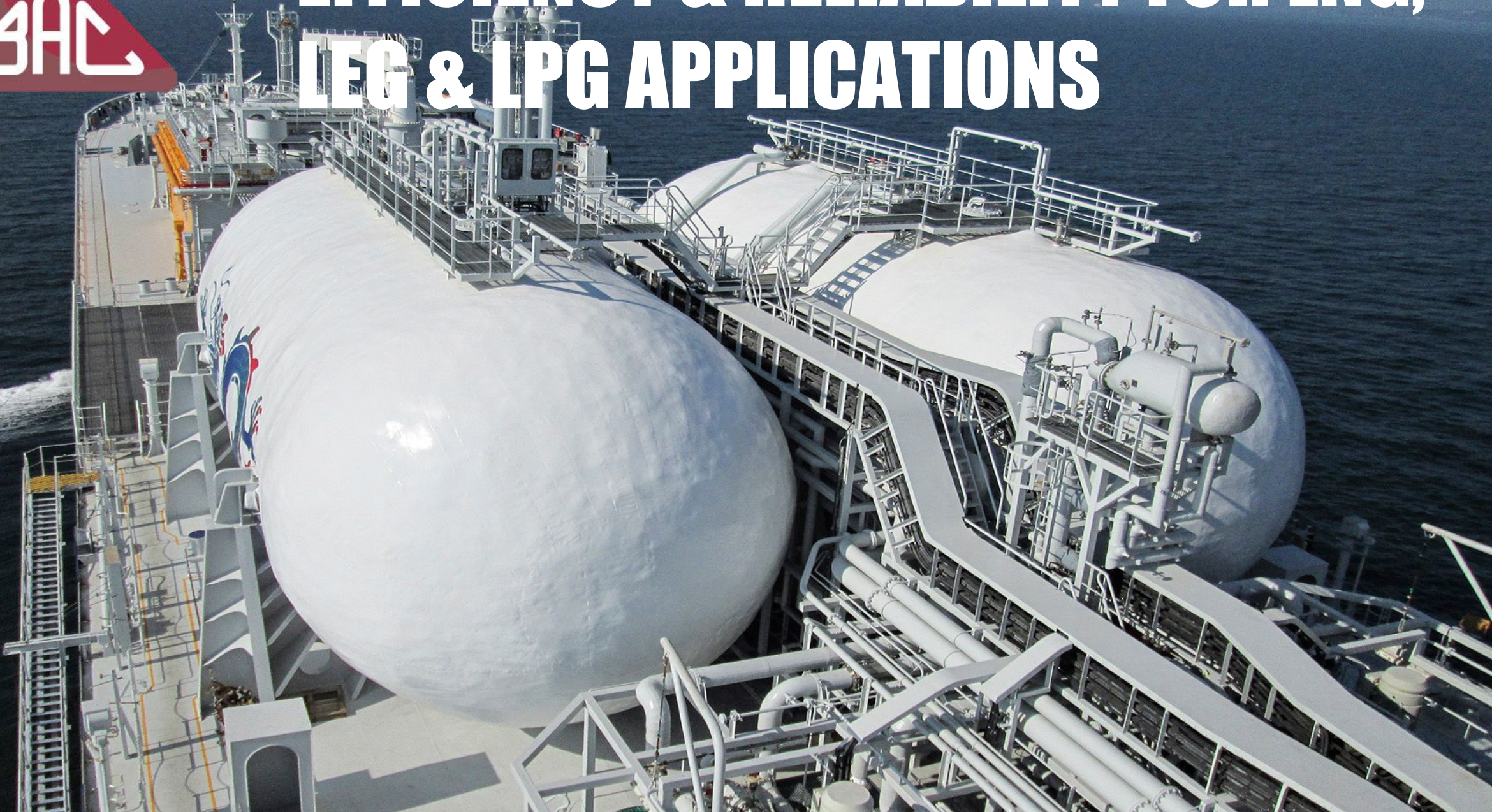




EFFICIENCY & RELIABILITY FOR LNG, LEG & LPG APPLICATIONS





BAC VALVES
LNG, LEG & LPG

Who We Are

Family owned company founded in 1958, keeping same culture and values we design, manufacture and market high-performance ball and butterfly valves, intended for the service of the chemical, petrochemical, gas and process plants.

Over 30 years delivering to the cryogenic market with a team of 95+ Engineers & technicians.

ISO 9001

ISO 14001

ISO 45001

Integrated Management System (IMS)





BAC VALVES
LNG, LEG & LPG

LNG & LPG

LNG Specifications

Cryogenic -162°C

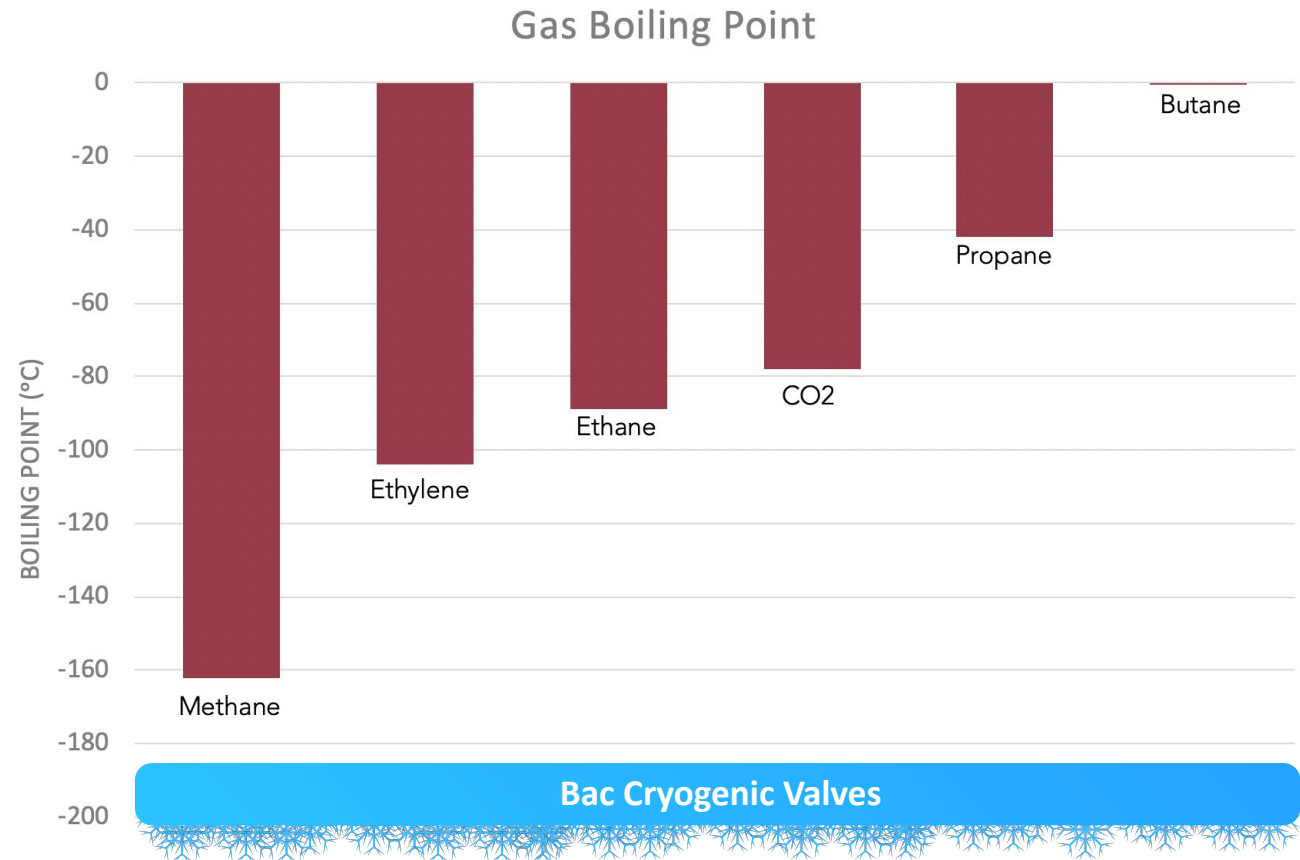
LEG Specifications

Cryogenic -110°C

LPG Specifications

Cryogenic -55°C

Class pressures 150# - 300# - 600#
900# - 1500#

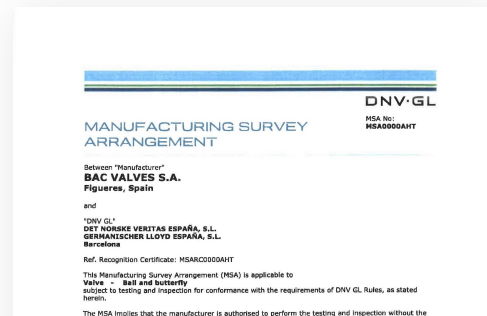




BAC VALVES
LNG, LEG & LPG

Marine Approvals

Company quality assurance and
Type Approval certifications

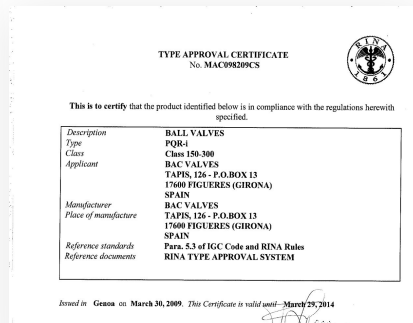


DNV-GL MSA



ABS PQA

Type Approvals





BAC VALVES
LNG, LEG & LPG

Continuous research based on our solid know-how and experience.

State of the art internal Research & Development capabilities to test and evaluate valve performance.

Cooperation with end users, engineerings and suppliers.



PIA
GAS & OIL

The logo icon for Saint-Gobain, featuring a stylized bar chart with three bars of increasing height in blue, red, and orange.

SAINT-GOBAIN



AC-INOX
OFFSHORE & ONSHORE





BAC VALVES
LNG, LEG & LPG

Ball Valves

Floating Ball Valves

Side entry FB - End entry PQR-i
Top entry (TEV-f)

Trunnion Ball Valves

Side entry (APT, TSB)
Top entry (TEV)

Trunnion C-Shape Ball Valves(In development)

Side entry (TSB)
Top entry (TEV)



BAC VALVES
LNG, LEG & LPG

Ball Valves

Floating Ball Valves

Side entry FB - End entry PQR-i
Top entry (TEV-f)

Trunnion Ball Valves

Side entry (APT, TSB)
Top entry (TEV)

Trunnion C-Shape Ball Valves(In development)

Side entry (TSB)
Top entry (TEV)



BAC VALVES
LNG, LEG & LPG

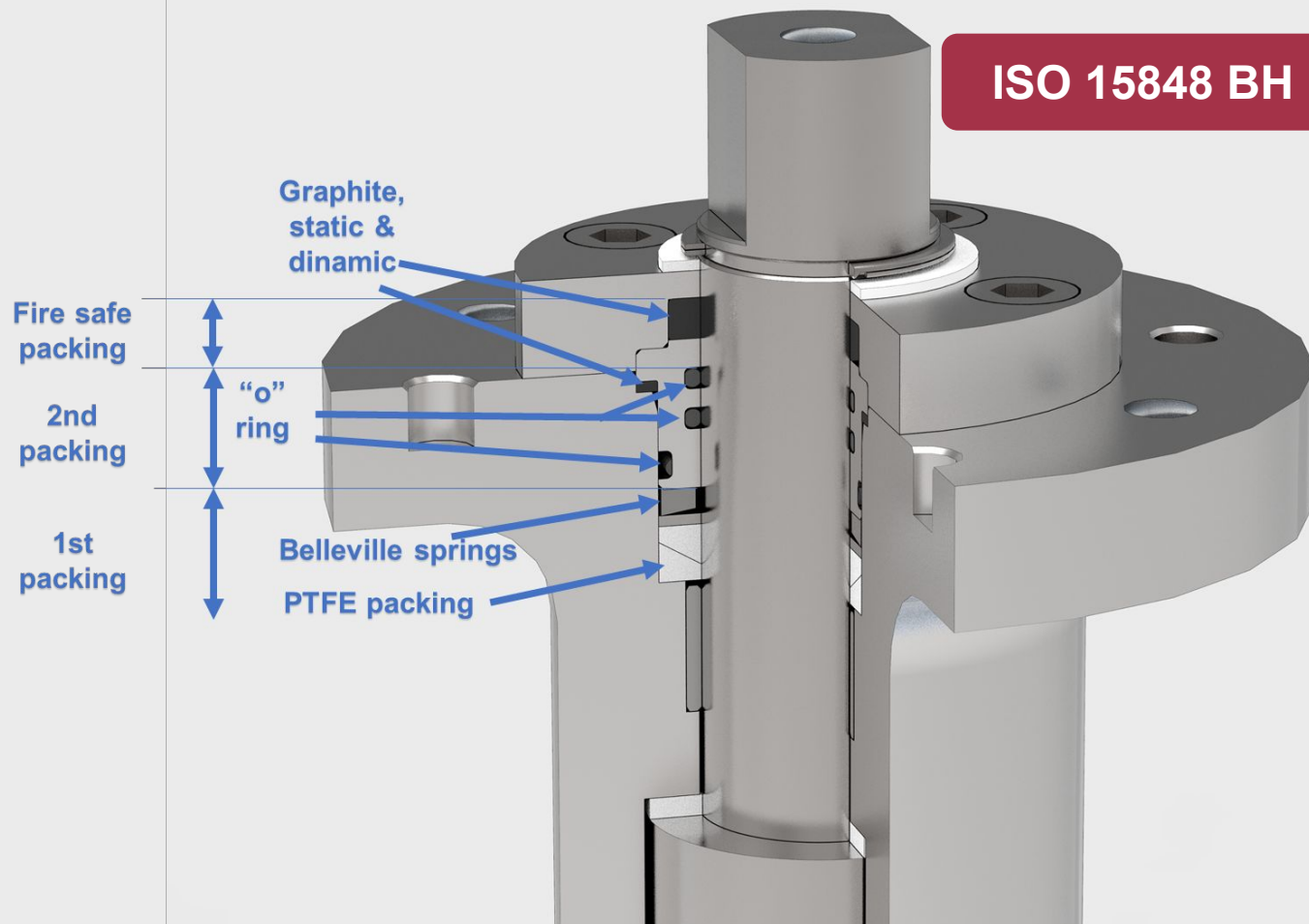
FUGITIVE EMISSIONS CERTIFIED

SELF ADJUSTED PACKING

1st PTFE conical packing spring loaded, fire barrier against chemical products, very high corrosion resistance and long lasting sealing. This barrier alone meets the requirement of ISO 15848 BH.

2nd "O" ring FKM with PTFE coating improve the life of sealing on high cycling valves when gas is involved.

3rd Graphite gaskets independent from the other 2 for the fire safe cases.





Floating

- Side entry
- Top entry

Trunnion

- Side entry
- Top entry

Trunnion C

- Side entry
- Top entry

Floating Ball Valves

SIDE ENTRY - END ENTRY

- Unidirectional:

Class 150 to 300	1/2" – 8"
Class 600 to 2500	1/2" - 1 1/2"

SIDE ENTRY

- Bidirectional Single Seat:

Class 150 to 300	1" – 3"
Class 150	4"

TOP ENTRY

- Unidirectional with Parallel seats:

Class 150 to 300	1/2" – 8" x 6"
Class 600 to 900	1/2" – 3" x 2"

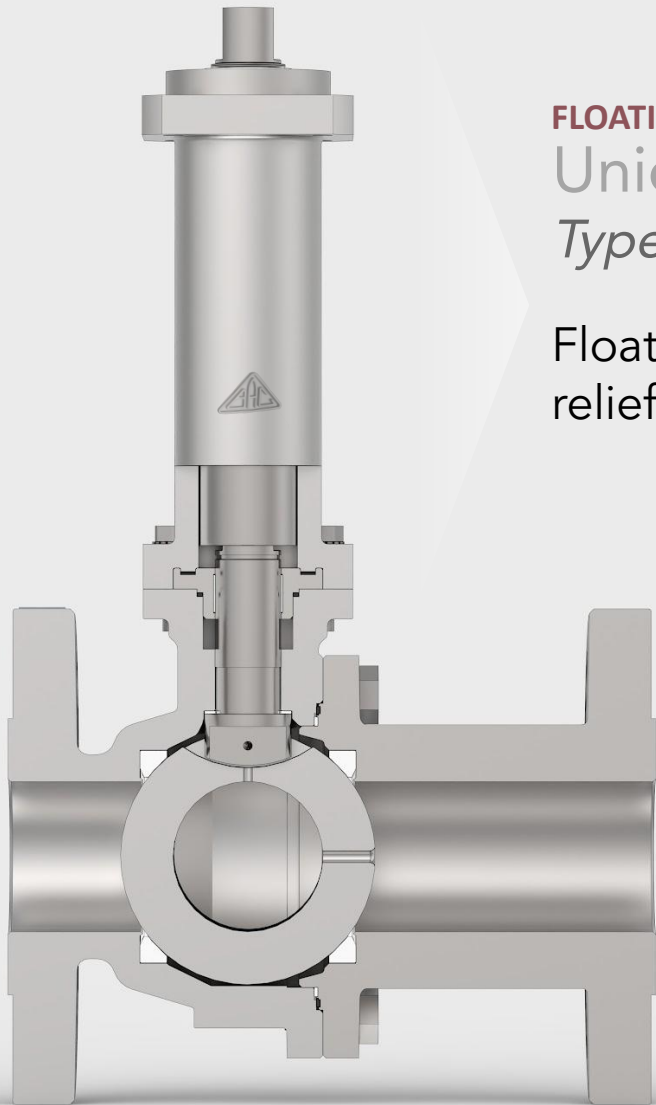


BAC VALVES
LNG, LEG & LPG

PATENTED

FLOATING SIDE ENTRY
Unidirectional
Type FB

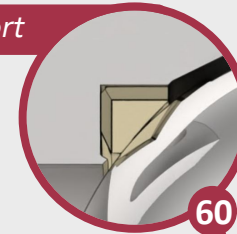
Floating ball valve with cavity relief hole in the ball.



FLOATING SIDE ENTRY
Bidirectional
Type FB-SSB

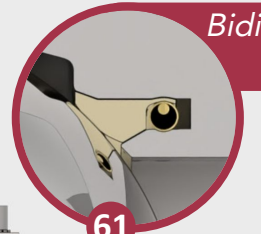
Floating ball valve with Single Seat Bidirectional (61) and vented supported ring (60), cavity free valve.

Vented Support

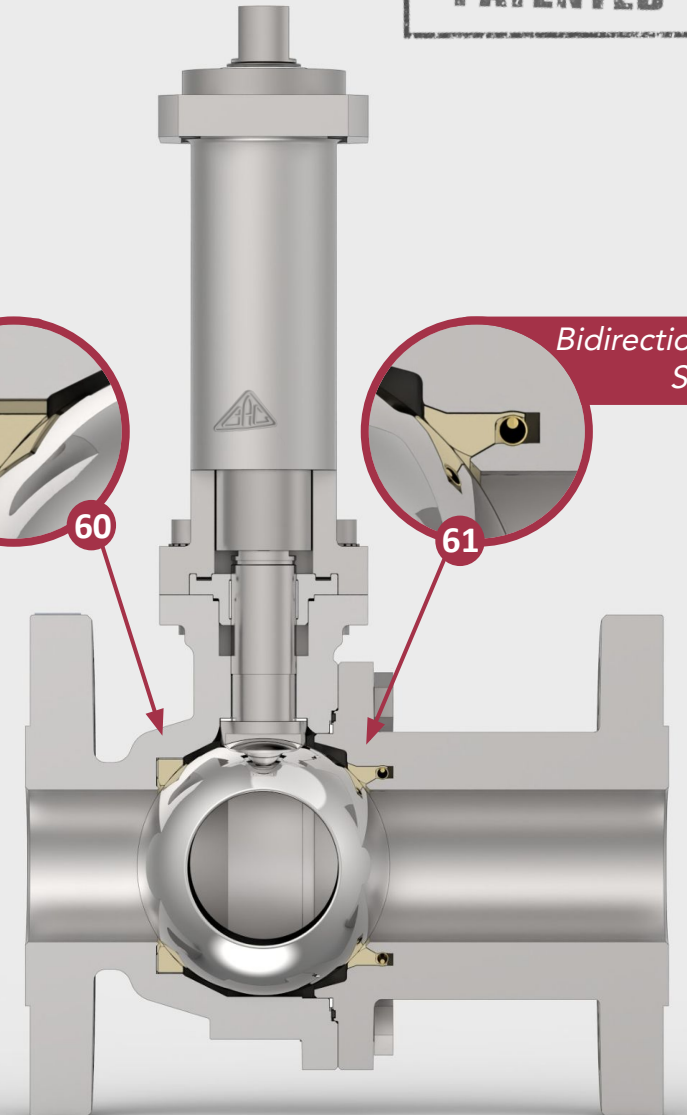


60

Bidirectional Seat



61





BAC VALVES
LNG, LEG & LPG

FLOATING TOP ENTRY

Unidirectional

Type TEV-f

Top Entry Floating Ball Valve with relief hole in the ball and parallel seats, better performance than angle assembled designs.

Unique Patented Assembly system.





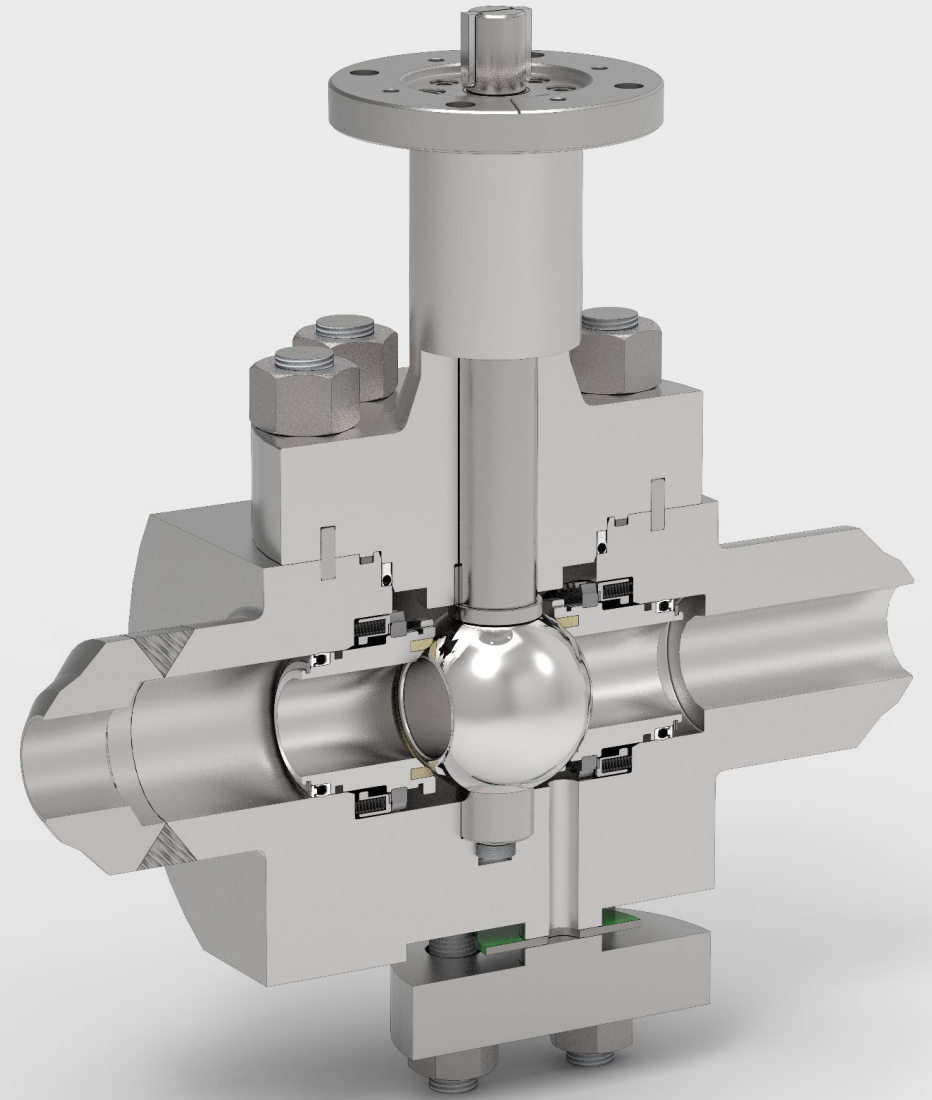
BAC VALVES
LNG, LEG & LPG

Applications

Fuel Gas Systems

Either from the medium pressure to highest pressure gas 430 barg systems our valves give the reliability needed to Fuel the engines.

Valves type tested more than 1000 cycles.





BAC VALVES
LNG, LEG & LPG

Floating

Side entry
Top entry

Trunnion

Side entry
Top entry

Trunnion C

Side entry
Top entry

Trunnion Ball Valves

SIDE ENTRY BIDIRECTIONAL

- Type APT / APT-R*: Class 150 to 2500 1 ½" - 6"x4"
- Type TSB / TSB-R*: Class 150 to 1500 6" - 24"

TOP ENTRY BIDIRECTIONAL

- Type TEV / TEV-R*: Class 150 to 600 2" - 16"x12"
- Type TEV / TEV-R*: Class 1500 to 2500 1 ½" - 3"x2"

*Reduced bore



BAC VALVES
LNG, LEG & LPG

Floating

Side entry
Top entry

Trunnion

Side entry
Top entry

Trunnion C

Side entry
Top entry

Trunnion Ball Valves

Characteristics

Trunnion mounted construction

Double block&bleed (DBB)

