

EVX® Electric Valves

A smaller, smarter, and tougher solution for liquid handling

WHITE PAPER

THE PROBLEM WITH ELECTRICALLY ACTUATED VALVES USED IN LIQUID HANDLING

Original Equipment Manufacturer (OEM) engineers are grappling with the design challenges of modernizing liquid handling systems. With the addition of new electronic systems and a range of extended features, getting everything to fit and function properly is no easy task. System automation increases efficiencies by performing previously manual operations faster and more accurately. This, in turn, requires valves that can fit into increasingly confined spaces and more readily adapt their orientations as needed, contribute less to the overall weight of the machine, communicate via various protocols, and deliver a very high level of reliability. Additionally, as the transition from simple, but relatively inexpensive, manual valves to pricier, electrically actuated valves occurs, manufacturers also must control the escalating costs of their products.

Most electrically actuated valves suitable for agricultural and industrial liquid handling systems were designed many years ago prior to the rapid changes described above. As such, they don't incorporate the latest technologies that utilize advanced communication protocols and cannot detect and report electrical system or product issues. Further, these older products are not designed to enable OEM engineers to maximize fit for space-constrained environments while also limiting weight. Considering all of these limitations, OEMs often have to choose among certain features, capabilities, and economics when designing systems. This limits the possibilities and poses a barrier to optimizing liquid handling systems.

Consequently, while the rapid automation of many types of agricultural and industrial equipment is a reality, products capable of meeting the entire range of requirements are not. A new product from Banjo, the EVX® Electric Valve, is poised to transform that reality.

HOW EVX SOLVES LIQUID HANDLING DESIGN CHALLENGES

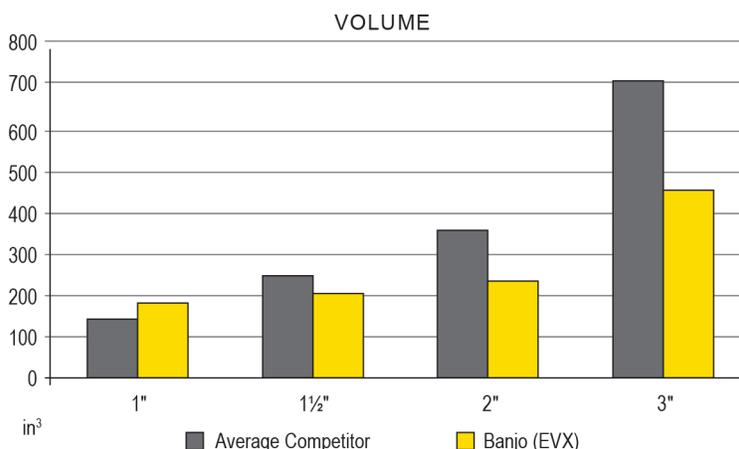
EVX electric valves from Banjo address the problem with current electric valve models by being smaller, smarter, and tougher than existing offerings.

SMALLER

EVX electric valves extensively expand the design possibilities of how and where to place electric valves in a system. In some cases, the reduced footprint of EVX enables the actual automation of a system which would not have otherwise been possible.

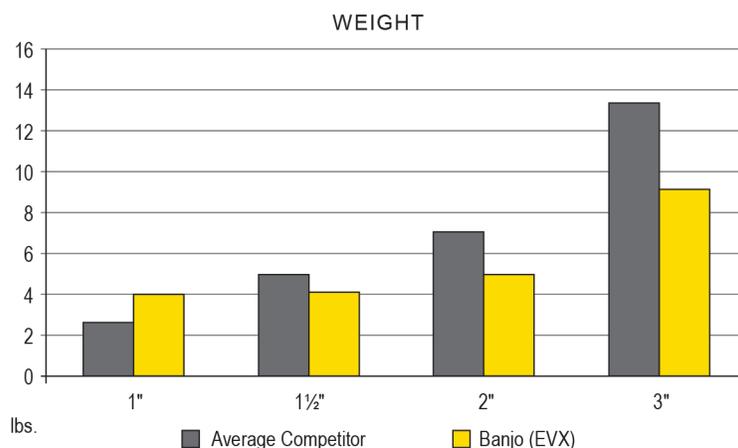
The space savings compounds as valve size increases, and is most pronounced for 3" models where EVX is 40% smaller by volume than the average size of currently available comparable electric valves.

Electric Valve Size Comparisons



In tandem with size reductions, EVX also yields significantly lower weight than current electric valve models. When compounding the weight of electric valves across the entire system, the reduced weight of EVX offers compelling benefits that can lead to better gas mileage, reduced wear and tear, and less impact to the field.

Electric Valve Weight Comparisons



SMARTER

EVX enriches the capability and functionality of electric valves through a more versatile design, engineering diagnostics that enable alerts when issues arise, and communications via a range of the latest protocols.

