Embrace innovation for enchanced process performance

AEV™ C-Ball Valves

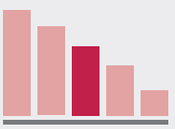
High Performance Ball Valve Technology for
Cryogenic and Critical Service Isolation Applications

EMERSON™

Is Traditional Valve Technology Returning Traditional Results?

In a world increasingly focused on sustainability and environmental responsibility, the demand for efficient processes that adhere to stringent regulations has never been higher. In this new reality, your choice of valve technology matters.

Valves are a leading cause of unplanned shutdowns and slowdowns resulting in annual production capacity losses of as much as 0.2%.
- "Improve reliability with essential asset monitoring" InTech 2012



Inferior or poorly specified valves in critical applications can put your operations at risk, potentially causing harm to personnel and the environment.

Valves are the leading cause of fugitive emissions in any process facility. Unaddressed, these emissions can be harmful to the environmental, risk heavy fines and result in valuable product loss.

Maximize your Results with Revolutionary and Proven Ball Valve Technology

Your choice of valve technology can have a profound impact on the profitability and on time delivery of your projects, as well as the efficiency of your ongoing operations and cost of production. When you partner with Emerson, you will gain access to cutting-edge innovations and application experts that can drive these benefits in your business.

Introducing Emerson's latest innovation, set to revolutionize the way you think about ball valves in the isolation of your cryogenic and critical service processes. With its breakthrough "C" shaped ball design, the ^{2}XC™ ball valve delivers positive isolation, with improved safety, reliability, and long term trouble-free operation.

Technology in Action

AEV technology has led the valve industry for more than a decade with its advanced design that has been trusted to excel in cryogenic and critical services. Today, more than 70,000 AEV C-Ball Valves are installed in essential energy and process infrastructure around the world. The industry's leading EPCs and industrial producers have trusted Emerson to partner on these projects to ensure their successful startup, as well as their efficient ongoing operation.

An Advanced, Modern Design to Solve the Shortcomings of Traditional Ball Valve Technology

The AEV C-Ball is a quarter-turn valve featuring a uniquely shaped half ball with a 'C' configuration. This C-shaped ball is offset in two planes, enabling a double eccentric cam motion. This design ensures tight sealing that is independent of process pressure, eliminating the need for spring-loaded dynamic seals between the body and seat. The unique double eccentric motion and cavity-free design address inherent issues found in traditional trunnion-mounted ball valves. Emerson's advanced design offers superior sealing performance and reliability during operation.

What's your challenge?

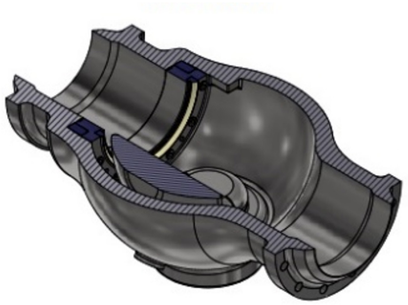
The critical ball valves in your facility rely on traditional designs that see their performance degrade from the very first cycle. Compromised valve operation can put your site's safety, sustainability and production goals at risk.

What's your opportunity?

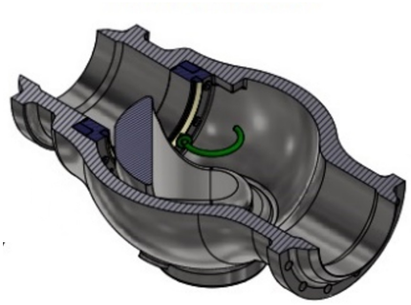
Prioritize the upgrade of outdated ball valves in critical applications to cutting edge double offset C-Ball technology. Experience reliable operation over an extended lifecycle that helps safeguard your personnel and improve the efficiency of your processes.

