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Flow Control Division
Valtek Control Products

### *Valtek XL Series Positioners* Features

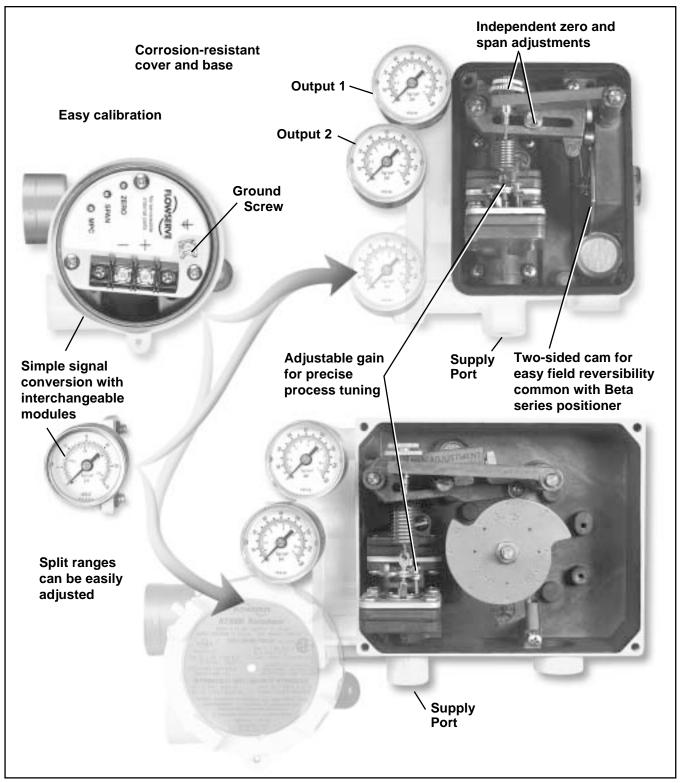


Figure 1: Features of XL Series Positioners with Pneumatic or Electro-pneumatic Modules



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### Valtek XL Series Positioners Introduction



Figure 2: XL Positioner Mounted on Valtek Linear Actuator

The Valtek<sup>®</sup> XL<sup>™</sup> Series (XL and XL90), two-stage positioners offer fast and sensitive dynamic response characteristics to meet extremely demanding control objectives. The positioners are available with either an electro-pneumatic (I/P) transducer module for milliamp current control signals or a pneumatic module for air control signals.

Designed for high performance, these positioners are field reversible and ruggedly built for reliability in severe industrial environments. The XL positioner uses



Figure 3: XL Positioner Mounted on Competitor's Actuator

common mounting brackets and follower arms with the Valtek Beta and 80R positioners. The XL90 uses common rotary mounting brackets identical to the Logix 1000 Series positioners: therefore, the positioners can be mounted on existing Valtek linear or rotary actuators without additional hardware. Two and three-way split ranges are available without special feedback springs.

Mounting kits are available to install the XL Series positioners on other manufacturers' actuators for improved performance.

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### Valtek XL Series Positioners **Advantages**

Calibrating the XL Series positioners is easy due to minimal interaction between zero and span. Also, the positioners' simplicity, modular design and few parts, make maintenance quick and easy.

In addition to providing premium performance to meet demanding control needs, the XL Series positioners are also adaptable for various applications and can be used on both single- and double-acting valve actuators. (See

Figures 2 and 3.) The XL Series positioners with NT 3000 I/P transducer module are universally certified for intrinsically safe and explosion-proof applications. (See Table II for a complete listing.)

When an application demands fast strokes and fine control, the XL Series positioners are clearly the best, dependable solution.

Features	Benefits
For Single or Double-acting Actuators	Usable with either single or double-acting actuators (both linear and rotary) makes the XL Series positioners versatile.
Easily Field Reversed	Action can be reversed in the field on linear valves by simply turning the cam over, reversing anti-backlash spring and changing output tubing.
Changeable Flow Characteristics	Easily changed cam provides flow characterization.
Easy Calibration Procedures	Calibration is easy due to minimal interaction between zero and span. Other positioner adjustments are enclosed for protection to discourage tampering.
Split-Range Service	Standard signal ranges are 4-20 mA for the electro-pneumatic (I/P) model and 3-15 psi (0.21-1.03 bar) for the pneumatic (P/P) model. Optional range is 10-50 mA (I/P) or 6-30 psi (0.41-2.06 bar) (P/P). All models can be calibrated for a 2- or 3-way split range without additional parts.
Shock and Vibration Resistant	XL Series positioners are designed with a high natural frequency coupled with pneumatic damping – unaffected by vibrations with acceleration up to 2 g's and frequencies to 500 Hz.
Insensitive to Mounting Position	Positioners can be mounted in any orientation without affecting performance.
I/P or P/P Signal Convertible	Field conversion from one control signal to another is easily accomplished by replacing one module with the other, greatly reducing spare parts inventory.
Corrosion Resistant Parts for Long Life	Cover and base assembly are epoxy powder-painted and continuously purged from the inside with instrument air. Internal working parts are constructed from 300 series stainless steel, anodized aluminum or nitrile.
Simplified Maintenance	The XL Series positioners' simplicity, modular design and few parts, make maintenance quick and easy.
No Regulator* Required	The XL Series positioners with the NT 3000 I/P or the pneumatic module are designed to withstand 150 psi (10.34 bar) at all ports and are relatively insensitive to supply pressure fluctuation.

\*With any sensitive pneumatic instrument, a clean air supply is required. This instrument must have an air supply meeting or exceeding ISA-7.0.01.



# *Valtek XL Series Positioners* Advantages

Low Air Consumption	Steady state air consumption is 0.28 SCFM (0.48 m <sup>3</sup> / hr) @ 60 psi (4.1 bar); supply maximum 0.34 SCFM (0.58 m <sup>3</sup> / hr) with I/P module
Extended Temperature Model	I/P: -40° F to 185° F (-40° C to 85° C) P/P: -50° F to 250° F (-46° C to 121° C)
Oxygen Service Model	Pneumatic models are available with fluorosilicone diaphragms and O-rings.

#### XL 90 Positioner Additional Advantages

Direct Rotary Mounting	Eliminates linkage backlash or deadband, thus increasing performance.
Visual Position Indicator	High visibility neon green provides quick visual indication of valve / actuator position. With optional UltraDome, visibility is increased to more than 180 degrees.
Optional Internal Switches	4-20 mA position transmitter provides analog feedback of position independent of control signal. Micro or magnetic switches provide discrete open and closed (or any position in between).
Optional UltraSwitch	Provides explosion-proof / intrinsically safe 4-20 mA position feedback and discrete limit switches.

#### With the NT 3000 I/P Transducer

Replaceable Coalescing Filter*	Removes particles that may clog transducer. Large orifice / air passages provide additional protection against clogging. Positioner includes orifice screen to prevent clogging.
Minimum Pressure Cutoff	When enabled, allows the NT 3000 transducer output to decrease to near zero when input signal falls below a user-settable point.
Output Gauge Helps Monitor Unit	Indicates transducer output to positioner, permitting easy troubleshooting.
Self-controlling Internal Regulator	Reduces pressure to 22 psi (1.52 bar), eliminating need for external regulator.