Cryoseat® Patented design

Cryogenic configurations SPE-SPE or SPE-DPE

Cavity relief

Anti-blowout stem

Extended bonnet

Anti-static

Fire safe design

Low torque



BAC VALVES
LNG, LEG & LPG

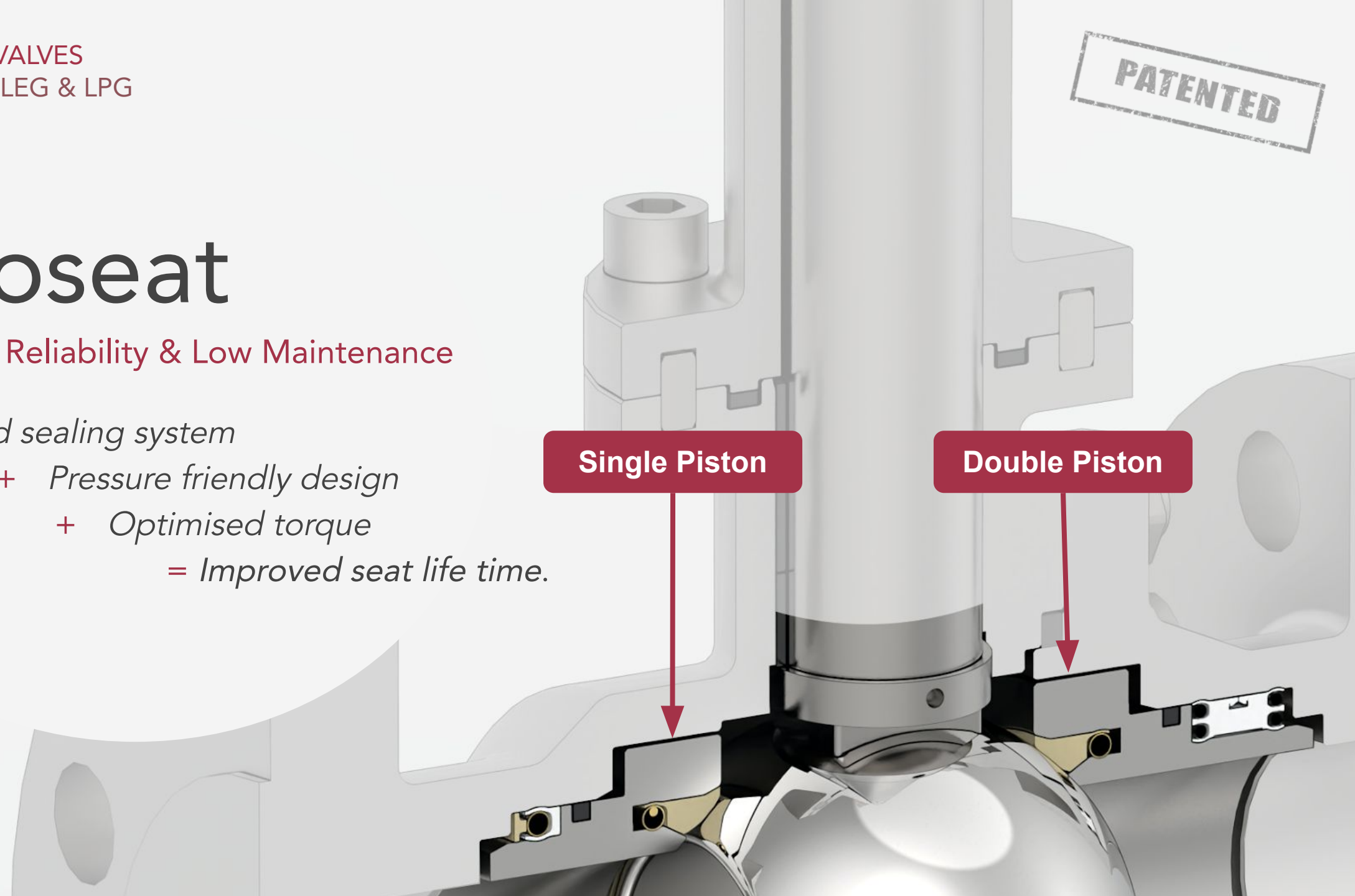
Cryoseat

Tightness, Reliability & Low Maintenance

Improved sealing system

- + *Pressure friendly design*
- + *Optimised torque*
- = *Improved seat life time.*

PATENTED



Single Piston

Double Piston



BAC VALVES
LNG, LEG & LPG

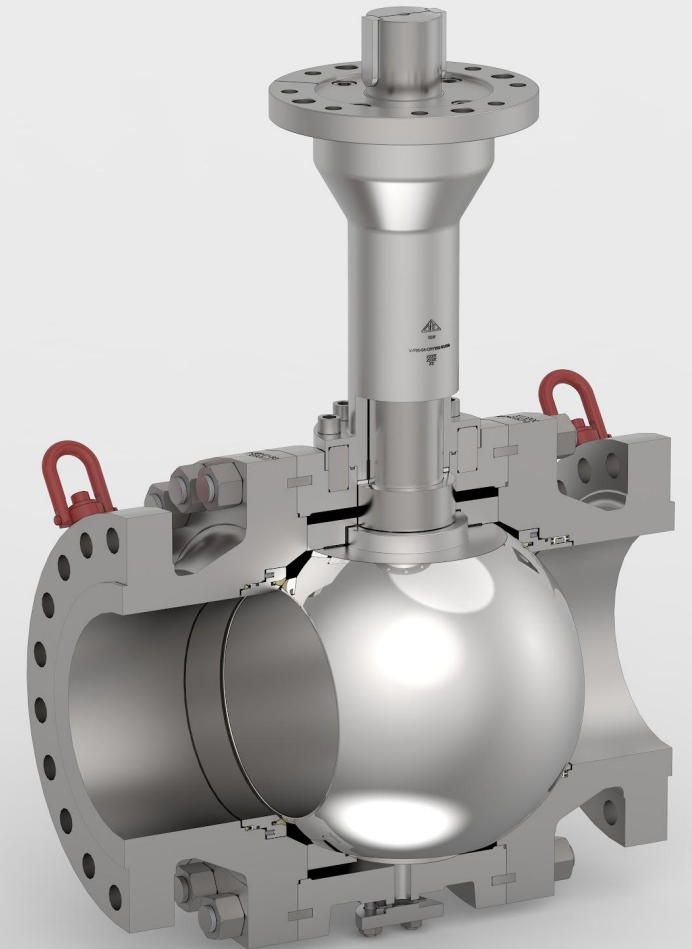


TRUNNION SIDE ENTRY

*Type APT, APT-R**

Trunnion mounted ball through stems, bidirectional,

Equipped with Cryoseat Technology can be supplied SPE-SPE & SPE-DPE.



TRUNNION SIDE ENTRY

*Type TSB, TSB-R**

Trunnion mounted ball through plates.

*Reduced bore

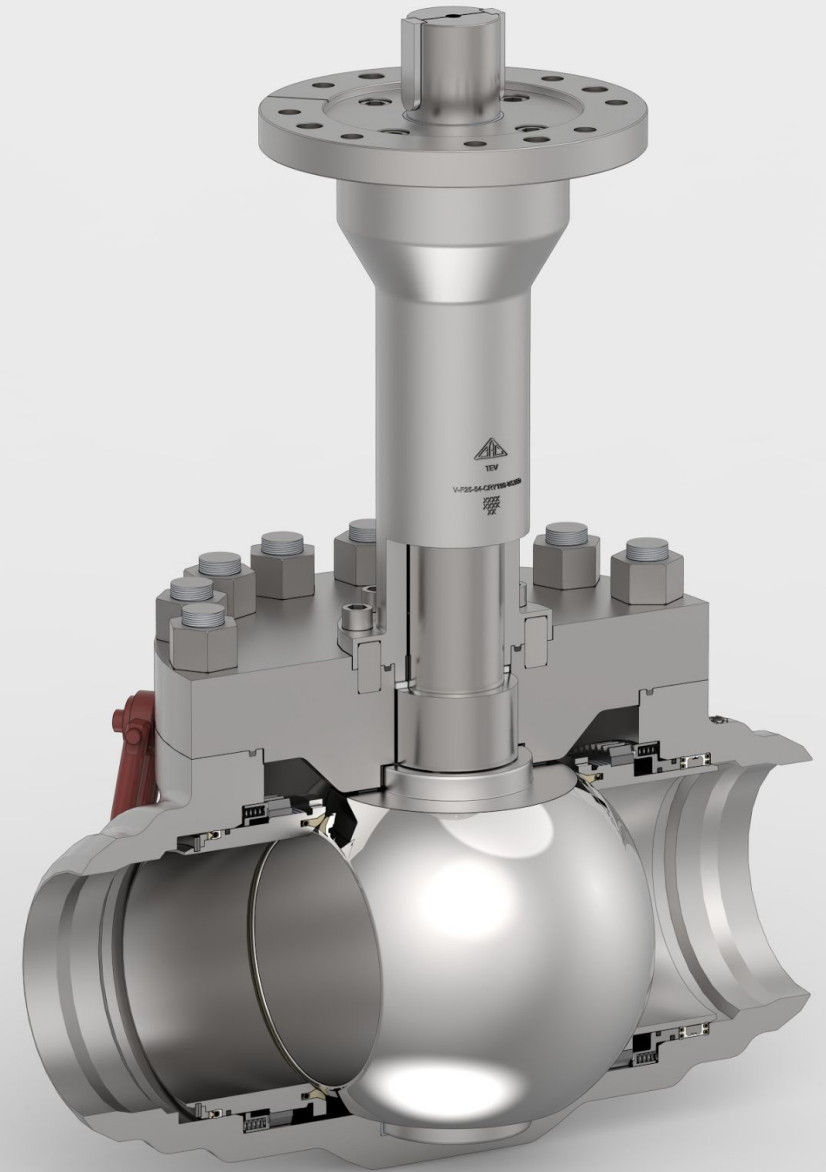


BAC VALVES
LNG, LEG & LPG

TRUNNION TOP ENTRY

*Type TEV, TEV-R**

Equiped with Cryoseat Technology
can be supplied SPE-SPE & SPE-DPE.



*Reduced bore



BAC VALVES
LNG, LEG & LPG

Trunnion C-Shape SSB Ball Valves

Floating

Side entry
Top entry

Trunnion

Side entry
Top entry

Trunnion C

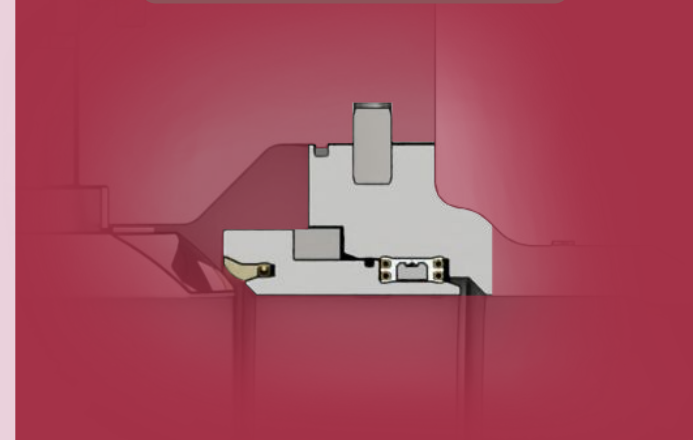
Side entry
Top entry

Trunnion mounted construction
C-Shape Ball valve (centered or eccentric)
SSB (Single seat Bidirectional)
Cryoseat® design Patent and/or Torque seated
Anti-blowout stem
Extended bonnet
Anti-static
Fire safe design



BAC VALVES
LNG, LEG & LPG

Unique Valve Concept



Cryoseat

- C-SHAPE BALL
- TRI-ECCENTRIC DESIGN
- CRYOSEAT SEAT DESIGN
- SINGLE SEAT BI-DIRECTIONAL
- LOW TORQUE

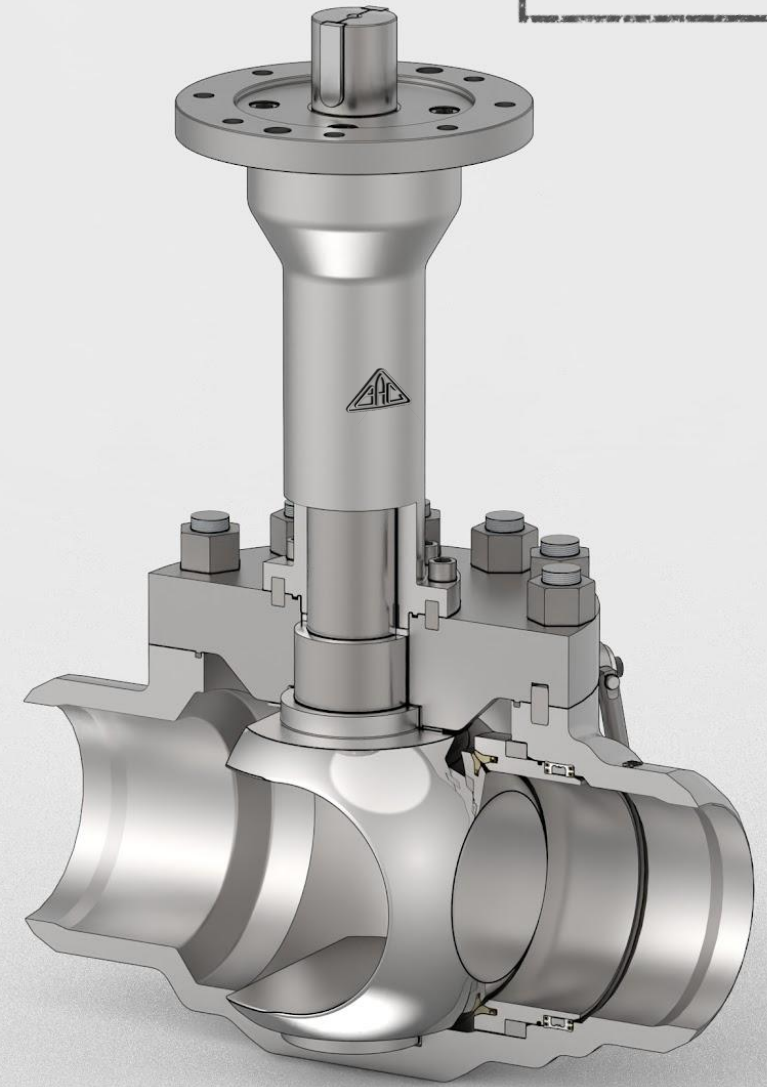


BAC VALVES
LNG, LEG & LPG

One body can deliver the
different solutions

Cryoseat

PATENTED





BAC VALVES
LNG, LEG & LPG

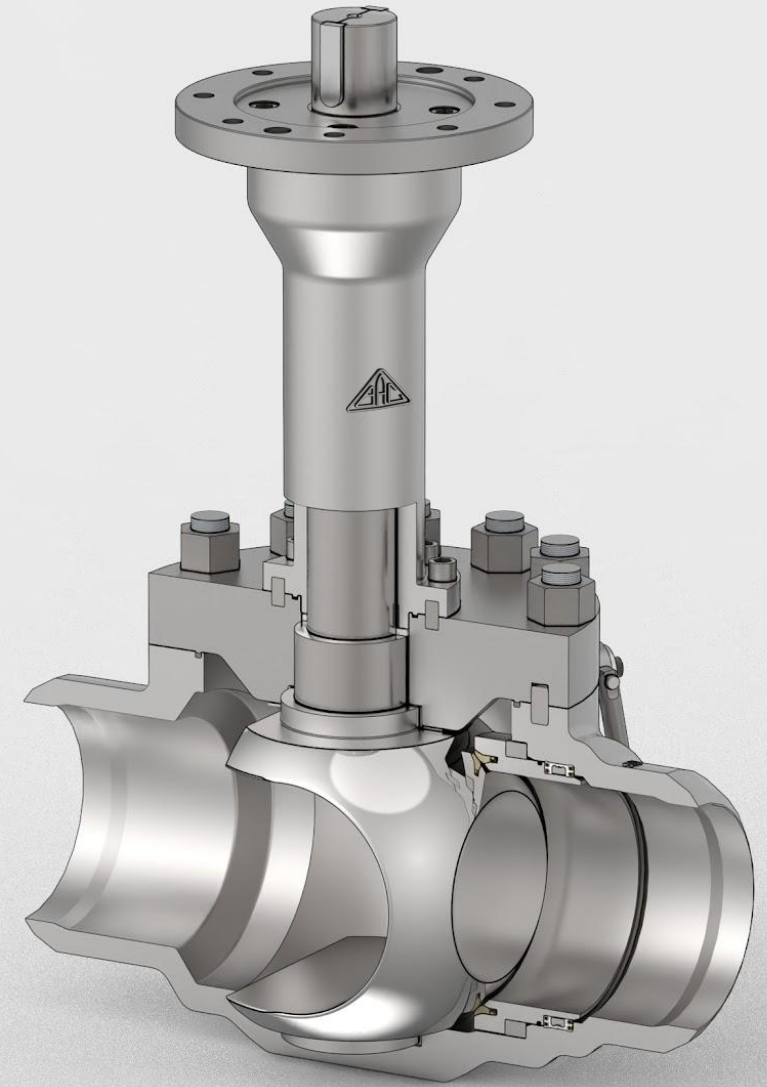
1 Reliability

The Cryoseat seat offers a very reliable sealing long lasting and low torque.

Reduced torque, smaller actuator size, less overall cost.
It reduces the maintenance cost of the valve.

2 Reduced torque

3 No pressure drops





BAC VALVES
LNG, LEG & LPG

1 Reliability

2 Reduced torque

The Cryoseat uses the same pressure to keep the tightness of the sealing system, which makes the valve torque more proportional to the working pressure with much lower torques than competition.

Which improves the lifecycle of the valve as the ball seat friction is reduced.

3 No pressure drops

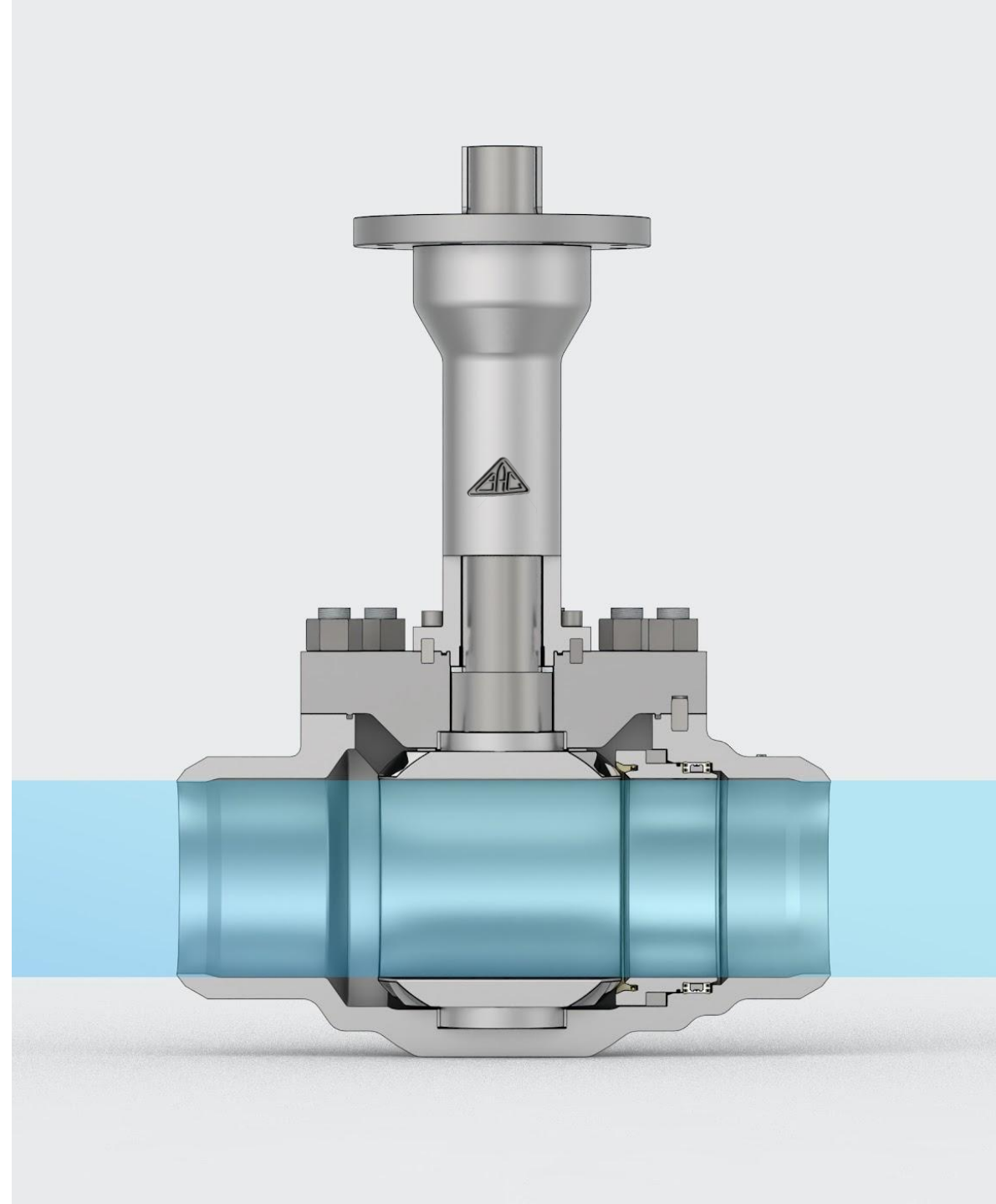




BAC VALVES
LNG, LEG & LPG

- 1 Reliability
- 2 Reduced torque
- 3 No pressure drops

The Eccentric C-shape ball has two basic advantages, which are cavity free and full bore passage, that improve flow rate (Cv) and basically low pressure drops along the valve.





BAC VALVES
LNG, LEG & LPG

Features Summary

- Tightness cryogenic sealing in both directions, bidirectional valve one seat carrier cavity free.
- Low operational and seal torque.
- Long service life, by improved performance design.
- Pressure friendly design.
- Possibility of torque seated design as extra feature.
- Possibility of eccentricity design for sealing higher cycle life.

PATENTED





Competitive Advantage

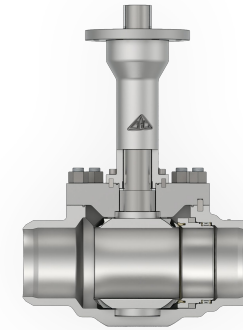
	Butterfly Top Entry	TEV C-ball Eccentric Full Equip
Performance and reliability	Average Higher torque, tightness performance	High Ball valve reliability with low torque
Maintenance	Complex Limited parts accessible and with restrictions	Easy Easy to retrofit, all parts are accessible
Flow characteristics (Cv, flow interruption)	Poor Due to the disc thickness	Good Eccentric, Cavity free & C-ball design



Butterfly Top Entry

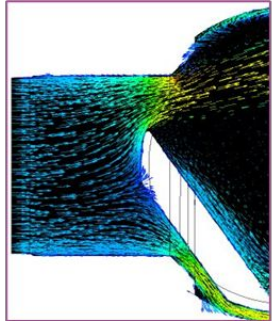


TEV C-ball Eccentric Full Equip



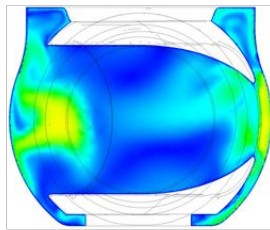
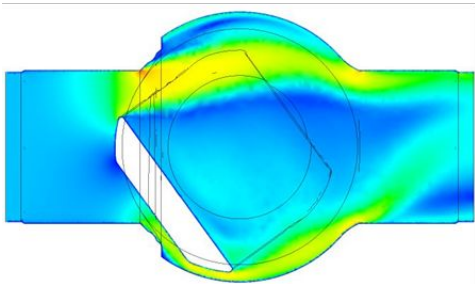


Improved flow characteristics

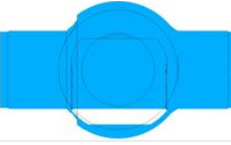
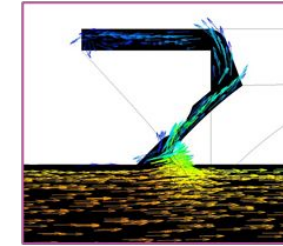
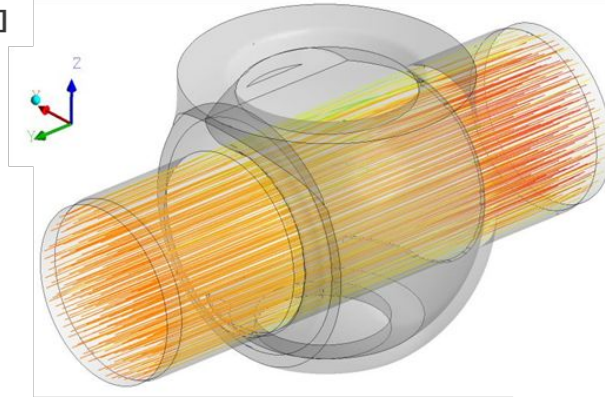
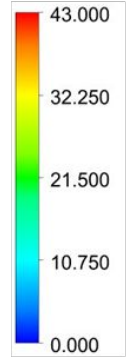


$\Delta P = 1$ [bar]
 $G_s = 1$
 $Q = 200$ [m³/h]

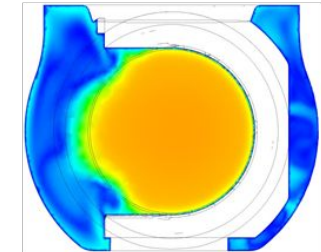
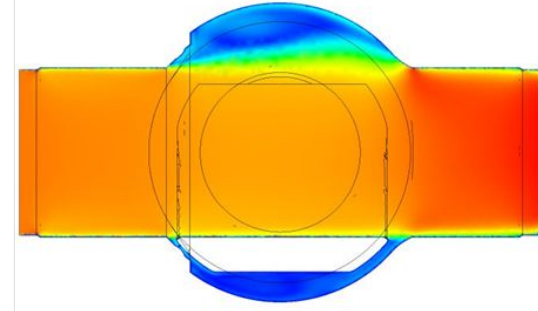
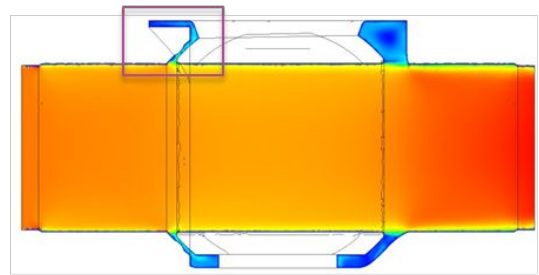
$K_v = 200$ [m³·h⁻¹·bar^{-0.5}]
 $C_v = 231$ [gpm·psi^{-0.5}]



Velocitat [m/s]

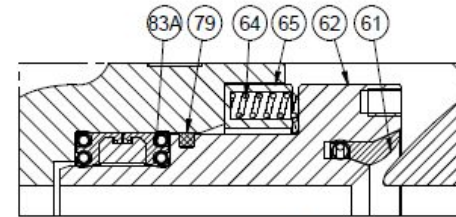
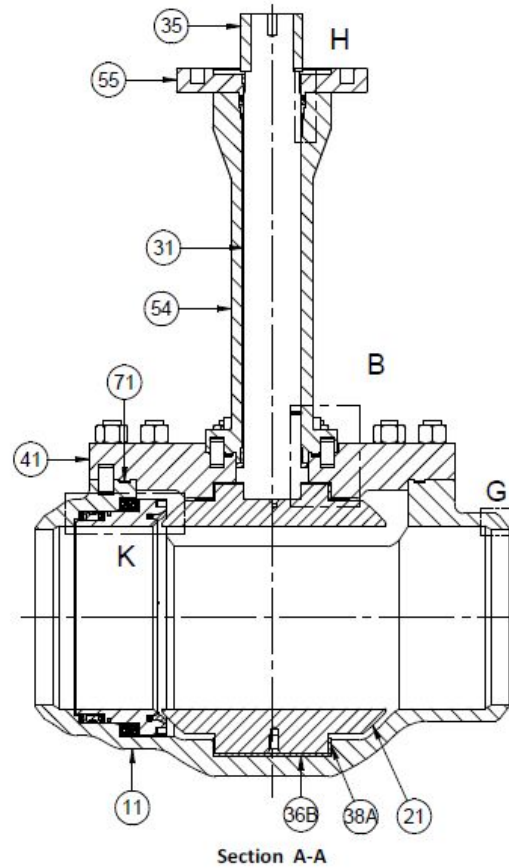


$\Delta P = 1$ [bar]
 $G_s = 1$
 $Q = 2366$ [m³/h]
 $K_v = 2366$ [m³·h⁻¹·bar^{-0.5}]
 $C_v = 2735$ [gpm·psi^{-0.5}]

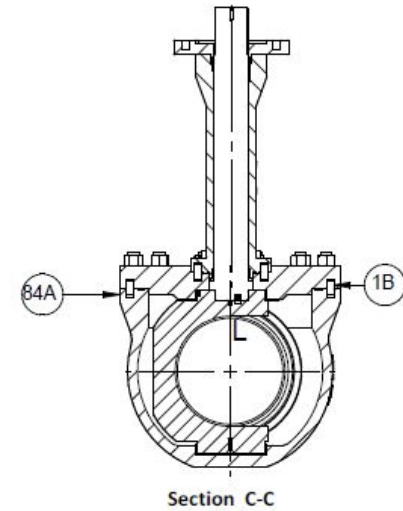




Adjusted design



NPS (in/mm)	CLASS	ØD	L	H	ISO 5211	WEIGHT
		mm				Kg
6"	150	150	457	568	F14-X48	118
	300	150	457	568	F14-X48	123
8"	150	201	521	603	F16-X60	198
	300	201	521	603	F16-X60	208
10"	150	252	559	686	F16-X60	310
	300	252	559	705	F25-X72	369
12"	150	303	635	747	F25-X72	504
	300	303	635	769	F30-X98	591





BAC VALVES
LNG, LEG & LPG

Standards & Certifications

Cryogenic Standards

- BS-6364
- ISO-28921
- Industry standards (SHELL)

Fire Safe Valves

- ISO 10497
- API 607
- API 6FA

Type Approvals

- BV
- DNV-GL
- ABS
- LRS
- NKK
- RINA
- KR



Standards & Certifications

Cryogenic Standards

Maximum allowable seat leakage rates		
BS6364 Rev 1984	ISO 28921-2.2015	SHELL 77/200 <i>(Feb 2017)</i>
100 mm ³ /s x DN*	50 mm ³ /s x DN**	33 mm ³ /s x DN***

***BS6364 Rev 1984** : Appendix A, Paragh. A.3.1.4. Page 5

****ISO 28921-2.2015** : Anex A, Paragh. A.7, Table A.1, Page 12

*****SHELL 77/200 (Feb 2017)** Paragh. 3.10.3, Table 5. Page 14



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Thank you