High Reliability Design

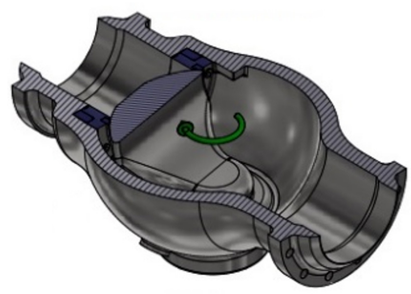
STEP 1 - VALVE OPEN



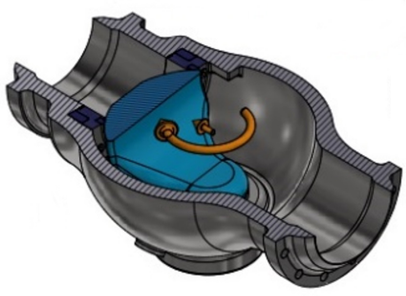
STEP 2 - RUNNING TO CLOSE



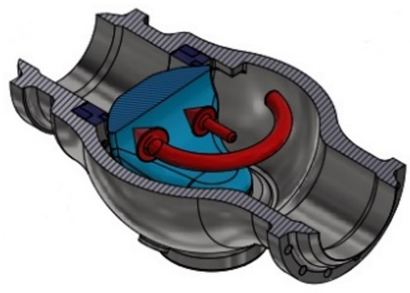
STEP 3 - RUNNING TO CLOSE



STEP 4 - RUNNING TO CLOSE

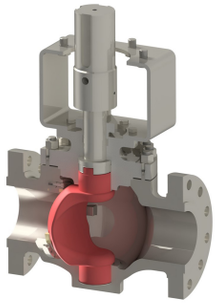


STEP 5 - VALVE CLOSE



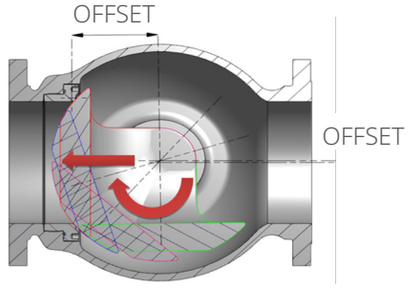
A double eccentric C-ball valve is a quarter-turn valve with a half ball that creates a "C" shape. This C-shaped ball is offset on two planes to allow a double eccentric motion that achieves sealing by cam effect against a fixed seat. This design enables tight sealing that is independent of process pressure and eliminates the need for springs or dynamical seals between the seat and body that are often the root cause of reliability issues in conventional trunnion mounted ball valves. Emerson's advanced design provides superior sealing performance and reliable operation with minimal maintenance cost.

Cavity Free



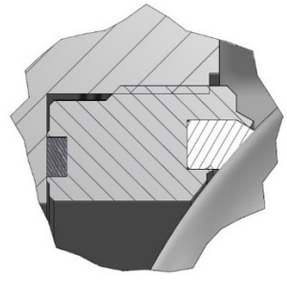
Unique C-Ball design eliminates risk of trapped liquid or liquified gas in Cryogenic applications.

Double Eccentric Motion



The stem is offset on two planes to allow a "cam" effect enabling positive isolation against a fixed seat, independent of process pressure, while eliminating rubbing between ball and seat for most of 90 degrees of travel.

Fixed Seat



Seat is fixed in place with a static gasket simplifies design eliminating dynamic seals for greater reliability, improved performance and safety.

For more information, **visit Emerson.com/AEV**

Improve Safety in your Cryogenic Processes with Cavity-Free Ball Valve Technology

Product Overview

The AEV ^{2}XC Cryogenic C-Ball Valve is the ideal solution for the safe handling of liquefied gases, featuring a cavity-free design that mitigates the risks associated with trapped media. With true bi-directional shut-off and unparalleled leakage performance, these valves deliver unrivalled safety and reliability.

Our AEV C-Ball Valves can be fully customized to match your specific application to positively impact the productivity and lifecycle cost of your operations.