The EVX modular design enables the valve and actuator to be easily removed and replaced. If needed in the field, the valve assembly easily converts to a manual valve. The versatility of this design facilitates the utilization of both electric and manual valve styles in the same system without changing valve platforms.

LED indicators show the system is powered via a blue LED and open and closed verify via a green and red LED, respectively. Diagnostic functions signal fuse blown conditions as well as temperature and voltage beyond normal operating parameters.

Often, field issues that prompt costly service and repairs, including downtime, result from an incorrect technical assessment. The yellow fuse blown LED conveniently identifies this issue as a simple fuse reset and avoids otherwise costly service experiences that lower product satisfaction and damage customer loyalty. Temperature and voltage sensors communicate data through any of the advanced communication protocols providing the capability to alert users who are operating the system if abnormal conditions¹ occur.

TOUGHER

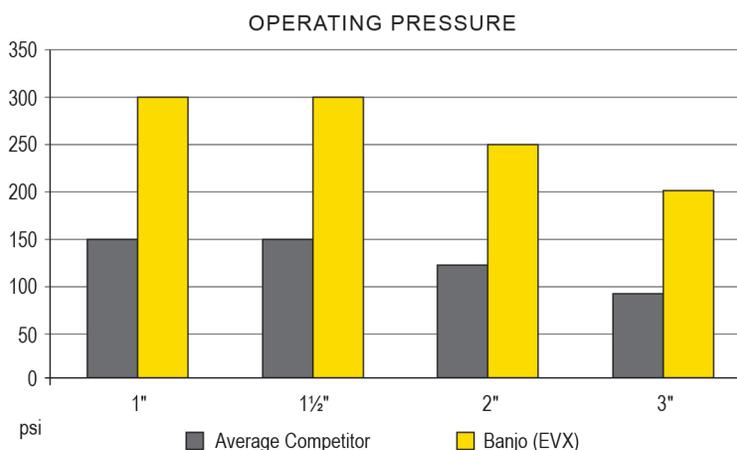
The single most important requirement of any valve product is to be tough enough to withstand the most strenuous applications it will endure. Banjo has built a legacy as the OEM choice by providing the toughest, most reliable products for liquid handling. EVX is the next edition in this legacy.

EVX valves use a solid state design and are formulated with a proprietary polypropylene material that ensures durability and enables injection molding to precision tolerances. Advanced welding machines assemble the valves. This construction and process eliminates a leak point while supporting a sleek and compact design.

Setting the new standard for electric valve toughness, EVX passes 52 separate durability torture tests including mechanical shock, vibration, extreme temperature, rain /shine, operating pressure, and rigorous longevity tests. EVX is also CE compliant.²

EVX truly earns its “tougher” moniker by its ultra-high burst pressure ratings, which well exceed that of available comparable competitive electric valves with the 1" and 1½" models achieving a 300 PSI rating.

Electric Valve Burst Pressure Comparisons



¹ As specified by an OEM's system parameters / requirements

² CE-compliant models available.

ECONOMICAL

Banjo designed EVX to break numerous design barriers but also to achieve price points enabling wide-scale adoption on OEM systems. The welded design and manufacturing process reduces materials and componentry as well as assembly costs affording a more economical electric valve.

EVX FEATURES AND BENEFITS

- 1", 1½", 2", and 3" port sizes provide full flow for agricultural and industrial applications
- Multiple actuator sizes optimize total product footprint by port size
- Manifold and Female NPT thread options
- Welded construction increases operating pressure rating and reduces valve footprint
- Modular assembly enables easy actuator and valve replacement and enables function as manual valve with available handle
- Operating pressures up to 300 PSI³ provide outstanding valve toughness in case of pressure spikes
- LED indicator power-on, blown fuse and open / close verify (optional)
- Diagnostics that communicate voltage, and temperature outside of specifications as well as cycle count
- Four actuator technology models available
 - Level 0: 2 / 4 wire regulating, direct control
 - Level 1: LED for power-on, fuse blown, and open / close verify wire output (optional), white wire control
 - Level 2: Level 1 plus LED for open / close verify (optional), voltage and temperature sensor, CE-compliant
 - Level 3: Level 2 plus options for CAN / ISO BUS, linear feedback, pulse width modulation (PWM), and Bluetooth® wireless technology⁴ communication
- High and low torque actuator models as required by application
- 12VDC and 24VDC versions for versatility for different electrical installations

CONCLUSION

The evolving landscape of liquid handling applications is demanding more versatile and capable electric valves. With EVX, OEM engineers now have a smaller, smarter, and tougher product to meet their range of technological requirements at price points that enable system-wide implementation.

Learn more about EVX at:

banjocorp.com/banjo/evx

³ 1" and 1½" versions at 300 PSI

⁴ The Bluetooth® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc.