

TBV Series 9900 Fire-Tested, Top-Entry Ball Valves

Cryogenic and non-cryogenic valves with welded connections to meet 2" and smaller valve requirements

TECHNOLOGY



TBV Series 9900 Fire-Tested, Top-Entry Ball Valves



Millbury, Mass., USA

Cameron is a leading provider of valves, valve automation, and measurement systems to the oil and gas industry. Our products are used primarily to control, direct, and measure the flow of oil and gas as it is moved from individual wellheads through flowlines, gathering lines, and transmission systems to refineries, petrochemical plants, and industrial centers for processing.

We provide critical service valves for refinery, chemical, and petrochemical processing businesses, and for associated storage terminal applications, particularly through our ORBIT® and GENERAL VALVE® product lines. These brands are complemented by our WKM® and TBV™ valve products, and considerably expand the scope of our product offerings.

TBV valve products are manufactured and assembled at Cameron's facility in Millbury, Mass. This facility offers 68,600 sq ft of space, of which, 52,160 sq ft is dedicated to manufacturing, assembling, testing, shipping, and quality assurance. The manufacturing space allows us to expand our product offerings and size range. Our TBV valves are competitive in the LNG, mining, and petrochemical markets, with the added ability to offer larger size ranges within this product line.

Facility Features

- Clean room for oxygen, chlorine, and phosgene assembly and testing
- Paint booth
- Dedicated cryogenic testing area
- State-of-the-art CNC machining
- In-house NDE capabilities – PMI, Ferrite testing, fugitive emissions testing, high-pressure gas testing, and LP examination
- Welding performed to provide a wide variety of configurations
- ASME-qualified welders



Table of Contents

TBV SERIES 9900 FIRE-TESTED, TOP-ENTRY BALL VALVES

Introduction.....	2
Features, Certifications, and Markets	5
Details and Seat Rating	6
How to Order	7

TBV Series 9900 Fire-Tested, Top-Entry Ball Valve

Cameron's TBV series 9900 fire-tested, top-entry ball valves complement Cameron's portfolio of split-body and end-entry valve products. This top-entry valve is designed specifically for users who prefer welded connections and who do not want to tamper with the valve body integrity during repair or installation, or those concerned with possible flange connection leak paths during operation.



FIRE TESTING

Any hydrocarbon leak (e.g., diesel, LNG, etc.) that can find an ignition source can cause a fire. As a valve manufacturer, it is our duty to keep the pressure inside a valve to help safe-guard the general public, personnel, and the environment. Fire testing helps achieve this by verifying that a valve will perform in case of a catastrophic event such as a fire. Cameron's TBV series 9900 top-entry ball valves are fire-tested in accordance with API 607, 6th ed. standards.

This testing makes TBV series 9900 ball valves ideal for a variety of applications, including:

- Gas processing plants (LNG)
- Petrochemical plants
- Refineries
- Aerospace and fuel loading
- Production, transport, and storage of liquefied industrial gases

Equipment confirmed to be in calibration to NIST standards?	✓
Burn and Cool Down Test: Were the valve leakages below the allowable rate?	✓
Post-Burn Seat Test: Was the leakage below the allowable rate?	✓
Operational Test: Was the leakage below the allowable rate?	✓
Does the valve pass or fail the test standard?	Pass



FEATURES

- Investment castings
- Fire-safe approved (with fire-safe seats – indicate “FS” modifier when ordering)
- Cryogenic and non-cryogenic versions available
- Bonnet extensions for cold service
- Welded connections (flanged connections available)
- Clean room assembly and sealed in polyethylene bags
- Cavity pressure relief for cryogenic configuration
- Repair via the top of the valve while body integrity is maintained
- Assembled and tested in Millbury, MA, USA

CERTIFICATIONS AND DESIGN STANDARDS

- Qualification Testing
 1. Initial shell and seat leakage test
 2. Ambient testing – 1500 cycles ranging from no pressure to 1440 psig
 3. Cryogenic testing per BS 6364
 4. Repeat ambient testing – 1550 cycles
 5. Low pressure and high pressure testing at ambient and cryo testing
- Fire-tested to API 607, 6th ed.
- 316SS blowout-proof stem according to API 608 specifications
- Leak-tested per API 598
- Design standards: ASME B31.3, B16.34, B16.25, B16.11

Markets and Applications						
Industrial Fuels	Transportation Fuels	Petrochemical Feedstocks	Natural Gas Liquids (NGLs)	Liquefied Natural Gas (LNG)	Compressed Natural Gas (CNG)	Gas to Liquids

