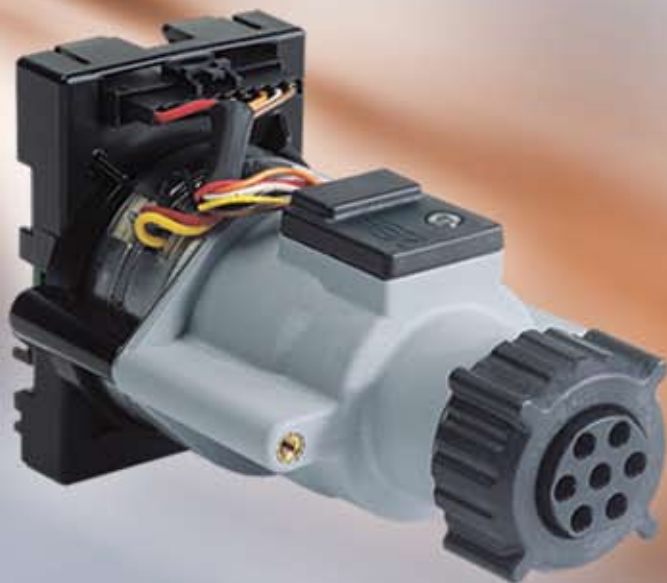




Titan

EX™

LOW-PRESSURE
FLUID PLATFORMS



- **Compact, Space Efficient Package**
Simplifies Integration
- **Long Life - Millions of Actuations**
Virtually Maintenance Free
- **Fittingless Tubing Connections**
No Tools in Tight Locations
- **Random Access & Multi-Position**
Eliminates Banks of Solenoids



TitanEX™ - a complete range of high-performance, low-pressure fluid management platforms.

- **Long-life polymer sealing surfaces.**
- **Virtually maintenance free.**
- **Pressure rating up to 125 psi, 9 bar.**
Ideal for low-pressure applications.
- **Unique tubing connection system.**
No tubing fittings or flares required.
- **Random access and multi-position capability.**
Eliminates multi-solenoid manifolds.
- **Compact, space efficient size.**
Fits virtually anywhere.
- **Extensive use of advanced composites.**
High performance, maintenance-free
- a great value.
- **Integrated stepper motor driver board available.**
Speeds project development and shortens time-to-market.

“Clean-Sheet” Design

The TitanEX platform has been specifically designed from the ground up for low-pressure (≤ 125 psi (9 bar)) medical, analytical, biotechnology, and industrial applications. These revolutionary products from Rheodyne are available for fluid selection and switching applications. For fluid selection they are available in 6 and 10-Port flowpaths (Figs. 1 and 2.) and for fluid switching they are available in 2-Position, 6-Port and 2-Position, 6-Port Double 3-Way architectures (Figs. 3 and 4.).

TitanEX implements advanced polymeric wear surfaces, an exclusive tubing connection system (patent-pending) and utilizes Rheodyne’s proven absolute position feedback to yield a truly revolutionary product. These features provide a high-performance fluid management platform for OEM customers’ ultra-high duty cycle applications in a low-cost, small footprint package.

Long-Life Polymer Sealing Surfaces

Long life is a cornerstone of the TitanEX platform. During the past 5 years component lifetime has become increasingly important as duty cycle regimes have increased. TitanEX’s use of polymer wear surfaces was dictated by OEMs’ need for maximum longevity and maintenance-free operation. The result is a fluid platform qualified to millions of actuations.

TitanEX Internal Flowpaths

Figure 1.
Schematic flowpath of TitanEX
6-Position Stream Selector.

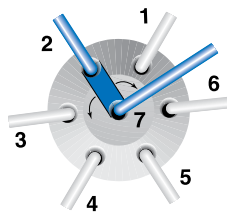


Figure 2.
Schematic flowpath of TitanEX
10-Position Stream Selector.



Figure 3.
Schematic flowpath of
TitanEX Switching Valve.

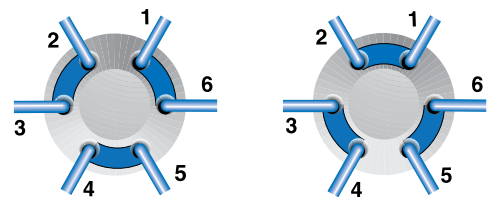
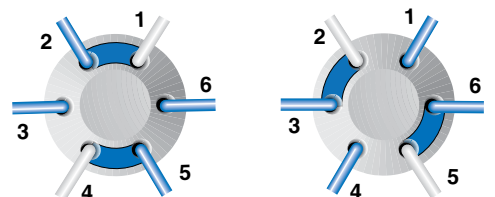


Figure 4.
Schematic flowpath of
TitanEX Double Three-Way
Switching Valve.