\*With any sensitive pneumatic instrument, a clean air supply is required. This instrument must have an air supply meeting or exceeding ISA-7.0.01.

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### Valtek XL Series Positioners Operation

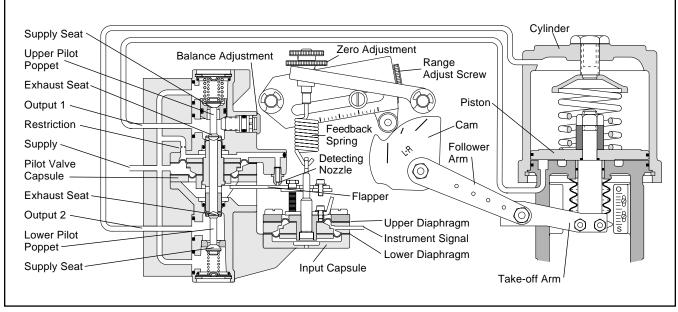


Figure 4: XL Series Positioners' Schematic for Air-to-Open (linear valve shown)

The XL Series positioners are two-stage, forcebalanced instruments. Figure 4 shows an XL Series positioner used in conjunction with either an electropneumatic or pneumatic module, installed on a doubleacting actuator for air-to-open action. Positioning is based on a balance of two forces: one proportional to the instrument signal and the other proportional to the stem position.

The current signal for the NT 3000 I/P module is first converted to a 3-15 psi (0.2-1.03 bar) air signal, while the 3-15 psi air signal for the pneumatic model is passed directly into the positioner. The supply pressure is filtered and regulated in the transducer by a filter element and an internal regulator.

The output of the transducer is controlled by a feedback loop consisting of a pressure sensor, electromagnetic pressure modulator and circuit board. The pressure modulator consists of a stiff flapper that is attracted by the electromagnet to a nozzle. The nozzleflapper spacing determines the transducer output. Based on the difference between the input and the output measured by the pressure sensor, the circuit board sends a current to the pressure modulator that adjusts nozzle-flapper spacing to provide correct output pressure to the positioner. For more information, refer to *NT 3000 Series Electro-pneumatic Transducer Module* technical bulletin. The positioner operates as follows: An increase in the instrument signal forces the instrument signal capsule and flapper downward. The nozzle now releases air and the pressure decreases on top of the pilot valve capsule. The pressure differential moves the pilot valve capsule upward, opening the upper supply seat and allowing supply pressure to output 1. This opens the exhaust seat on output 2, causing the actuator piston to move upward.

The upward motion of the piston is transmitted back to the positioner through the feedback linkage and cam resulting in the spring being stretched proportionally to the valve position. The piston continues to stroke upward until the force in the feedback spring increases sufficiently to counter the force generated by the instrument signal capsule. At this point, the balance beam and spool begin to return to their equilibrium position. As the valve spool ports start to close, the air flow rate to the actuator is decreased.

After the piston has reached the required position, the feedback spring tension force will equal the force generated in the instrument signal capsule. The flapper and instrument signal capsule will remain in their equilibrium positions with no air flowing to the actuator until a change in the instrument signal is made.

A decrease in signal reverses the action, causing downward movement of the actuator piston and stem.



### Valtek XL90 Positioner Options

### Valtek XL90 Rotary Positioner

The XL90 positioner utilizes a rotary feedback mechanism that can be used on applications with 60, 90 and up to 180 degrees rotation. While the XL90 is used primarily on rotary applications it can be used on linear applications when the double D rotary input shaft option is used (standard on Valtek and Sereg models).

By using the same internal positioning parts as its linear-motion counterpart (XL positioner), interchangeability between the XL and XL90 is significant, allowing for lower spare part inventory. In addition to its highperformance positioning functions, the XL90 allows the use of internal position feedback potentiometers that provide 4-20 mA analog signal independent of the control signal, as well as limit switches that provide discrete open/closed signals or any discrete intermediate position. The position indicator allows for easy viewing of valve/actuator position and the optional Ultra-dome provides increased visibility of position. The UltraSwitch option provides explosion-proof or intrinsically safe switches and/or position feedback. Mounting is accomplished using NAMUR, F05, Westlock or standard Valtek mounting. Available in either pneumatic or I/P models, the XL90 is the premier choice for rotary positioning.

#### **XL90 OPTIONS**

#### **Option F: 4-20 mA Transmitter**

The XL 90 Feedback option allows accurate and reliable monitoring of valve position when installed in the XL 90 positioner.

The Feedback option may be used in any non-hazardous location. For hazardous locations utilize the UltraSwitch explosion-proof limit switch enclosure.

Voltage Supply Required: 6-30 VDC

Impedance: 300 Ohms at 20 mA

Note: Impedance changes with current (refer to IOM 48). To properly design the current loop, use 300 Ohms and 20 mA current.

#### **Option J and K: Mechanical Switches**

Mechanical switch technology is proven and the most cost effective switching method used today. Tool-free cam adjustment is accomplished through a springloaded spline arrangement. Simply push or pull the cam, disengaging the splines, and rotate to the desired switch trip point. After releasing, the spring causes automatic spline engagement, locking the setting.

#### 2-SPDT

Load Capacity: 10 amps at 125 VAC, 5 amps at 250 VAC, 0.5 amp at 125 VDC, 0.25 amp at 250 VDC.

Operating Force: 4.8 ounces

Differential Travel: 0.016 inches minimum

Mechanical Life: 10,000,000 cycles

#### **Option M and N: Proximity Switches**

Proximity reed switches offer cost effective contacts for extended life in corrosive applications. These switches are tripped by magnets embedded in cams to indicate valve open and closed positions. Tool-free cam adjustment is accomplished through a spring-loaded spline arrangement. Simply push or pull the cam, disengaging the splines, and rotate to desired switch trip point. After releasing, the spring causes automatic spline engagement, locking the setting.

#### SPST Proximity Switches

Load Capacity: 0.35 amp 140 VAC, 1 amp 50 VDC, 50 Watt maximum contact rating

Contact Material: Rhodium plated Actuated by magnetic force

#### SPDT Proximity Switches

Load Capacity: 0.25 amp 120 VAC, 0.25 amp 28 VDC, 3 Watt maximum contact rating

Contact Material: Ruthenium plated

Actuated by magnetic force

MOV and 0.25 amp fuse protected

# Option Q: Intrinsically Safe Solid State Proximity Switches

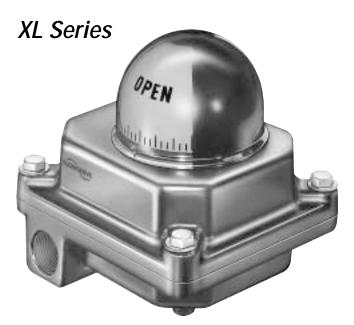
With the same mounting as the mechanical switches, the FM/CSA rated I.S. Solid State Proximity Switches can be used to obtain valve open and closed position. Tool-free cam adjustment is accomplished through a spring-loaded spline arrangement. Simply push or pull the cam, disengaging the splines, and rotate to the desired switch trip point. After releasing, the spring causes automatic spline engagement, locking the setting.

