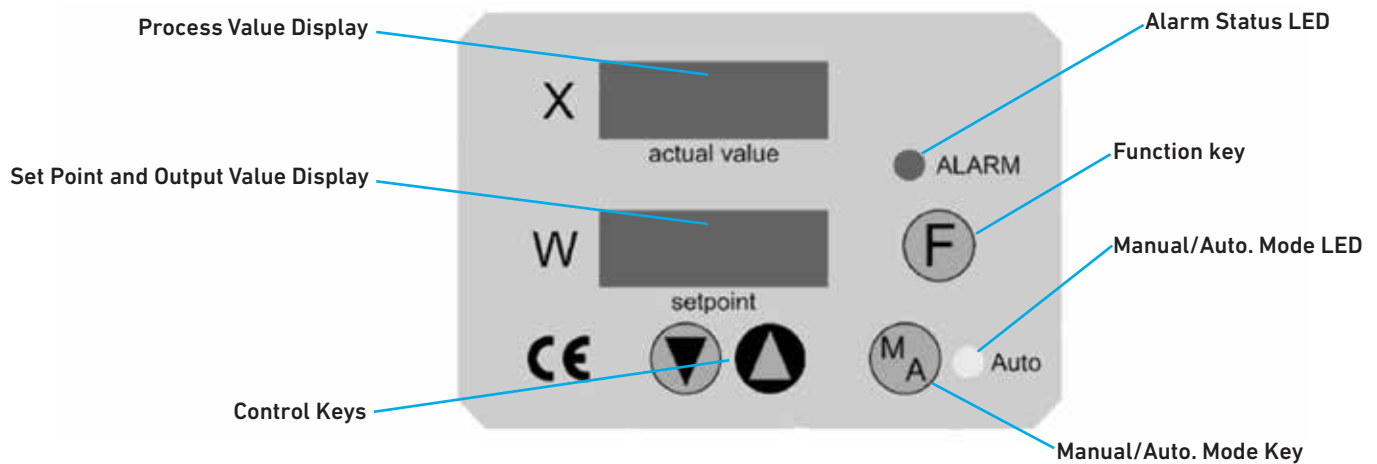
Wiring: Pt100 2-wire



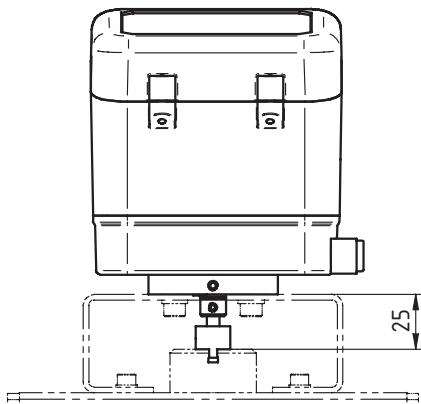
Wiring: Pt100 3-wire



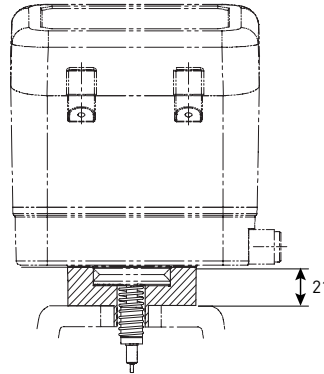
Controller Interface



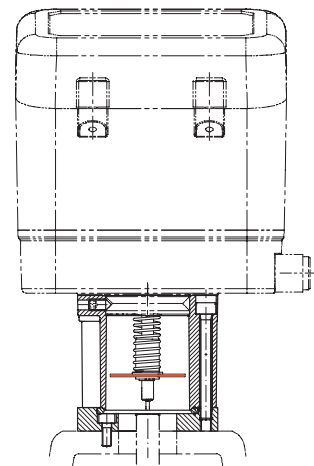
Mounting Options



NAMUR Mounting Pad: Rotary positioners all utilize the same NAMUR compliant mounting pad if used with a GF pneumatic actuator. An operator can see the rotary position sensor for optical position indication.



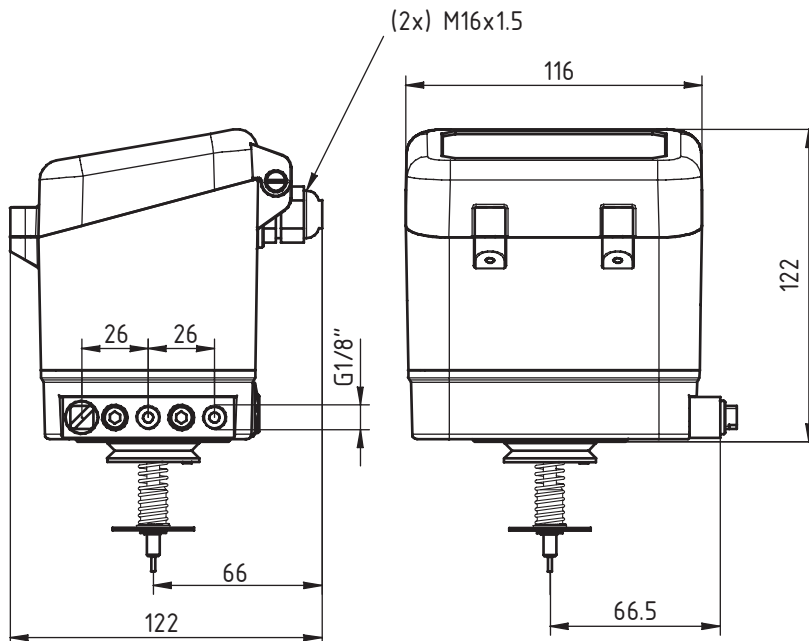
Without Optical Indicator: Linear positions can utilize a GF DIASTAR Valve specific mounting pad that lowers the overall footprint of the assembly but does not allow the user to see the position of the valve.



With Optical Indicator: Linear positions can utilize a GF DIASTAR Valve specific mounting pad that utilizes an orange colored disc on the sensing pin and a viewing window on the mounting pad to provide the user with an optical indicator.

Dimensions

The following dimensions are shown in millimeters unless otherwise specified



Linear version shown, all dimensions applicable to rotary versions.



Special Note: DIASTAR 025 Valve

The height of the positioner used with DIASTAR 025 Valves sizes 2½"–6" (d75–d110) is 166mm. This dimension is shown as 122mm in the drawing at left. All other dimensions identical.