Key Features and Benefits

- Cavity free
- Top entry
- Mechanically assured shut-off
- Double eccentric motion
- Unibody design
- Fixed seat with no springs
- Bi-directional tight shut-off
- Ultra low emissions

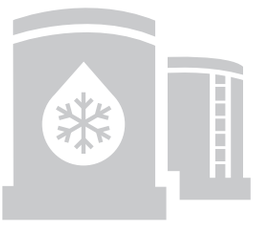
Accessories

- Actuators
- Controllers
- Instruments
- Positioners

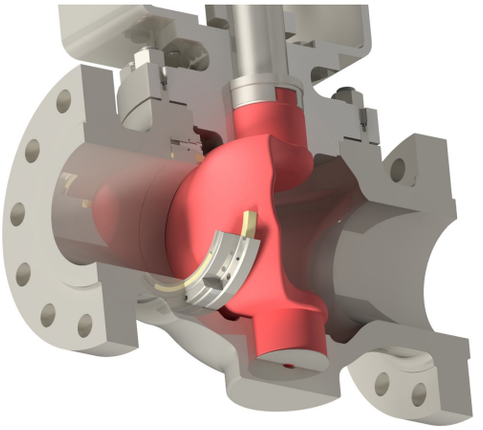
Applications

^{2}XC ball valves excel in some of the most challenging cryogenic applications.

- LNG Liquefaction Terminals
- LNG Regasification Terminals
- Peak Shaving Plants
- Rocket Engine Testing
- LNG Bunkering
- FRSU
- FLNG
- LNG Fuelling
- LNG Ships
- LPG Fuelling
- Ammonia Fueling
- Gas Fractionation Plants
- Ethylene Storage
- Air Separation
- Liquid Hydrogen
- Liquid Oxygen
- Emergency Shutdown

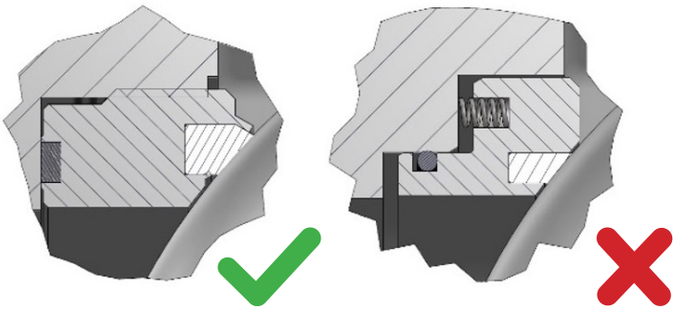


Cavity-free Design



"C" shaped ball eliminates the ball cavity and with it, the inherent risk of trapped product expanding to cause catastrophic valve failure. The valve seat is also fully encapsulated with stainless steel to safeguard against explosive failure.

Single Fixed Seat



AEV C-Ball Design

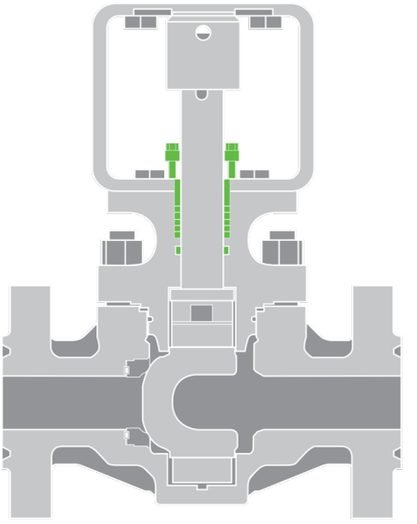
Traditional Ball Valve Design

Seat is fixed in place with a static gasket vs floating seat with spring and dynamic seal in traditional ball valve. Static seat to body seal simplifies design eliminating dynamic seals for greater reliability, improved performance and safety. Sealing in AEV design independent from media pressure and plastic deformation of sealing elements.

Bi-directional Tight Shut-off

The unique combination of torque and position seating design ensures bi-directional tight shut-off through mechanical sealing. AEV™ C-Ball can achieve significantly better leakage performance than allowed in BS 6364 and ISO 28921-1 standard.

Stringent Emissions Compliance



Futureproof your facility with ISO 15848-1 certification to stay ahead of fugitive emissions regulation. Various packing materials can be configured with live-loading to achieve low emissions requirements.