NAMUR Output:  $\leq 1mA = Off; \geq 3mA = On$ 

Voltage Range: 5-25 VDC



# Valtek XL90 Positioner UltraSwitch Options\*



The XL series rotary limit switch enclosure provides a rugged heavy duty package for visual and remote electrical indication of valve position. The die cast aluminum housing has a dichromate undercoat and electrostatic powder top coat for superior corrosion resistance. The housing is suitable for NEMA 4, 4X, 7 and 9 locations and is available with optional position transmitters and a wide range of limit switch options.



\* See ordering chart on back page.



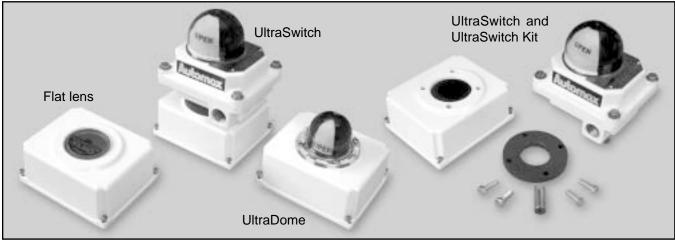
The PL series offers many features similar to the XL series. The PL series housing is a non-metallic engineered resin and provides an excellent enclosure for harsh corrosive environments. Designed to meet NEMA 4X standards, the housing also features a unique labyrinth cover seal.

#### XL and PL Features:

- Pharos indicator for high contrast wide angle viewing. XL series utilizes a snap on design, PL series utilizes bolt-on design.
- Quick set spring loaded cams are extra wide and splined to allow tool free limit switch calibration.
- Switches available in a wide range of options.
- Terminal strip is multipoint and prewired.
- Housing on XL series is die cast aluminum with dichromate undercoat and electrostatic powder topcoat, UL Listed and C-UL approved for hazardous locations. PL series housing is non-metallic and suitable for corrosive environments.
- Dual 0.75-inch conduit entries are standard.
- NAMUR mounting shaft eliminates coupling and maximizes interchangeability.
- Captive stainless steel cover screws.
- Potting compartments available on XL series for factory sealed leads.



### *Valtek XL90 Positioner* Cover and other Options



**Figure 5: Cover Options** 

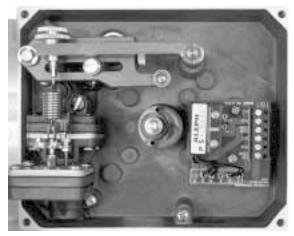


Figure 6: XL90 Proximity Switch Option (cam removed for easy viewing)

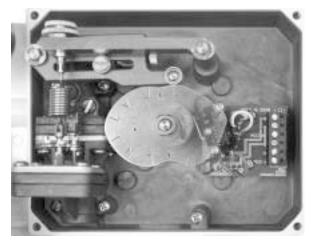


Figure 7: XL90 Mechanical Switch Option (cam dimmed for easy viewing)

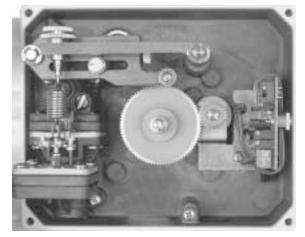


Figure 8: XL90 4-20 mA Position Feedback Option (cam removed for easy viewing)



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### XL90 Model Numbering System (Does not include UltraSwitch Options)

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Selection Constraints Steel Cauges with Brass Fittings (Sardard) U Cover for top-mounted Namur UltraSwitch untraff of the Selection Code Stainless Steel Cauges with Brass Fittings (Sardard) 4 Stainless Steel Cauges with Brass Fittings (Sardard) 5 Stainless Steel Cauges (Sardard) 5 Stainless Steel Cauge (Sardard) 5 Stainless Steel Cauge (Sardard) 5 Stainless Steel Cauge (Sardard) 5 Stainless Steel Cauges (Sardard) 5 Stainless Steel Cauges (Sardard) 5 Stainless Steel Cauge (Sardard) 5 Stainl	SAA Explosion Proof ex a, intrinsically Safe Ex Ia Ex N NT 3000		
Flat Lens with Green Indicator Indic	INDICATION		
Clandradi       U         Cover for top-mounted Namur UltraSwitch       T         Includes UltraSwitch mounting kit)       T         Selection       Code         Stainless Steel Gauges with Brass Fittings       2         (Stainless Steel Gauge with Brass Fittings (kg/cm2 /psi)       4         Stainless Steel Gauge (bar/psikPa)       6         Stainless Steel Gauge (bar/psikPa)       6         Stainless Steel Gauge (bar/psikPa)       8         No Gauges       Z         Stainless Steel Gauge (bar/psikPa)       8         No Gauges       Z         Stainless Steel Gauge (bar/psikPa)       8         No Gauges       Z         Standard Temperature (Buna-N soft goods)       7         Standard Temperature (Fluorosilicone soft goods)       8         Steel Cion       Code         Accord Unaer Cam       A         Accord Unaer Cam       A         Accord Unaer Cam       Cam         Valtek Linear Cand =% Cam - Disphragm Actuator       E         Valtek Linear Candrad       R         Dritou	Selection	Code	
Ultradome with Green Indicator U Cover for top-mounted Namu UltraSwitch mounting kit) Selection Code Stainess Steel Gauges with Brass Fittings 2 (Standard) Stainess Steel Gauges (kg/cm2 /psi) 6 Stainess Steel Gauges (kg/cm2 /psi) 6 Stainess Steel Gauges (kg/cm2 /psi) 6 Stainess Steel Gauges (kg/cm2 /psi) 7 Stainess Steel Gauges (kg/cm2 /psi) 7 Stainess Steel Gauges (kg/cm2 /psi) 7 Extended Temperature (Buna-N soft goods) 7 Extended Switches With High Resolution Cams J 2-SPDT Mechanical Switches M 2-SPDT Nechanical Switches M 2-SPDT Necha		1	
Cover for top-mounted Namur UltraSwitch T (includes UltraSwitch mounting ki) GAUGES Selection GAUGES Stainless Steel Gauges with Brass Fittings (2 (Standard) Stainless Steel Gauge (bar/psikPa) Stainless Steel Gauge (bar/psikPa) Steetcin Code Accord Linear Cam A Accord Jok 60 & 90 Degree Linear Cam A Accord Jok 60 & 90 Degree Linear Cam A Accord Jok 60 & 90 Degree Linear Cam A Accord Joker Square Root (Damper) Cam C Accord Joker Square Root (Damper) Cam C Accord Joker Square Root (Damper) Cam C Accord Joker Consultator E Vatek Linear Can - Disban Actuator E Vatek Linear Can - Disban Actuator CONDUIT THREAD CONNECTION CONDUIT THREAD CONNECTION CONDUI		I.	
(Includes UltraSwitch mounting kit)         Selection       Code (Stanlarss Steel Gauges with Brass Fittings       2 (Stanlards         Stainess Steel Gauges (kat/psik/Pa)       4         Stainess Steel Gauges (kat/psik/Pa)       4         Stainess Steel Gauges (kat/psik/Pa)       6         Stainess Steel Gauges (kat/psik/Pa)       6         Stainess Steel Gauges (kat/psik/Pa)       7         Stainess Steel Gauges (kat/psik/Pa)       7         Stainess Steel Gauges (kat/psik/Pa)       7         Stainess Steel Funct (Huronsilicone soft goods)       7         Staines Caure Square Sq			
Subcion       Code         Stainless Steel Gauges with Brass Fittings       2         Stainless Steel Gauge (bar/psi/kPa)       4         Stainless Steel Gauges with Brass Fittings (kg/cm2/psi)       6         Stainless Steel Gauges with Brass Fittings (kg/cm2/psi)       6         No Gauges       Z         Stainless Steel Gauges (bar/psi/kPa)       4         Stainless Steel Gauges with Brass Fittings (kg/cm2/psi)       6         No Gauges       Z         Stainless Steel Gauges (bar.a) Not goods)       7         Extended Temperature (Buorosilicone cont goods)       7         Stainter Cam       A         Accord Junear Square, Square Root (Damper) Cam       E         Accord Junear Square, Square Root (Damper) Cam       Code         Accord Junear Square, Square Root (Damper) Cam       E         Valtek Junear Cam - Piston Actuator       E         Valtek Junear Cam Piston Actuator       E <td></td> <td>T</td> <td></td>		T	
Selection       Code         Stanless Steel Gauges with Brass Fittings       2         Stanless Steel Gauge (bar/psi/kPa)       4         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges       2         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       6         Stanless Steel Gauges with Brass Fittings (kg/cm2 / psi)       7         Stanless Steel Gauges (baran Steel Cause)       7         Stanless Steel Gauges (baran Steel Cause)       8         Accord Jones Caure Square S	(includes UltraSwitch mounting kit)		
Stantess Steel Gauges with Brass Fittings 2 (Standard) Stantess Steel Gauge with Brass Fittings (kg/cm2 /psi) 4 Stantess Steel Gauges with Brass Fittings (kg/cm2 /psi) 6 Stantess Steel Gauges with Brass Fittings (kg/cm2 /psi) 8 No Gauges 2 EMPERATURE Code Stantess Steel Gauges with Brass Fittings (kg/cm2 /psi) 8 Standard Temperature (Buan-N soft goods) 7 Extended Temperature (Fluorosilicone soft goods) 8 CAM Code Accord Linear Cam A Accord Juear Cam A Accord Juear Cam A Accord Juear Cam - Square Root (Damper) Cam A Accord Linear Cam - Piston Actuator Actuator A Selection Code Selection Code CONDUIT THREAD CONNECTION Code Natice -% Cam-Piston Actuator Actary Valve G Selection Code 1/2 'NPT (Standard) P Rue -% Cam-Piston Actuator Actary Valve G Selection Code Patter -% Cam-Piston Actuator Actary Valve G Selection Code P Selection Code Accord Linear Cam - Piston Actuator Actary Valve G Selection Code P N20 Threads Actuator Rotary Valve G Selection Code 4-20mA Transmitter F Selection Code Accord State Proximity Switches J Selection Code Accord Code State Proximity Switches N 2-SPDT Prokinity Switches N 2-Intrinsically Safe Solid State Proximity Switches N 2-SPDT Prokinity Switche	GAUGES		
Claradard)       4         Stainless Stele Gauge dar/psi/kPa)       4         Stainless Stele Gauges with Brass Fittings (kg/cm2 / psi)       6         Stainless Stele Gauges with Brass Fittings (kg/cm2 / psi)       6         Stainless Stele Gauges with Brass Fittings (kg/cm2 / psi)       6         Stainless Stele Gauges with Brass Fittings (kg/cm2 / psi)       7         Stainless Stele Gauges bit (blue state			
Stainess Steel Gauge (bar/psi/kPa) 4 Stainess Steel Gauges with Brass Fittings (kg/cm2 /psi) 6 Stainless Steel Gauges with Brass Fittings (kg/cm2 /psi) 6 Stainless Steel Gauges with Brass Fittings (kg/cm2 /psi) 7 EMPERATURE Code Standard Temperature (Buna-N soft goods) 7 Extended Temperature (Fluorosilicone soft goods) 8 CAM Code Accord Linear Cam A A Accord 30, 45, 60 & 90 Degree Linear Cam B Accord 10-60 Degree Cam (Butterfly Valves) D Sereg Linear and -% Cam - Dipalphragm Actuator E Valtek Linear Cam - % Cam - Dipalphragm Actuator E Valtek -% Cam-Piston Actuator-Rolary Valve G CONDUIT THREAD CONNECTION Code Yatek -% Cam-Piston Actuator-Rolary Valve R CONDUIT THREAD CONNECTION Code 4.20m Transmitter F Selection CONDUIT THREAD CONNECTION Code 4.20m Transmitter F COME CONDUIT THREAD CONNECTION Code 4.20m Transmitter F CONDUIT THREAD CONNECTION Code 4.20m Transmitter F CONDUIT THREAD CONNECTION Code 4.20m Transmitter K Selection COMBERS A 2.SPDT Mechanical Switches M 2.SPDT Mechanical Switches M 2.SPDT Mechanical Switches M 2.SPDT Mechanical Switches M 2.SPDT Froximity Switches M 3.CPDT Froximity Switches M 4.CPDT Froximity Switches M 4.CPDT Froximity Switches M 4.CPDT Froximity Sw		2	
Stainless Steel Gauges with Brass Fittings (kg/cm2 /psi) 6 No Gauges Z TEMPERATURE Code Standard Temperature (Buna-N soft goods) 7 Extended Temperature (Buna-N soft goods) 7 Extended Temperature (Fluorosilicone soft goods) 8 CAM Code Accord Linear Cam A Accord 30, 45, 60 & 90 Degree Linear Cam B Accord Linear Cam, A Accord 30, 45, 60 & 90 Degree Linear Cam B Accord Linear, Square, Square, Rodu (Damper) Cam C Accord Linear, Square, Square, Rodu (Damper) Cam C Selection C Selection F Accord Linear, Square, Square, Rodu (Damper) Cam C Accord 0-00 Degree Cam (Butterfty Valves) D Sereg Linear and -% Cam - Disphragm Actuator E Valtek -% Cam - Disphragm Actuator E Valtek -% Cam - Disphragm Actuator E Valtek -% Cam - Disphragm Actuator B Valtek Linear Cam - Piston Actuator - Rotary Valve G Selection C CONDUIT THREAD CONNECTION Code A2-Dm Transmitter F Selection C ANALOG OUTPUTS Selection C CODE Selection C CODE COTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS Selection C CODE Selection S CODE CO			