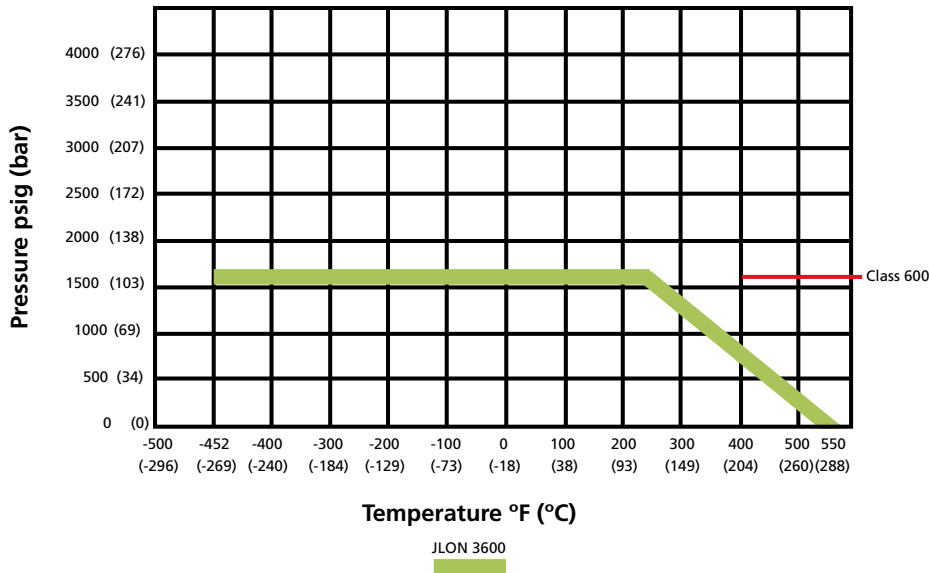
Details and Seat Rating

	Flanged Configuration	Screwed End, Butt Weld, Threaded Configurations
Size Range	1/2" to 2" (15 mm to 50 mm)	
Pressure Classes	Class 150 – 600	Class 600
Standard Cavity Pressure Relief Method	Upstream cavity pressure relief via vented ball for cryogenic valves	
Ball/Seat Configuration	Floating ball, soft-seat configuration Fire-tested	
Body Seal Design	Spiral wound gasket with graphite filler	
Casting Type	Investment cast	
Unique Features	Unique metal seat carrier design for fire-safe valve	
Port Configuration	Full port	
Temperature Range	-425° F to 550° F (-254° C to 288° C)	
Stem Seal Belleville Washer	17-7 pH Stainless Steel (SST)	



Welded Configuration

CRYO SEAT RATING CHART



Flanged Configuration

How to Order

SERIES 9900

Size	Porting	Series	End Connection	Body/Bonnet Material	Ball/Trim Material
05 = 1/2"	F = Full Port	99 = Top Entry	150 = ASME 150# Flange RF	36 = 316 SS	36 = 316 SS (with INCONEL® X750 bellville springs for live loading)
07 = 3/4"		9C = Cryo Top Entry	300 = ASME 300# Flange RF	LC = LCB Carbon Steel	
10 = 1"			600 = ASME 600# Flange RF		
15 = 1-1/2"			FSE = NPT Female Thread		
20 = 2"			FSW = Female Socket Weld	B80 = Butt Weld Sched 80	

Stem Material	Seat Material	Stem Seal Material	Bolting	Modifiers
X9 = Nitronic 50 HS	9 = JLON 3600	H = Graphite	T = ASTM A193 GR B8M CL2 ASTM A194 GR 8M (Non-NACE, STD)	VB = Vented Ball*
		T = Virgin TFE (not fire-safe)	5 = MONEL K500 (for NACE approval req'd)	FS = Fire-Safe
			H = INCONEL 718 (also NACE approved)	LH = Locking Handle
				OH = Oval Handle
				OX = Oxygen Cleaned*
				AP = Actuator Prepped
				AI = Actuator Installed

*Standard feature for Cryo "9C" valves

Example: 10F 9C FSE 3636X9 9 T 5LH; 1" full port cryogenic top-entry, with NPT female threaded end connections, 316 SS body/bonnet material, 316 SS ball, Nitronic 50 HS stem material, JLON 3600 seat material, Virgin TFE stem seal material, MONEL K500 bolting and a locking handle.



Cryogenic Top-Entry Flanged



Cryogenic Top-Entry Welded End



Non-Extended Top-Entry Welded End



Non-Extended Top-Entry Flanged

3250 Briarpark Drive, Suite 300
Houston, TX 77042
USA
Tel 1 281 499 8511

For more information about TBV valves:

TBV@c-a-m.com
www.c-a-m.com/TBV



HSE Policy Statement

At Cameron, we are committed ethically, financially and personally to a working environment where no one gets hurt and nothing gets harmed.