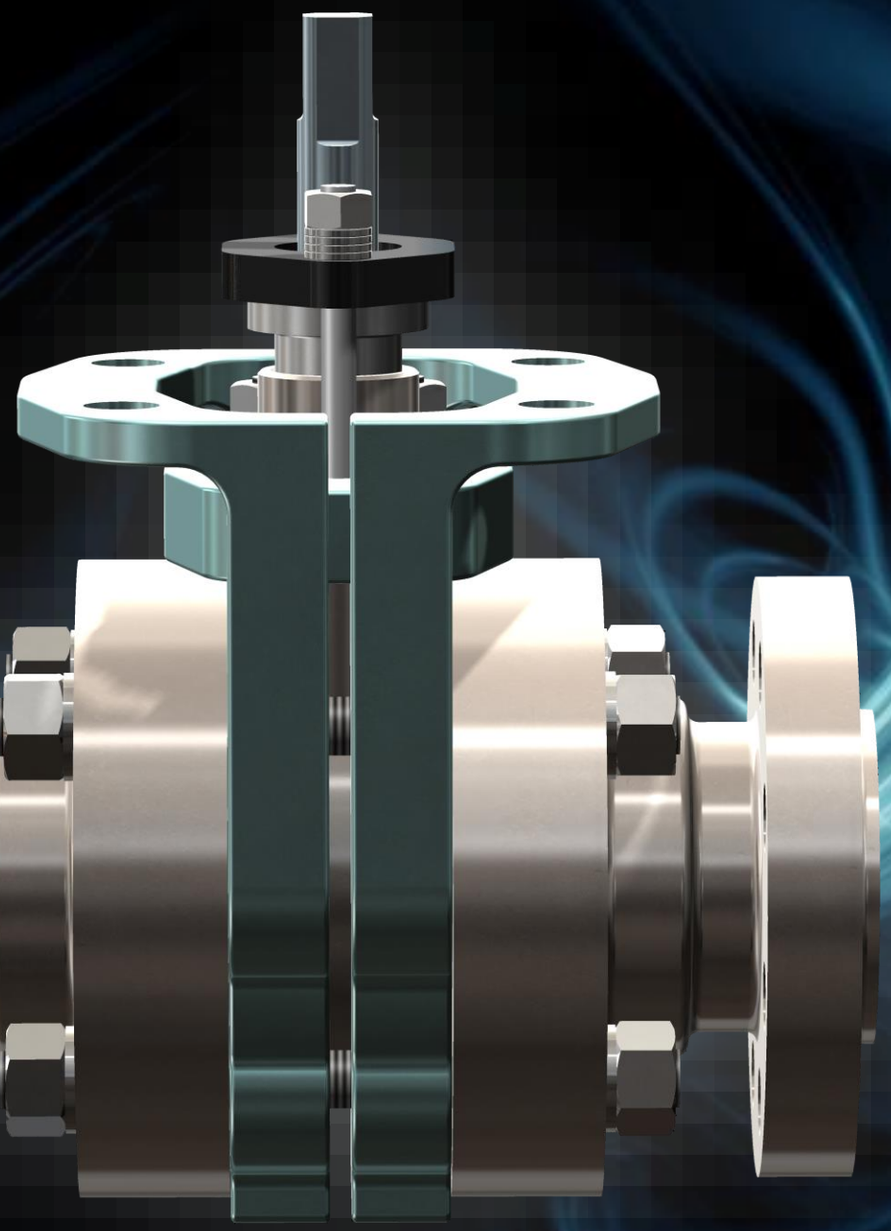
gosco VALVES

FAB VALVE

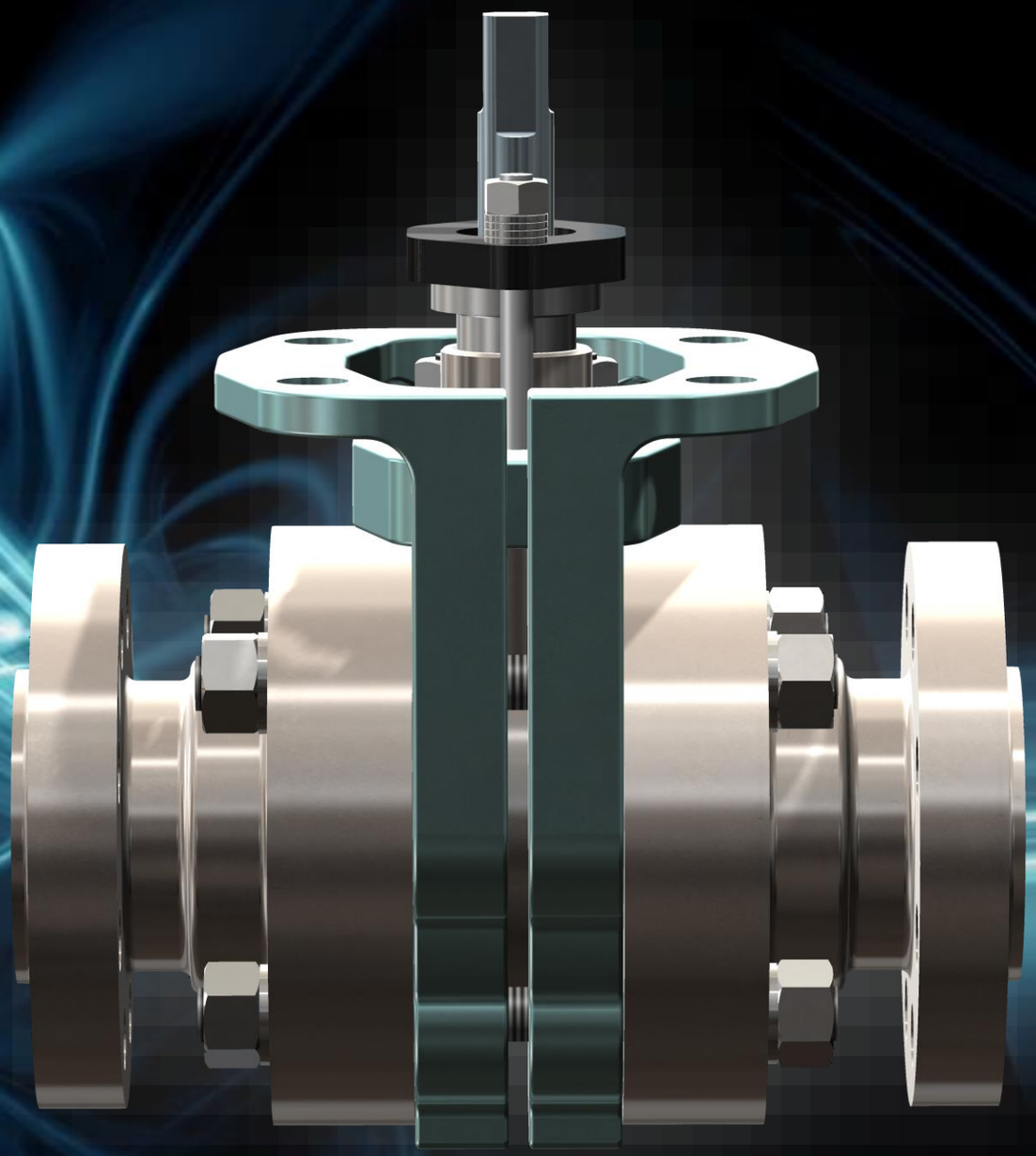


FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES

Fab Valve



NPS ½ to NPS 6 (DN15 to DN150)

-58° F/ -50° C to 1100° F/593° C

Class 150, 300 and 600

Extremely Fast Delivery
(Including Exotic Materials)

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES

what makes this valve different ?