For more information, **visit Emerson.com/AEV**

Achieve Ultimate Dependability in Critical Service Applications

Range Overview

The AEV ^{2}XC Critical Service C-Ball Valve is ideal for critical isolation applications, engineered to perform reliably under extreme conditions such as cycling operations, thermal fluctuations, and challenging process media.

These valves offer superior shut-off, enhanced reliability, and extended service life. The superior design minimizes maintenance needs, effectively reducing valve related downtime.

AEV C-Ball Valves can be fully customized for your specific application to positively impact the productivity and lifecycle cost of your operations.

Key Features and Benefits

- Cavity-free design
- Mechanically-assured shut-off
- Friction-free design
- Fixed seat with no springs
- Metal seat design
- Hard coated ball and seat
- Lower maintenance cost
- Ultra low emissions

Accessories

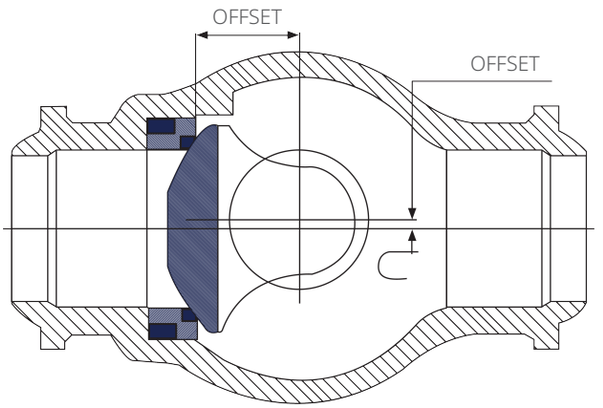
- Actuators
- Controllers
- Instruments
- Positioners

Applications

^{2}XC ball valves are proven to perform in some of the most challenging severe service applications.

- Molecular sieve
- Polymers
- Fouling service
- Ammonia
- Molten fluids
- Cavity-free applications
- High Integrity Pressure Protection Systems
- Emergency shutdown

Double Eccentric Design

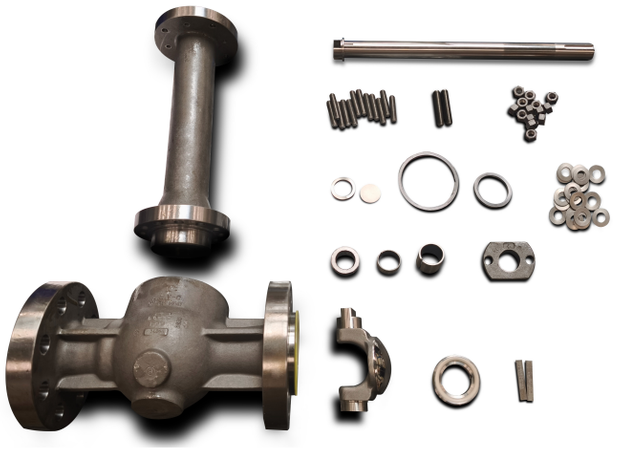


The double eccentric motion generates a “cam motion,” resulting in a non-rubbing design where the ball and seat do not experience continuous contact for most of 90 degrees travel. This design is inherently robust, making it ideal for cycling applications and critical service applications.

Fully Hard Coated C-Ball and Seat

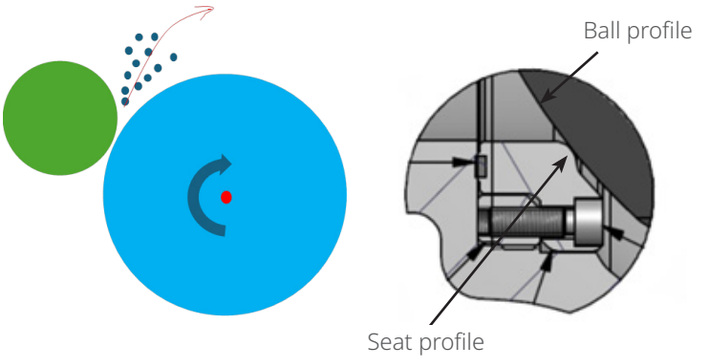
The AEV ^{2}XC valve ball is fully surface hardened, ensuring exceptional durability and dependability. This advanced coating provides enhanced protection and significantly reduces the occurrence of erosive damage, making the valve highly suitable and reliable for critical service applications.