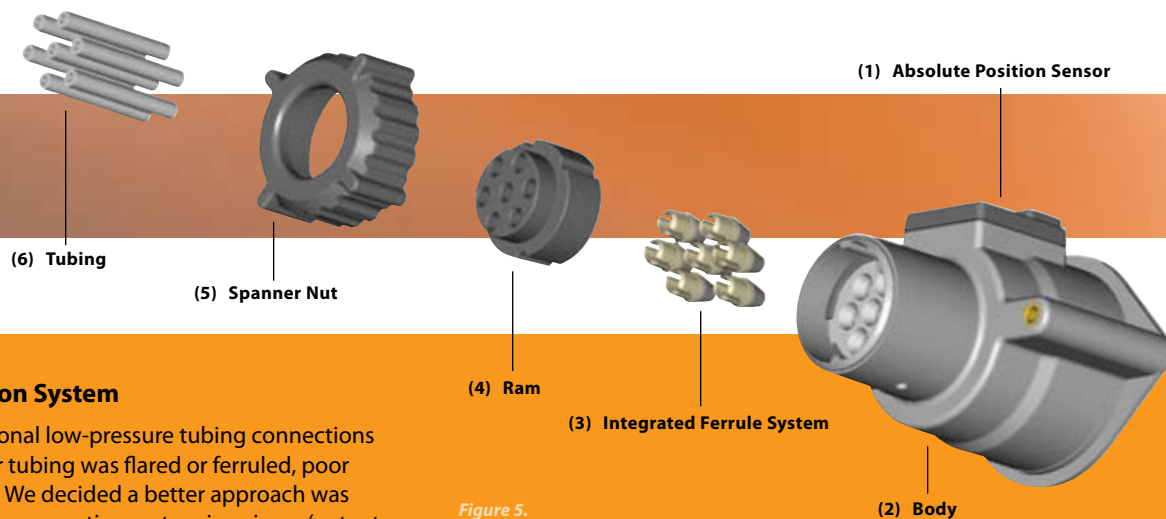


Figure 5. Exploded view of TitanEX showing Absolute Position Sensor (1), Body (2), Tubing Connection System (3-4), Spanner Nut (5), and Tubing (6). TitanEX incorporates a unique and exclusive tubing connection system where leak-free connections are made by seating tubing into the valve and hand twisting the valve's Spanner Nut.

Unique Tubing Connection System

Our customers told us traditional low-pressure tubing connections were less than ideal. Whether tubing was flared or ferruled, poor quality connections resulted. We decided a better approach was necessary. The TitanEX tubing connection system is unique, (patent pending) and fittingless... all the parts are internal to the valve (Fig. 5). The design reduces the tubing/valve interface to a simple finger tight operation that requires no tools. Simply insert the tubing into the ports, tighten the spanner nut and you're done. This connection system will accommodate 1/8" and 1/16" tubing. Imagine, you'll never flare tubing again or search for another ferrule on the floor.

Random Access and Multi-Position Capability

Solenoids manifolds are frequent solutions to the problem of randomly accessing different streams/reagents/samples, however this solution becomes very expensive as the number of lines increase and the pressures rise to 125 psi (9 bar). The TitanEX Selector was benchmarked to solve this problematic technical and cost challenge. Depending on the application, a single random access TitanEX Selector can replace a manifold and solenoids for less than half the cost. In addition, TitanEX's 1mm ID and smaller geometry and shear-face design provides equipment manufacturers with zero dead volume.

Advanced Composites Mean No Maintenance

Long life is a principal design criteria of the TitanEX platform. The valve body and internal wear components make extensive use of modern material science by employing advanced composite polymers throughout. These highly inert and wear-resistant materials allow the valve to be actuated over the full operating temperature range without maintenance during its lifetime.

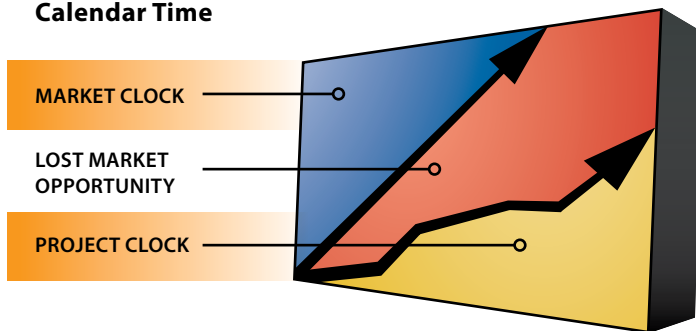
Typical Applications

- **Process Control / Monitoring**
 - Process Stream Sampling
 - FIA Sample Injection
 - Reagent / Calibrant Selection
- **Industrial**
 - Solenoid Manifold Replacement
 - Fluid Switching / Fluid Selection
- **In Vitro Diagnostics**
 - Immunoassays
 - Real Time PCR
 - Probe Based Systems
 - Nucleic Acid Amplification
- **Biotechnology**
 - Fermentor Sampling
 - HTP Screening Reagent Addition
 - Automated Chemical Dispensing
- **Scientific Instrumentation**
 - Ultra-High Purity Water Sampling
 - TOC Reagent Selection
 - HPLC Solvent Selection
 - Post-Column Fraction Collection