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES

TRADITIONAL BALL VALVE DESIGNS

Use ASME B16.34 Code to calculate the minimum wall thickness requirements

TRADITIONAL BALL VALVE DESIGNS

Use ASME B16.34 Code to calculate the minimum bolting requirements

TRADITIONAL BALL VALVE DESIGNS

Combine the two ASME Code requirements into one common part

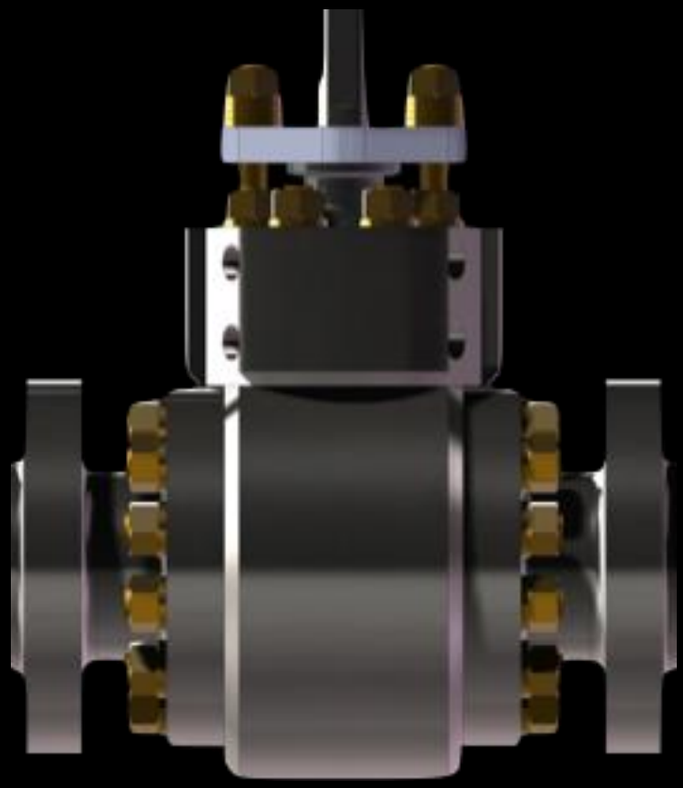
TRADITIONAL BALL VALVE DESIGNS

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES

TRADITIONAL BALL VALVE DESIGNS

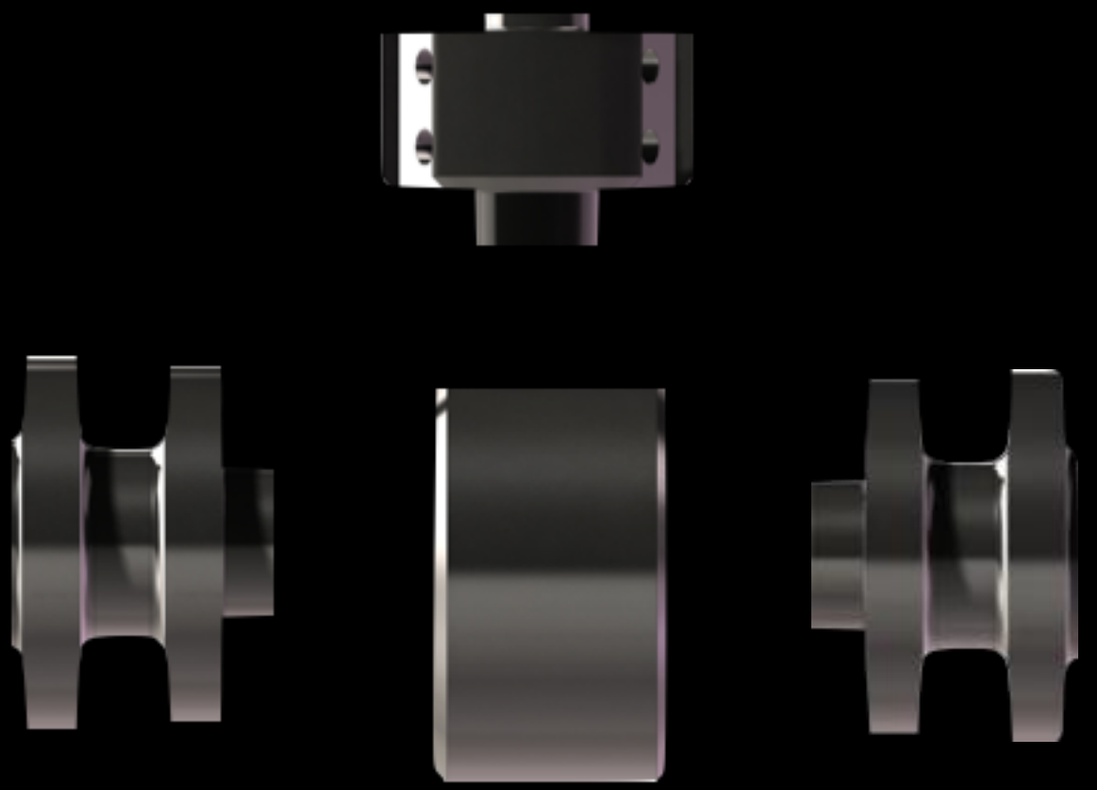


FAB VALVE

FABRICATED METAL SEATED BALL VALVES

GOSCO VALVES

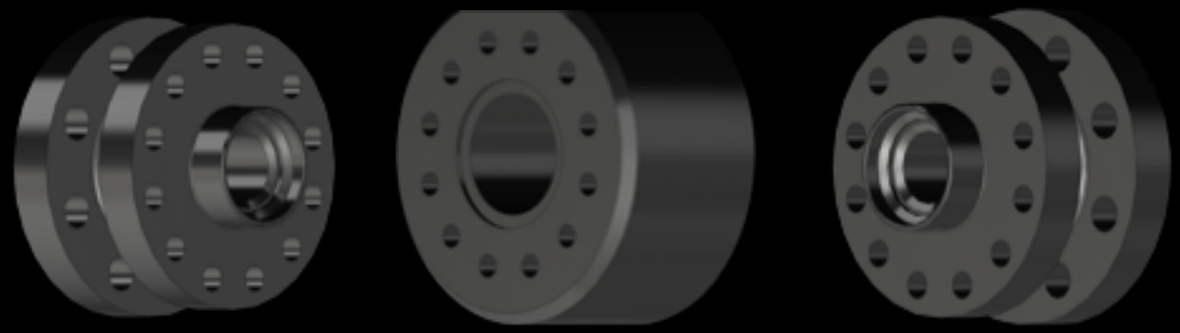
TRADITIONAL BALL VALVE DESIGNS



FAB VALVE

FABRICATED METAL SEATED BALL VALVES

TRADITIONAL BALL VALVE DESIGNS

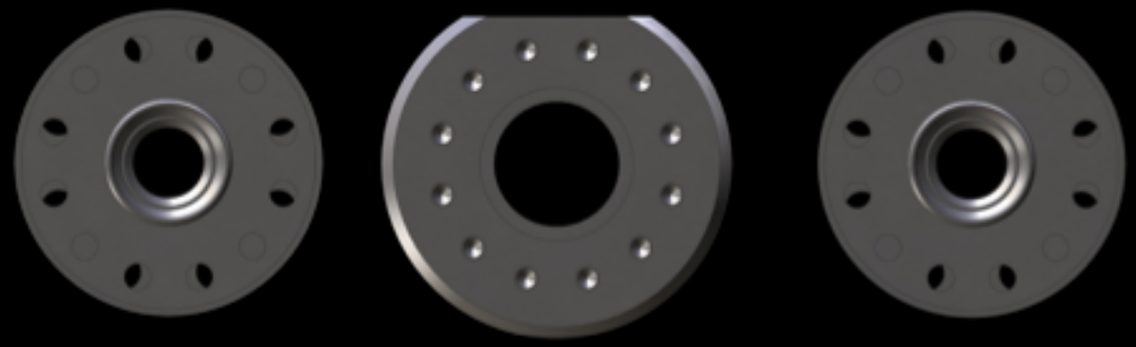


FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES

TRADITIONAL BALL VALVE DESIGNS



FAB VALVE

FABRICATED METAL SEATED BALL VALVES

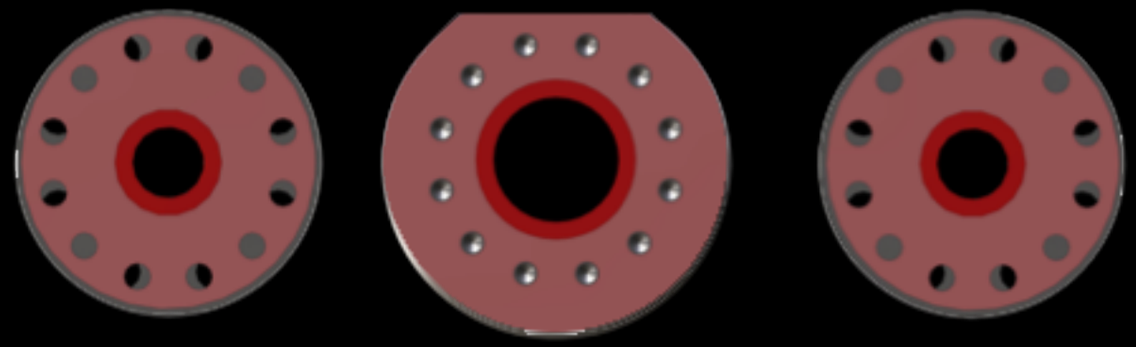
