

"Apollo"® **INDUSTRIAL**
P R O D U C T S

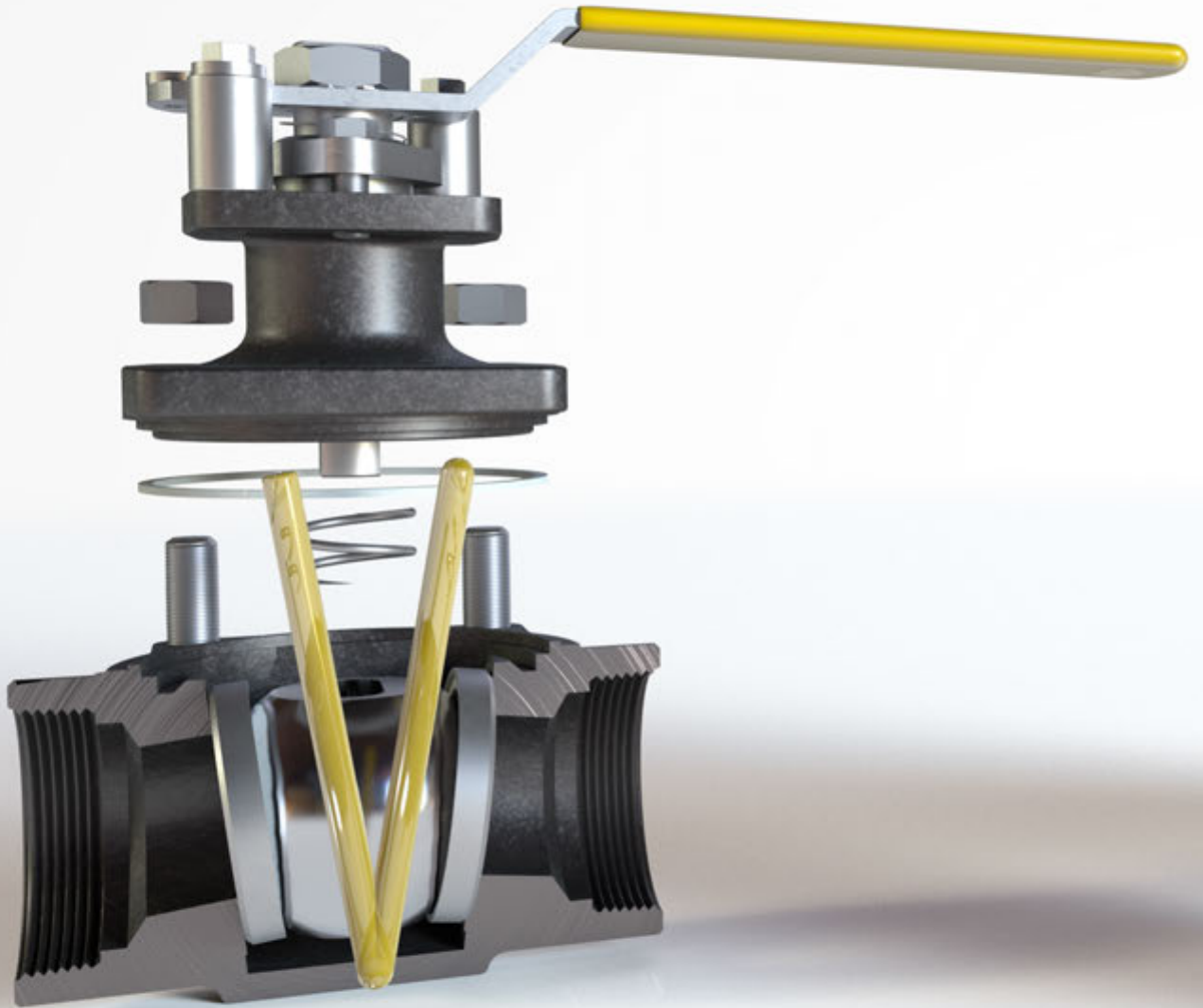
TOP ENTRY
BALL
VALVES



"Apollo"® TOP ENTRY BALL VALVES

TOP ENTRY ADVANTAGES

- Self-Adjusting Seats Which Compensate for Wear & Temperature Fluctuations
- Spring Loaded Low Pressure Seals
- Pressure Activated Seating
- Built-In Antistatic Feature
- Simplified In-line Service
- Minimal Potential Leak Paths
- ISO 5211 Mounting Pad
- Blowout-Proof Stem
- 5 Year Warranty, Made in USA



THE CORRECT DESIGN

The characteristic **"V" design** introduced the self-adjusting seat to the floating ball valve. Unlike the conventional floating ball valve, this design does not rely on the built-in interference and upstream pressure to seal. Rather, the design utilizes an internal spring and "V" design that provides **automatic compensation for pressure, temperature, and wear**. When using resilient seats, this results in a **positive leak tight shut-off**.

EASE OF MAINTENANCE

Apollo® Top Entry Ball Valves provide simplified in-line maintenance in the most natural way. The valve body is allowed to act as a permanent part of the piping system, eliminating potential leak paths. With the variety of bonnet gaskets and stem seal arrangements available these threats can be minimized.