Available With Integrated Driver Board

An optional driver board integrates with the TitanEX platform to provide the added functionality of motor drive and valve control without significantly affecting the remarkably small footprint of this multi-position valve. Customers have only to provide 24VDC power and 4-line BCD signals for random access actuation with position feedback. The benefit to OEM customers is clear — elimination of internal board and firmware development means shorter product development cycles and reduced time-to-market.

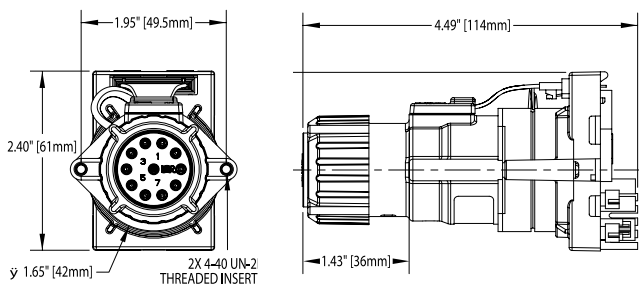
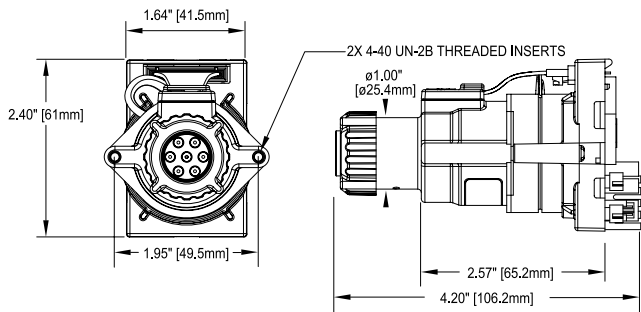
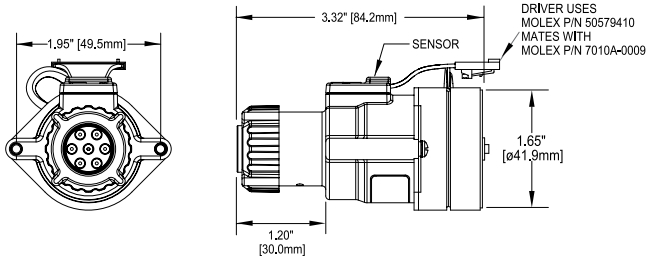
Calendar Time



Faster to Market.

Rheodyne's goal is to form collaborative partnerships with our OEM customers to help speed new products to market. Working with a Rheodyne development team provides access to state of the art fluidic technologies, comprehensive engineering resources, and rapid prototyping to get your products to market FASTER.

Ordering Information



TitanEX™ without Integrated Driver Board

MLP777-201	2-Position, 6-Port Injector, 1/16"
MLP777-203	2-Position, 6-Port D-3Way, 1/16"
MLP777-205	6-Position, 7-Port Selector, 1/16"
MLP777-206	6-Position, 7-Port Selector, 1/8"
MLP778-205	10-Position, 11-Port Selector, 1/16"

TitanEX™ with Integrated Driver Board

MLP777-601	2-Position, 6-Port Injector, 1/16"
MLP777-603	2-Position, 6-Port D-3Way, 1/16"
MLP777-605	6-Position, 7-Port Selector, 1/16"
MLP777-606	6-Position, 7-Port Selector, 1/8"
MLP778-605	10-Position, 11-Port Selector, 1/16"

Typical Specifications Dimensions:

Without Driver Board
With Driver Board
(See diagrams to the left)

Communications:
Automated operation by 4 line BCD

Power Requirements:
24 VDC at 1 Amp

Communications Options with Integrated Driver Board

	2-Position Valves	Multi-Position Valves
Single pulse	Yes	No
Dual pulse	Yes	No
Single line level logic	Yes	No
4 line BCD	Yes	Yes
I ² C	Yes	Yes
UART	Yes	Yes

Wetted Surfaces:
Contact Rheodyne

Operating Temperature
0° - 60° C



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