gosco VALVES

TRADITIONAL BALL VALVE DESIGNS

ASME minimum wall thickness requirements (red)

TRADITIONAL BALL VALVE DESIGNS

ASME minimum bolting requirements (pink)



TRADITIONAL BALL VALVE DESIGNS

Only wetted areas need to be corrosion resistant

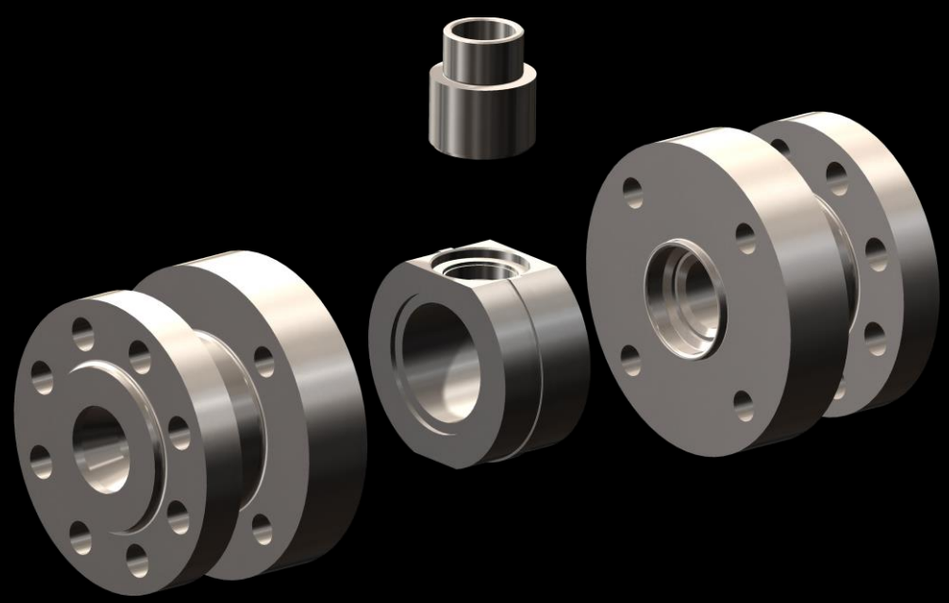
TRADITIONAL BALL VALVE DESIGNS

Therefore, only the wetted areas need to be expensive material

PATENTED DESIGN

Our patented design separates the two requirements of ASME B16.34

CORE COMPONENTS (MADE TO ORDER)