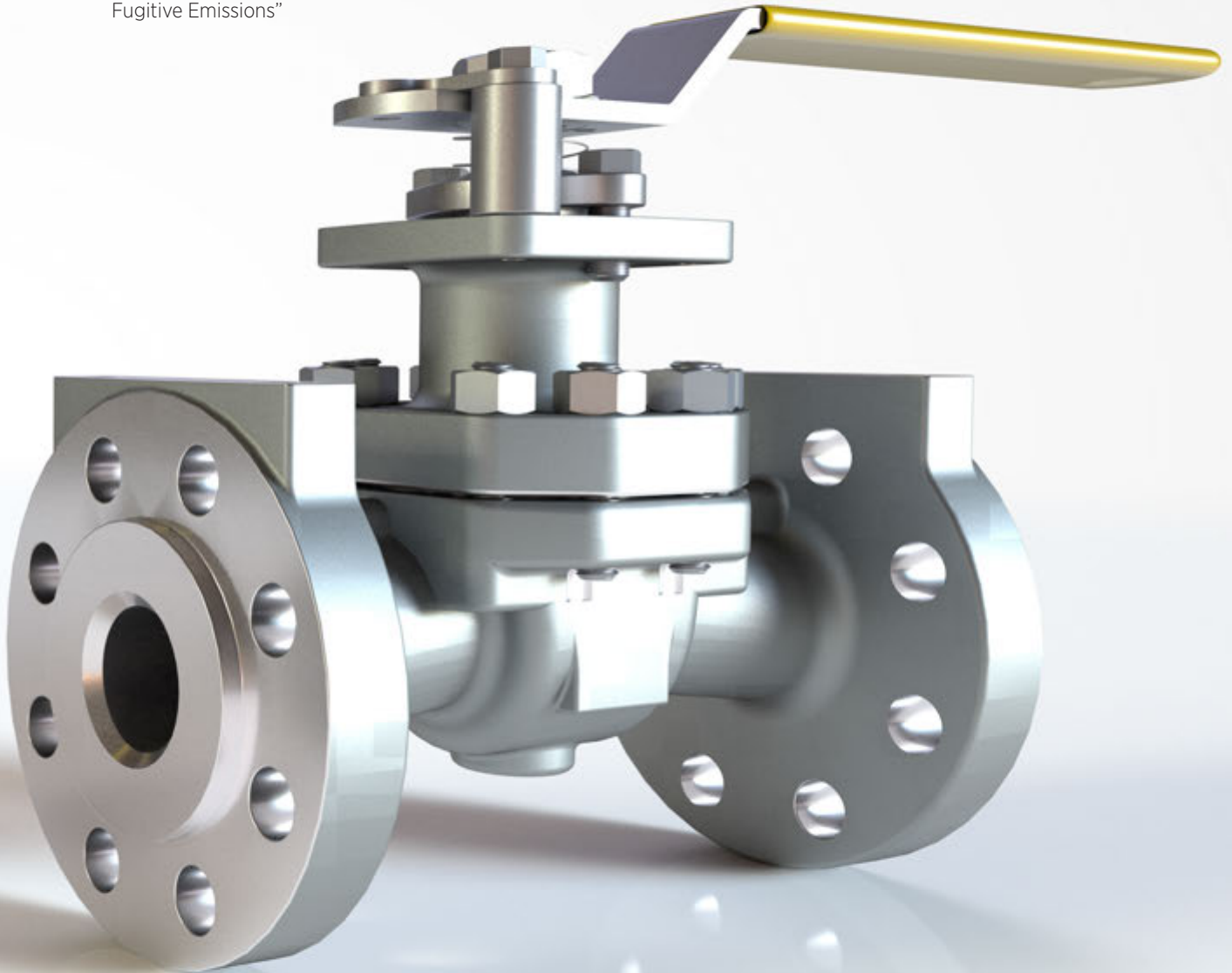
STANDARDS COMPLIANCE

(Most valves within this family of products comply with the requirements of these listed standards.)

- ASME B16.5 "Pipe Flanges and Flanged Fittings"
- ASME B16.10 "Face to Face Dimensions of Valves" (Except Full Port Valves)
- ASME B16.34 "Valves - Flanged, Threaded, and Welding End."
- ASME B31.1 "Power Piping"
- ASME B31.3 "Chemical Plant and Petroleum Refinery Piping"
- ASME B31.8 "Gas Transmission and Distribution Piping Systems"
- API 598 "Valve Inspection and Testing"
- MSS SP-25 "Standard Marking System for Valves"
- MSS SP-61 "Pressure Testing of Steel Valves"
- MSS SP-72 "Ball Valves with Flanged or Butt-weld Ends"
- CRN Registered in all Canadian Provinces
- NACE Compliant
- "Buy American Act" Compliant

OPTIONAL STANDARDS

- API 607 "Fire Test - Soft Seated Quarter Turn Valves" (Depending on Seat and Seal Selection)
- API 622 "Type Testing of Process Valve Packing for Fugitive Emissions"
- API 641 "Type Testing of Quarter Turn Valves for Fugitive Emissions"
- The Chlorine Institute Pamphlet 6
- CE Marking
- American Iron & Steel Act Compliant



FIT FOR PURPOSE

Apollo® Top Entry Ball Valves have many options that can be combined to create a product uniquely tailored to customer specifications and applications. These options include:

- Broad selection of materials from carbon and stainless steel to exotic high alloys such as Alloy 20, Duplex/Super Duplex, Hastelloy®, Monel® and many more.
- Optional features to choose from such as double packed extended bonnets, fugitive emissions compliant packing and vented bodies.
- More seal combinations such as ceramics, PEEK and carbon graphite.