Stantiants Steel Gauges Z No Gauges Z TEMPERATURE Code Standard Temperature (Fluorosilicone soft goods) 8 CAM Code Accord Linear Cam A Accord Linear Cam A Accord Linear, Square, Square Root (Damper) Cam C Accord Job By Degree Linear Cam B Accord Job Degree Cam (Butterfly Valves) D Sereg Linear and ** Cam Diaphragm Actuator E Valtek Linear Cam - Piston Actuator F Valtek *% Cam-Piston Actuator A Selection Colore Constraints Valve G CONDUIT THREAD CONNECTION Code Valtek Linear Cam - Piston Actuator F Valtek *% Cam-Piston Actuator R Selection Constraints R OPTIONS – AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS Selection Constraints R OPTIONS – AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS Selection Constraints K Selection Constraints Selection Constraints K Selection Constraints Selection Constraints	Stainless Steel Gauge (bar/psi/kPa)		
No Gauges       Z         TEMPERATURE         Selection       Code         Standard Temperature (Bura-N soft goods)       7         Extended Temperature (Fluorosilicone soft goods)       8         CAM         CAM         Code       A         Accord Juiear Cam       A         Accord Juiear Cam       B         Accord Juiear Square, Square Root (Damper) Cam       C         Cord Or-D Degree Cam (Butterfly Valves)       D         Selection       Com-Diaphragm Actuator         Convolutionaria device Cam - Piston Actuator       F         Valtek -% Cam - Piston Actuator Rotary Valve       G         Convolut THREAD CONNECTION       Code         Valtek -% Cam- Disphragm Actuator       F         Valtek -% Cam - Piston Actuator-Rotary Valve       G         Convolut THREAD CONNECTION       Code         Valtek -% Cam-Diston Actuator-Rotary Valve       G         Selection       Code         A-2:0mA Transmitter       Code         Valtex -% Catary Biston Actuator Rotary Valve       R         Selection       Code         A-2:0mA Transmitter       Code         S-SPDT Mechanical Switches       M			
TEMPERATURE       Code         Selection       Code         Accord Imperature (Buna-N soft goods)       8         CAM       Cam         Cacord Linear Cam       A         Accord Linear Cam       A         Accord Linear Cam       A         Accord Linear Square Root (Damper) Cam       C         Accord Linear Square Root (Damper) Cam       C         Accord 1-00 Degree Cam (Butterfly Valves)       D         Sereg Linear and -% Cam - Diaphragm Actuator       F         Valtek Linear Cam - Piston Actuator       F         Valtek Linear Cam - Piston Actuator       F         Valtek Linear Actuator-Rotary Valve       G         ConDUIT THREAD CONNECTION       Code         Selection       Code         12' NPT (Standard)       P         M20 Threads       R         OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS       Code         A-2ord Transmitter       F         Selection       Code			
Selection       Code         Standard Temperature (Bluar-N soft goods)       8         CAM	NO Gauges	L	
Standard Temperature (Buna-N soft goods) 7 Extended Temperature (Fluorosilicone soft goods) 8 CAM CAM Cam Accord Junear Cam A Accord Junear Cam A Accord Jo, 50 08 90 Degree Linear Cam B Accord O-60 Degree Cam (Butterfly Valves) D Sereg Linear and -% Cam - Diaphragm Actuator E Valtek Linear Cam - Piston Actuator Retary Valve G CONDUIT THREAD CONNECTION Selection CONDUIT THREAD CONNECTION Selection R DUTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS Selection Code 4-20mA Transmitter F OR INTERNAL LIMIT SWITCHES 2-SPDT Mechanical Switches with High Resolution Cams J 2-SPDT Mechanical Switches K 2-SPDT Proximity Switches N 2-SPDT Proximity Switches N 3-SPDT Proximity Switches			
Extended Temperature (Fluorosilicone soft goods) 8  CAM Code Accord Linear Cam Accord Linear Cam Accord Linear Cam Accord 0.40 Degree Linear Cam BCCORDURATION Color Degree Cam (Butterfly Valves) DSereg Linear and =% Cam - Diaphragm Actuator E Valtek Linear Cam - Piston Actuator F Valtek Linear Cam - Piston Actuator Valtek Linear Cam - Piston Actuator CONDUIT THREAD CONNECTION Selection CONDUIT THREAD CONTES 1-4 BELOW ANALOG OUTPUTS Code COMPUTIONS - AS WEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS Selection CONDUIT THREAD CONTES 1-4 BELOW ANALOG OUTPUTS COde COMPUTIONS - AS WEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS COde CONDUIT THREAD CONTES 1-4 BELOW ANALOG OUTPUTS CODE CONDUIT THREAD CONTES 1-4 BELOW ANALOG OUTPUTS CODE CONDUIT THREAD CONTES 1-4 BELOW CONDUITS CODE CONDUIT THREAD CONTES 1-4 BELOW CONDUITS CODE CONDUITS CODE CODE CODE CONDUITS CODE CODE CODE CODE CODE CODE CODE CODE			
CAM       Code         Accord Linear Cam       A         Accord J, 45, 60 & 90 Degree Linear Cam       B         Accord J, 45, 60 & 90 Degree Linear Cam       B         Accord J, 45, 60 & 90 Degree Cam (Butterfly Valves)       D         Sereg Linear and =% Cam - Diaphragm Actuator       E         Valtek Linear Cam - Piston Actuator       F         Valtek Linear Cam - Piston Actuator       F         Valtek Linear Cam - Piston Actuator Rotary Valve       G         CONDUIT THREAD CONNECTION       Code         Selection       CONDUIT THREAD CONNECTION         Selection       Code         OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW)       ANALOG OUTPUTS         AVAIDER OUTPUTS       Code         Selection       Code         INTERNAL LIMIT SWITCHES       Selection         2-SPDT Mechanical Switches with High Resolution Cams       J         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       N         2-SPDT Proximity Switches       N         2-SPDT Proximity Switches       N         2-Intrinscially Safe Solid State Proximity Switches       N         2-Intrinscially Safe Solid State Proximity Switches       N      <			
Selection       Code         Accord 30, 45, 60 & 90 Degree Linear Cam       A         Accord 30, 45, 60 & 90 Degree Linear Cam       B         Accord 1Linear, Square, Square Root (Damper) Cam       C         Accord 0-60 Degree Cam (Butterfly Valves)       D         Sereg Linear and =% Cam - Diaphragm Actuator       E         Valtek Linear Cam - Piston Actuator       F         Valtek Linear Cam - Piston Actuator Retary Valve       G         CONDUIT THREAD CONNECTION       Selection         Selection       Code         1/2" NPT (Standard)       P         M20 Threads       R         OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS         Accord 1.mer Switches       F         Selection       Code         Image: Community Switches       J         2-SPDT Mechanical Switches with High Resolution Cams       J         2-SPDT Mechanical Switches       M         2-SPDT Proximity Switches       N         2-Intrinsically Safe Solid State Proximity Swit	Extended Temperature (Fluorostilcone sont goods)	0	
Accord Linear Cam A Accord 30, 45, 60 & 90 Degree Linear Cam B Accord 10-60 Degree Cam (Butterfly Valves) D Sereg Linear Cam - Piston Actuator E Valtek Linear Cam - Piston Actuator F Valtek 4. Cam - Piston Actuator R Valtek 4. Cam - Piston Actuator R Valtek 4. Cam - Piston Actuator R Valtek 1. CONDUIT THREAD CONNECTION Selection Code 1/2' NPT (Standard) P M20 Threads R <i>OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW)</i> ANALOG OUTPUTS Selection Code 4-20mA Transmitter F Selection F Valtek LIMIT SWITCHES 2-SPDT Mechanical Switches With High Resolution Cams J 2-SPDT Mechanical Switches K SelPT Proximity Switches N 2-SPDT Proximity Switches N 2-Intrinscally Safe Solid State Proximity Switches N 2-Intrinscall	CAM		
Accord 30, 45, 60 & 90 Degree Linear Cam B Accord Linear, Square, Square Root (Damper) Cam C Accord 0-60 Degree Cam (Butterfty Valves) D Sereg Linear and +% Cam - Diaphragm Actuator E Valtek Linear Cam - Piston Actuator F Valtek +% Cam-Piston Actuator-Rotary Valve G CONDUIT THREAD CONNECTION P Selection CONDUIT THREAD CONNECTION P M20 Threads R <i>OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW)</i> ANALLOG OUTPUTS R Selection C COde F - CONDUIT THREAD CONTES 1-4 BELOW) ANALLOG OUTPUTS C Selection C - COMPUTE Selection C - CODE NTEERNAL LIMIT SWITCHES 2-SPDT Mechanical Switches K 2-SPDT Mechanical Switches M 2-SPDT Mechanical Switches M 2-SPDT Proximity Switches N 2-Intrinsically Safe Solid State Proximity Switches O - DUTPUT SHAFT D Double D D			