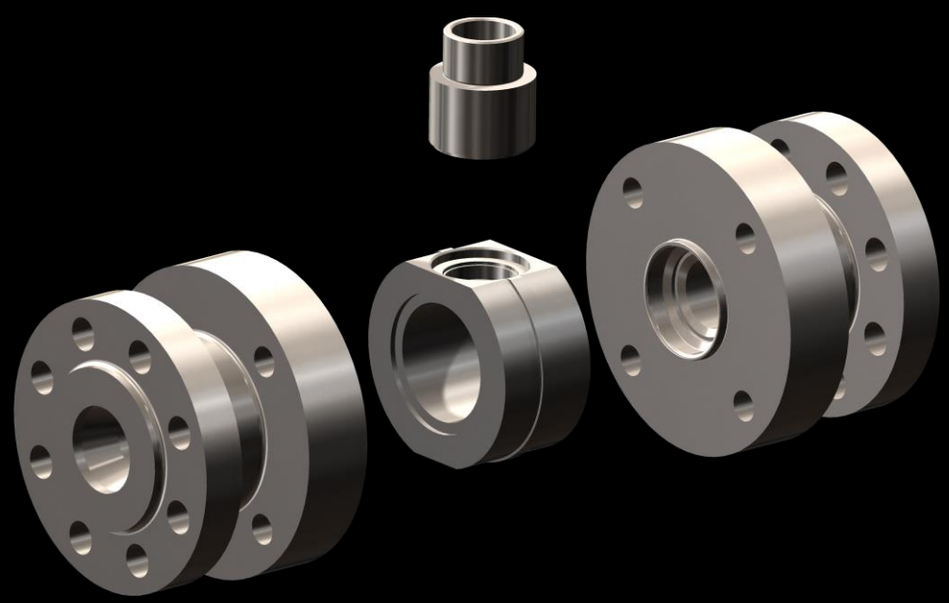


Designed to meet minimum wall thickness requirements

PATENTED DESIGN

Our patented design separates the two requirements of ASME B16.34

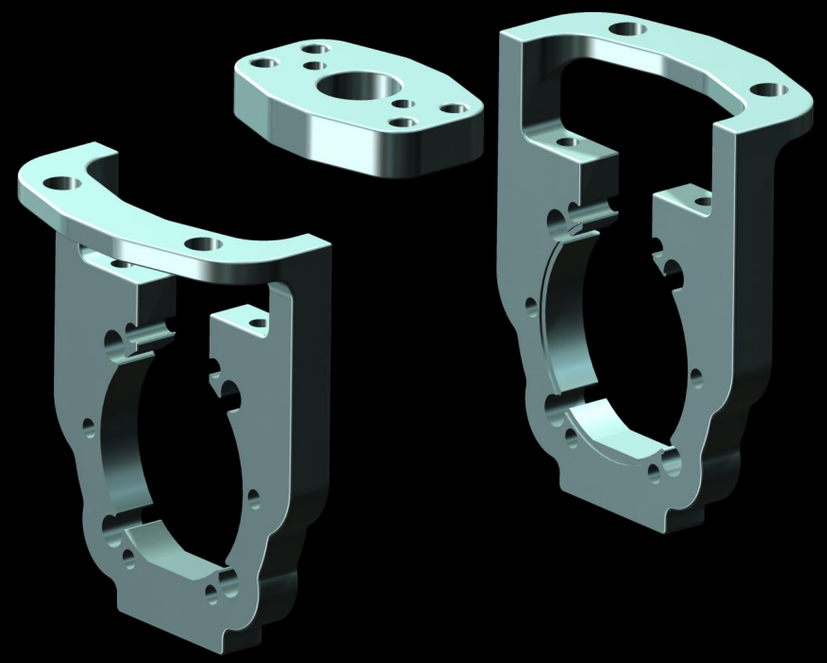
CORE COMPONENTS (MADE TO ORDER)



SUITABLE MATERIAL FOR PROCESS

MORE EXPENSIVE MATERIAL

BOLTING CONTAINMENT (STOCK PARTS)