"Apollo"® TOP ENTRY BALL VALVES SPECIAL APPLICATIONS

"FIRE-SAFE" REQUIREMENTS

Seat and seal arrangements are available to address valves in applications where performance during and immediately after a fire is a concern. The "L" (Multiseal) seat configuration offers **"tested" fire-safe performance**. Graphite spiral wound gaskets are available for bonnet seals. Die-formed Grafoil® in various configurations provide the stem seals.

LOW PRESSURE APPLICATIONS

Maintaining a low pressure seal has historically been one of the most difficult applications for the traditional floating ball valve. The internal spring and "V" design allow the ball and seats to **maintain a low pressure seal for the life of the seat**. Just one example of where an Apollo® Top Entry Ball Valves can succeed where traditional floating ball valves fail.

ABRASIVE & EROSION SERVICES

"Soft Seated" valves for abrasive services feature seat inserts completely confined by metallic components. Some designs feature inner and outer seat support rings, where the inner ring helps shield the seat insert from abrasives in the service. Other designs feature one piece seat holders which completely confine the seat insert and provide the same function in protecting the soft seat from abrasive particles in the flow stream.

In addition to the seat configuration options, resilient and rigid seat materials are available. The rigid seat choices include carbon-graphite, ceramic, peek, and carbon reinforced peek. Any of these seats provide **improved resistance to abrasion and erosion** and additionally **extend the potential service range to 1000°F (538°C)**.

For steam services, the #5 seat, a RPTFE containing 55% bronze and 5% molybdenum disulfide, is an excellent choice as is the #4 carbon-graphite seat.

CHLORINE SERVICE

Valves intended for service in dry chlorine require specific alloy selections, design features, cleaning and testing procedures. In accordance with the guidelines established by **The Chlorine Institute Pamphlet 6**, Hastelloy® trimmed carbon steel valves (model numbers starting with "CH") are suggested, and M35-1 trimmed carbon steel valves (model numbers beginning "CM") are the alternative for dry chlorine. All Hastelloy® or M35-1 valves are also available.

NOTE: Stainless steel valves or components are not recommended.

Selecting the required **"-26"** feature insures a valve that has been **vented, cleaned, and tested** to comply with the requirements of **The Chlorine Institute Pamphlet 6**.

OXYGEN SERVICE

For this application, cleanliness is of utmost importance. Apollo® Top Entry Ball Valves specified for oxygen service (option **"-57"**) are subjected to rigorous preparation procedures including special pre-cleaning and inspection followed by ultrasonic cleaning and more intense inspection. All to insure that the finished valve is free of burrs and sharp edges as well as cleaned of hydrocarbon residues and particulate matter. Once valves destined for oxygen service enter Apollo's clean room for preparation, they do not leave until they have been **cleaned, assembled, thoroughly tested, inspected, tagged and bagged** to meet customer requirements.

HIGH TEMPERATURE SERVICE

For any applications utilizing graphite, carbon graphite, peek, carbon reinforced peek, or ceramic seats, a ball stop should be incorporated into the valve design (option **"RS"**). This option is suggested at any temperature, but it becomes a necessity **above 500°F (260°C)** or when using ceramic seats. The ball stop prevents the ball and seat from sliding down the 7° wedge when expansion caused by the temperature increase widens the wedge. If the ball was permitted to slide down the wedge, the valve would be locked tight when cooling causes the wedge to contract.

STEAM JACKETS

Apollo® Top Entry Ball Valves are ideally suited for jacketed applications. The top entry concept allows for **continued access to stem packings and valve internals for ease of maintenance** without disturbing the jacket itself or removing the valve from the pipeline. Valves and jacketing can be supplied in a variety of materials.

Partial jacketing may be used on standard valves. Partial jacketing is applied just to the center section of the valve and does not incorporate the neck area or flanges of the valve. It is generally specified to allow the use of standard flanges and retain conventional flange bolting. Welded full jacketing may be applied to valves with oversize flanges or standard flanges.

Clamp-on jacketing offers flexibility not available in the other configurations. Clamp-on jacketing can be applied to valves already in service, or can be removed and reinstalled on a replacement valve or another similar valve in another application. Clamp-on jackets can be supplied as a weldment or in cast aluminum. A heat transfer compound can be applied between the clamp-on jacket and valve to improve its efficiency.

Combining these jacketed valves with extended bonnets for safe convenient operation, and adding carbon graphite seats or ceramic balls and seats enables the valve to handle a **broad range of viscous materials and temperatures**.