Accord Linear, Square, Square Root (Damper) Cam C Accord 0-60 Degree Cam (Butterfly Valves) D Sereg Linear and +% Cam - Diaphragm Actuator F Valtek Linear Cam - Piston Actuator F Valtek Linear Cam - Piston Actuator Walve G CONDUIT THREAD CONNECTION Selection C M20 Threads R COPTIONS – AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS Selection C 4-20mA Transmitter F COR INTERNAL LIMIT SWITCHES 2-SPDT Mechanical Switches with High Resolution Cams J 2-SPDT Mechanical Switches With High Resolution Cams J 2-SPDT Mechanical Switches M 2-SPDT Proximity Switches N 2-Intrinsically Safe Solid State Proximity Switches N 2-Intrinsically Safe Solid State Proximity Switches D DutPUT SHAFT D Double D D			
Accord 0-60 Degree Cam (Butterfly Valves) D Sereg Linear and =% Cam - Diaphragm Actuator E Valtek Linear Cam - Piston Actuator Rotary Valve G CONDUIT THREAD CONNECTION Selection Contract Control P M20 Threads R COTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS A Code 4-20mA Transmitter F Code 4-20mA Transmitter F CODE INTERNAL LIMIT SWITCHES 2-SPDT Mechanical Switches With High Resolution Cams J 2-SPDT Mechanical Switches K 2-SPDT Mechanical Switches M 2-SPDT Proximity Switches M 2-SPDT Proximity Switches N 2-Intrinsically Safe Porximity Switches O TOUTPUT SHAFT D Double D D			
Sereg Linear and =% Cam - Diaphragm Actuator       E         Valtek Linear Cam - Piston Actuator       F         Valtek Linear Cam - Piston Actuator       F         Valtek =% Cam-Piston Actuator - Rotary Valve       G         Selection       Code         1/2' NPT (Standard)       P         M20 Threads       R         OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS         Selection       Code         4-20mA Transmitter       F         OR       Code         VITERNAL LIMIT SWITCHES       Selection         2-SPDT Mechanical Switches with High Resolution Cams       J         2-SPDT Proximity Switches       M         2-Intrinsically Safe Solid State Proximity Switches       Q         Output ShAFT       D         Double D       D			
Valtek Linear Cam - Piston Actuator Valtek =% Cam-Piston Actuator-Rotary Valve CONDUIT THREAD CONNECTION Selection M20 Threads COTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS Selection 4-20mA Transmitter Code 4-20mA Transmitter Code ANALOG OUTPUTS Selection Code Code F Code Code Code F Code C			
Valtek =% Cam-Piston Actuator-Rotary Valve       G         CONDUIT THREAD CONNECTION       Code         Selection       Code         1/2" NPT (Standard)       P         M20 Threads       R         DUTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS       R         Selection       Code         4-20mA Transmitter       F         OR INTERNAL LIMIT SWITCHES       F         2-SPDT Mechanical Switches with High Resolution Cams       J         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       N         2-SPDT Proximity Switches       N         2-SPDT Proximity Switches       N         2-Intrinsically Safe Solid State Proximity Switches       Q         OUTPUT SHAFT       D			
CONDUIT THREAD CONNECTION       Code         1/2" NPT (Standard)       P         M20 Threads       R         Detection       Code         ANALOG OUTPUTS       B         Selection       Code         4-20mA Transmitter       F         DetectionS       Code         4-20mA Transmitter       F         Selection       Code         1/2" NPT (Standard)       F         2-SPDT Mechanical Switches with High Resolution Cams       J         2-SPDT Mechanical Switches       K         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       N         2-Intrinsically Safe Solid State Proximity Switches       Q         Double D       D			
Selection       Code         1/2" NPT (Standard)       P         M20 Threads       R         OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS       R         Selection       Code         4-20mA Transmitter       F         OR INTERNAL LIMIT SWITCHES       F         2-SPDT Mechanical Switches with High Resolution Cams       J         2-SPDT Mechanical Switches       K         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       N         2-SPDT Proximity Switches       Q         OUTPUT SHAFT       D			
1/2" NPT (Standard)       P         M20 Threads       R         OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW)         ANALOG OUTPUTS       Selection         Code         4-20mA Transmitter       F         DET Mechanical Switches with High Resolution Cams         J       SPDT Mechanical Switches         2-SPDT Mechanical Switches       K         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       N         2-SPDT Proximity Switches       N         2-Intrinsically Safe Solid State Proximity Switches       Q         OUTPUT SHAFT       D	CONDULT THREAD CONNECTION	Code	
M20 Threads R OPTIONS – AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS Selection Code 4-20mA Transmitter F OR INTERNAL LIMIT SWITCHES 2-SPDT Mechanical Switches with High Resolution Cams J 2-SPDT Mechanical Switches X 2-SPDT Proximity Switches K 2-SPDT Proximity Switches N 2-SPDT Proximity Switches N 2-Intrinsically Safe Solid State Proximity Switches Q OUTPUT SHAFT Double D D			
OPTIONS - AS NEEDED (SEE NOTES 1-4 BELOW) ANALOG OUTPUTS       Code         Selection       Code         4-20mA Transmitter       F         SPEDT Mechanical Switches with High Resolution Cams       J         2-SPDT Mechanical Switches       K         2-SPDT Mechanical Switches       M         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       N         2-SPDT Proximity Switches       Q         Output SHAFT       D			
ANALOG OUTPUTS Selection Code 4-20mA Transmitter F Code 14-20mA Transmitter F Code 14-20mA Transmitter F Code 14-20mA Transmitter F 2-SPDT Mechanical Switches with High Resolution Cams J 2-SPDT Mechanical Switches K 2-SPDT Mechanical Switches K 2-SPDT Proximity Switches K 2-SPDT Proximity Switches N 2-SPDT Proximity Switches Q 2-Intrinsically Safe Solid State Proximity Switches Q Duble D D			
Selection     Code       4-20mA Transmitter     F       4-20mA Transmitter     F       OR INTERNAL LIMIT SWITCHES       2-SPDT Mechanical Switches with High Resolution Cams     J       2-SPDT Mechanical Switches     K       2-SPDT Proximity Switches     M       2-SPDT Proximity Switches     N       2-SPDT Proximity Switches     Q       2-Intrinsically Safe Solid State Proximity Switches     Q       OUTPUT SHAFT     D			
4-20mA Transmitter     F       OR INTERNAL LIMIT SWITCHES     -       2-SPDT Mechanical Switches with High Resolution Cams     J       2-SPDT Mechanical Switches     K       2-SPDT Mechanical Switches     M       2-SPST Proximity Switches     M       2-SPDT Proximity Switches     N       2-SPDT Proximity Switches     Q       0utput SHAFT     D		Code	
OR INTERNAL LIMIT SWITCHES       J         2-SPDT Mechanical Switches with High Resolution Cams       J         2-SPDT Mechanical Switches       K         2-SPDT Mechanical Switches       K         2-SPDT Proximity Switches       M         2-SPDT Proximity Switches       N         2-SPDT Proximity Switches       Q         OUTPUT SHAFT       D         Double D       D			
INTERNAL LIMIT SWITCHES         2-SPDT Mechanical Switches with High Resolution Cams       J         2-SPDT Mechanical Switches       K         2-SPST Proximity Switches       M         2-SPST Proximity Switches       N         2-SPDT Proximity Switches       Q         2-Intrinsically Safe Solid State Proximity Switches       Q         OUTPUT SHAFT         Double D       D			
2-SPDT Mechanical Switches with High Resolution Cams     J       2-SPDT Mechanical Switches     K       2-SPST Proximity Switches     M       2-SPDT Proximity Switches     N       2-Intrinsically Safe Solid State Proximity Switches     Q       OUTPUT SHAFT       Double D     D	INTERNAL LIMIT SWITCHES		
2-SPDT Mechanical Switches     K       2-SPST Proximity Switches     M       2-SPDT Proximity Switches     N       2-Intrinsically Safe Solid State Proximity Switches     Q       OUTPUT SHAFT       Double D     D		J	
2-SPST Proximity Switches     M       2-SPDT Proximity Switches     N       2-Intrinsically Safe Solid State Proximity Switches     Q       OUTPUT SHAFT       Double D     D			
2-SPDT Proximity Switches     N       2-Intrinsically Safe Solid State Proximity Switches     Q       OUTPUT SHAFT       Double D     D			
OUTPUT SHAFT Double D D D	2-SPDT Proximity Switches		
Double D D		Q	
Double D D			
		D	
		-	