Reliable Operation



The valve design has fewer components than traditional ball valve and rising stem ball valve designs, ensuring trouble-free operation for many years with significantly reduced maintenance costs and facilitating easier maintenance, thereby lowering the total cost of ownership.

Convex-to-Convex Sealing Design



Separates rather than compresses

No particle accumulations

The C-Ball sealing mechanism is distinctive. During the sealing action, the C-Ball sweeps particles away rather than pressing them against the valve seat. This design prevents particles from becoming trapped between the seat and the ball, which is crucial for achieving excellent sealing in difficult media containing particles.

For more information, **visit Emerson.com/AEV**

Product Offering

	Cryogenic	Critical Service
Type	Trunnion Mounted Top Entry Valve	
Design	B16.34 API 608 API 6D IOGP 562 BS 6364 ISO 28921-1	
Pressure Class	Class 150 to Class 4500 PN 10 to PN 400	
Size	DN 15 to 750 NPS 1/2 to 30*	
Bore	Full Bore Reduced Bore	
End Connection	Butt Weld Socket Weld Threaded NPT / BSP / SAE AS5202 Flanged RF/FF/RTJ HUB# Customized+	
Face-to-Face	ASME B 16.10 API 6D Customized+	
Bonnet Type	Flat / Extended	
Temperature Range	-254°C to 200°C	-196°C to 538°C
Shutoff Class	Bi-directional tight shut-off BS 6364 and ISO 28921-1	Bi-directional API 598 and ISO 5208 Rate A
Body Material	Stainless Steel and others	Carbon Steel, Stainless Steel, Duplex and others
Ball Material	Stainless Steel	Stainless Steel / Duplex / Inconel® and others
Ball Coating	–	Tungsten Carbide / Chrome Carbide / Others
Seat Material	Stainless Steel and others	Stainless Steel / Duplex / Inconel® and others
Seat Coating	–	Stellite® / Tungsten Carbide / Chrome Carbide / Others
Seat Insert	PCTFE / PEEK / RPTFE / Others	–

Approvals and Certifications

- Firesafe API 607 / ISO 10497
- Fugitive Emission ISO 15848-1
- SIL 3
- CRN
- PED
- TSG
- ISO 9001
- Ship classification: LR / BVABS / TUV / DNV

Notes

* Consult factory for sizes up to DN 1050 / NPS 42

+ Consult factory

Directly machined on castings

Your Trusted Partner for Project Success and Operational Excellence

Emerson's AEV C-Ball Valves have been selected as the trusted isolation solution by many of the leading EPC firms and industrial producers as they deliver and operate the world's most critical infrastructure. That trust is built not only on leading AEV technology, but equally on the deep application expertise of our engineering teams and the manufacturing excellence of our dedicated facilities in Belgium and Italy.

Improve process reliability and reduce your operating costs

Emerson Electric Co.
Global Headquarters
8000 West Florissant Avenue
St. Louis, Missouri, 63136
United States
T +1 314 679 8984
ContactUs@Emerson.com
Emerson.com

Isolation Valves
North America
Headquarters
10707 Clay Rd
Houston, Texas, 77041
United States
T +1 713 986 4665

Emerson Automation Solutions
World Area Headquarters

Asia Pacific
1 Pandan Crescent
Singapore 128461
T +65 6777 8211

Europe
Neuhofstrasse 19a P.O. Box
1046 CH 6340 Baar,
Switzerland
T +41 41 768 6111

Latin America
1300 Concord Terrace Suite 400
Sunrise, Florida 33323,
United States
T +1 954 846 5030

Middle East & Africa
Emerson FZE P.O. Box 17033,
Jebel Ali Free Zone - South 2,
Dubai, United Arab Emirates
T +971 4 8118100

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