 Notes:
 1. Internal limit switches and an internal transmitter cannot be used simultaneously.

 2. When options F, J, K, M, or N are used with an I/P transducer, input model number 91 must be used.

3. When option Q is used with an I/P transducer, input model numbers 90 or 92 must be used.

4. Internal limit switches or an internal transmitter cannot be used in an explosion proof environment. As an alternative, the explosion proof UltraSwitch may be mounted on

top of the positioner. (Use option T.)
 Namur shaft end connections are standard for Automax and Accord positioners, Double 'D' shaft end connections are standard for Sereg and Valtek positioners. Double 'D' shaft required for linear applications.



# Valtek XL Series Positioners

Performance Test Results

### **Table I: XL Series Positioners Specifications**

Specification	Pneumatic Module	I/P Module	
Input Signal Range	3-15 psi (0.21-1.0 bar), 2- or 3-way split range; 6-30 psi (0.41-2.1 bar) 2- or 3- and 4-way split range	4-20 and 10-50 mA with 2- or 3- and 4-way split range	
Supply Pressure	30 psi to 150 psi (2.1-10.3 bar)	Same	
Ambient Temperature Limits	Standard model:         -20° F to +185° F           -29° C to 85° C           Ext. temp. model:           -50° F to +250° F           -45° C to 121° C	Standard model:         -20° F to +180° F           -29° C to 82° C           Ext. temp. model:         -40° F to +180° F           -40° C to 82° C	
Connections	Supply, instrument and output: 0.25-inch NPT; gauges: 0.12-inch NPT	Signal: 0.5 inch NPT elect. conduit; M20 Output: 0.25-inch NPT; gauges: 0.12-inch NPT	
Standard Materials	Stainless steel, anodized aluminum, epoxy powder-painted steel and nitrile	Same	
Loop Load	N/A	5.3 volts + 5 ohms (270 ohms at 20 mA)	
Net Weight	3 lbs. (1.4 kg)	5.5 lbs. ( <mark>2.5 kg</mark> )	

#### Table II: NT 3000 I/P (Electro-pneumatic) Transducer

Hazardous Location	Explosion proof:	Intrinsically safe:
Approvals	CLI, Div 1, Grp B, C, D FM / CSA	CLI, II, III, Div 1, Grp A-E FM / CSA
	EExd, IIB + H₂ T6 CENELEC Exd, IIB + H₂ T6 SAA / CEPEL	EEx ia IIC T4 (Ta = 80° C) CENELEC Ex ia IIC T4 SAA/CEPEL

#### **Table III: XL Series Positioners Performance**

TEST		Pneumatic Model	I/P Model
<b>Response Level</b> – Average change in input required to cause a change in valve stem position in one direction		0.1% F.S.*	0.1% F.S.
<b>Dead Band</b> – Average change in input required to c valve stem movement	ause a reversal in	0.1% F.S.	0.1% F.S.
Resolution - Smallest possible change in valve ste	m position	0.1% F.S.	0.1% F.S.
Independent Linearity - Maximum deviation from a	a best fit straight line	<u>+</u> 1.0% F.S.	<u>+</u> 1.0% F.S.
<b>Repeatability</b> – Average variation in position for the when approached from the same direction.	e same value of input	0.1% F.S.	0.1% F.S.
Steady State Air Consumption @ 60 psi (4.1 bar)		0.28 SCFM 0.47 m <sup>3</sup> /hr	0.34 SCFM 0.58 m <sup>3</sup> /hr
<b>Supply Pressure Effect</b> – Position change for a 10 pressure change.	psi (0.69 bar) supply	0.2 % F.S.	0.2% F.S.
<b>Open-loop Gain</b> – Ratio of actuator pressure unbalance to instrument pressure change with locked stem @ 60 psi (4.1 bar)		Adjustable 400 to 1100:1 psi / psi @ 60 psi	Adjustable 535 to 1465:1 psi / psi @ 60 psi
Maximum Flow Capacity @ 60 psi (4.1 bar)		16.5 SCFM 28 m <sup>3</sup> /hr	16.5 SCFM 28 m³/hr
<b>Frequency Response</b> – (With sinusoidal frequency of $\pm$ 5% F.S. centered about 50% F.S.)	-6 dB Frequency Phase Angle at -6dB	6.0hz -156.0°	6.0hz -156.0°
<b>Stroking Speed</b> – Speeds for a 100% step change in the input signal	opening closing	1.88 in / sec. 3.0 in / sec.	4.8 cm / sec 7.6 cm / sec

**NOTE:** Testing was performed on a Mark One control valve with a size 25 actuator, air-to-open, PTFE packing, 1.0-inch valve with a 0.75-inch stroke. Results may vary depending on valve system configuration. \*F.S. = Full Scale.

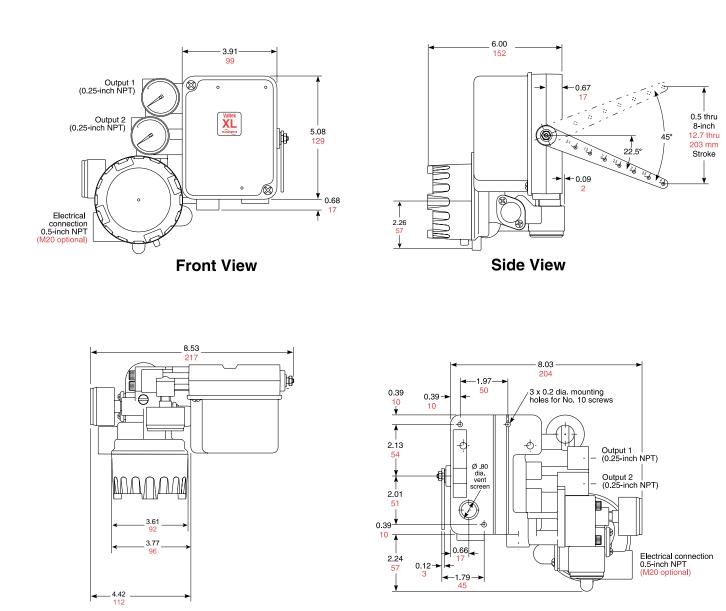
Flowserve Corporation, Valtek Control Products, Tel. USA 801 489 8611



# Valtek XL Positioner

Dimensions with Electro-pneumatic (I/P) Transducer

(inches / mm)



**Top View** 

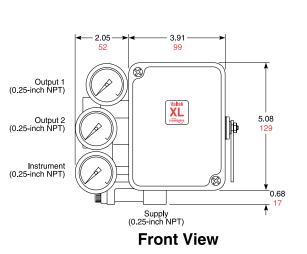
**Back View** 

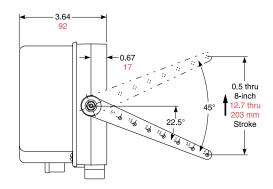


#### Valtek Control Products

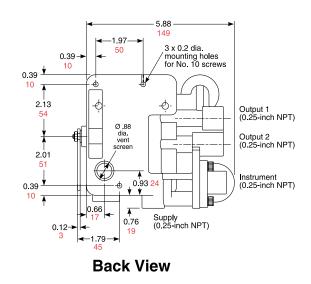
## *Valtek XL Positioner* Dimensions with Pneumatic (P/P) Module

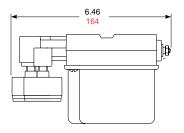
(inches / mm)





**Side View** 





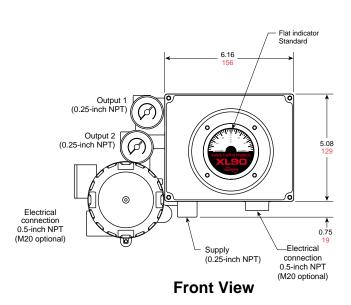
**Top View** 



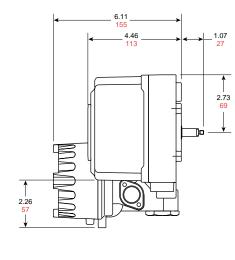


### Valtek XL90 Positioner

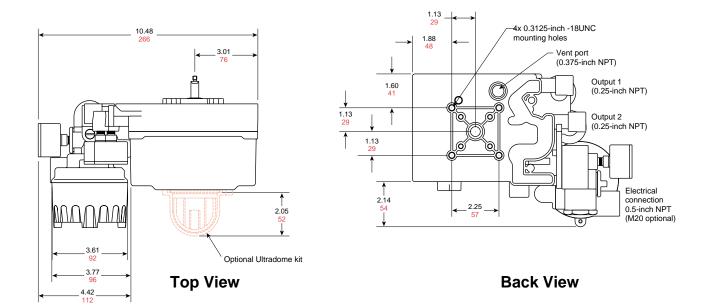
Dimensions with Electro-pneumatic (I/P) Transducer



(inches / mm)



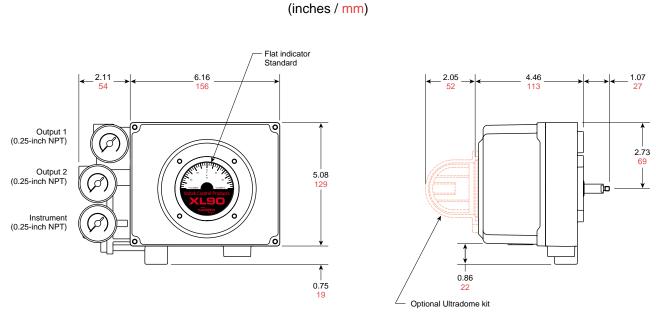
**Right View** 





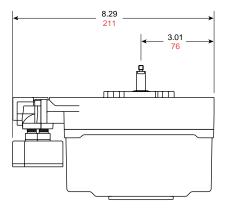
Valtek Control Products

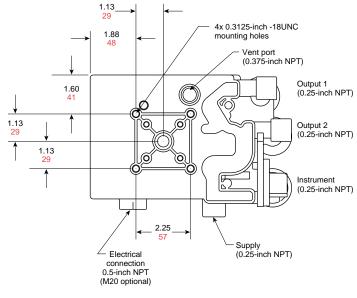
# *Valtek XL90 Positioner* Dimensions with Pneumatic (P/P) Module



Front View







**Back View** 





## Valtek XL90 Positioner UltraSwitch Ordering Information

#### UltraSwitch Ordering Information (Select Bold Type Code from each column that applies)

Model	Cover	Switches	Analog Output**
VNXL - Aluminum VNPL - Zytel	<ul> <li>1 - Flat</li> <li>2 - Pharos</li> <li>C - Pharos 90° 3-way</li> <li>D - Pharos 180° 3-way</li> <li>E - Pharos 180° Block Center</li> <li>*U - Bolt on UltraDome</li> </ul>	<ul> <li>NONE</li> <li>(2) SPDT Mechanical</li> <li>(2) DPDT Mechanical</li> <li>(2) SPST Proximity</li> <li>(2) SPDT Proximity</li> <li>(2) SPDT "Go" Proximity</li> <li>(2) SPDT "Go" Proximity</li> <li>(2) P&amp;F NAMUR Proximity</li> <li>(3) C2 SPDT Mechanical-Gold Plated</li> <li>(4) SPDT Sabre Proximity</li> <li>(5) SPDT Phazer Proximity</li> <li>(2) SPST BRS Proximity</li> <li>(3) SPST BRS Proximity</li> <li>(4) SPST BRS Proximity</li> <li>(5) Contact factory for additional options</li> </ul>	<ul> <li>0 - NONE</li> <li>T - Transmitter 4-20mA</li> <li>A - Potentiometer 0 -1k ohm</li> <li>B - Potentiometer 0- 5k ohm</li> <li>C - Potentiometer 0-10k ohm</li> </ul>

\* PL UltraSwitch only \*\* Switch options 1 & 4 only; for output with no switches, specify switch option "0"

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