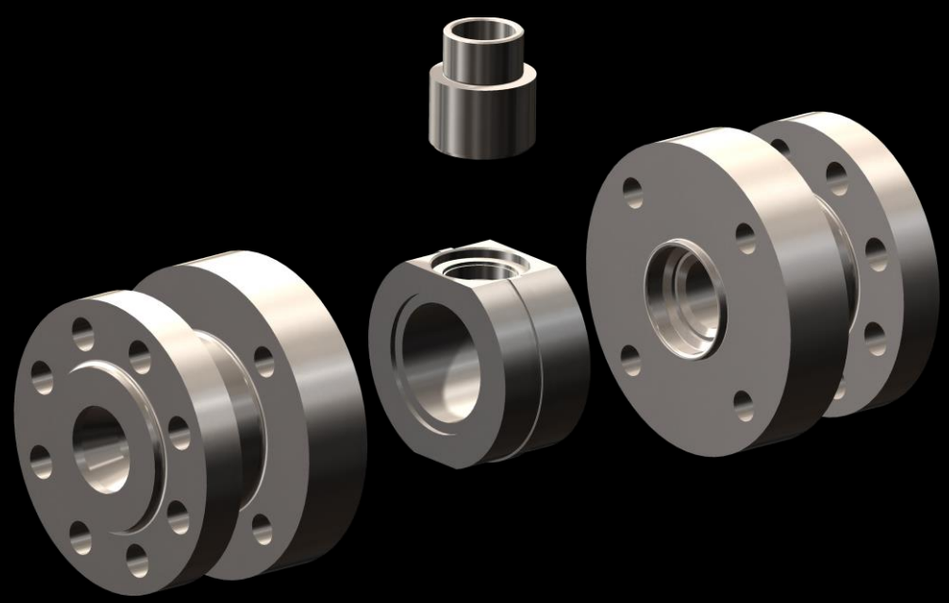


Designed to meet minimum bolting requirements

PATENTED DESIGN

Our patented design separates the two requirements of ASME B16.34

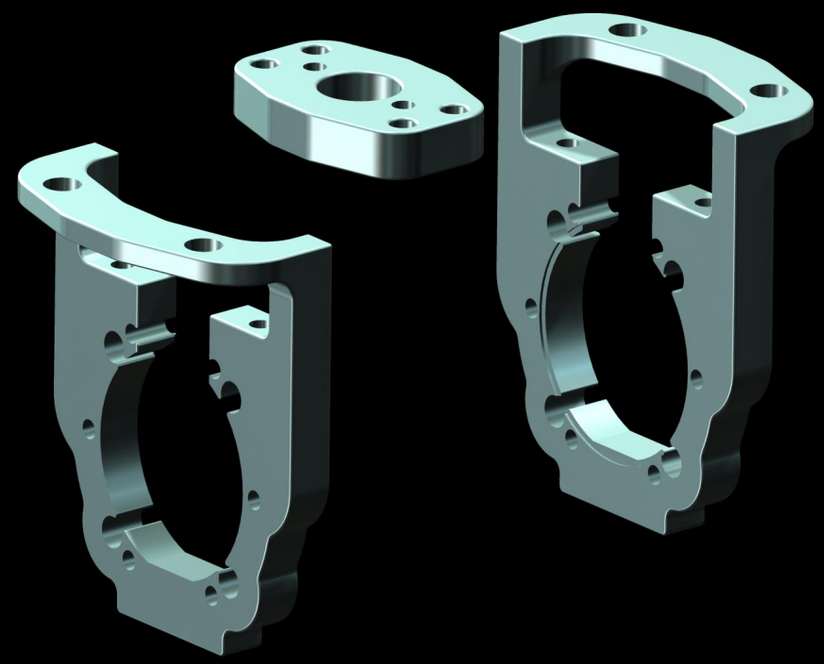
CORE COMPONENTS (MADE TO ORDER)



SUITABLE MATERIAL FOR PROCESS

MORE EXPENSIVE MATERIAL

BOLTING CONTAINMENT (STOCK PARTS)



ALWAYS WC6 (F11)

PAINTED TO RESIST EXTERNAL ENVIRONMENT/GALVANIC CORROSION

INEXPENSIVE TO MANUFACTURE

FAB VALVE

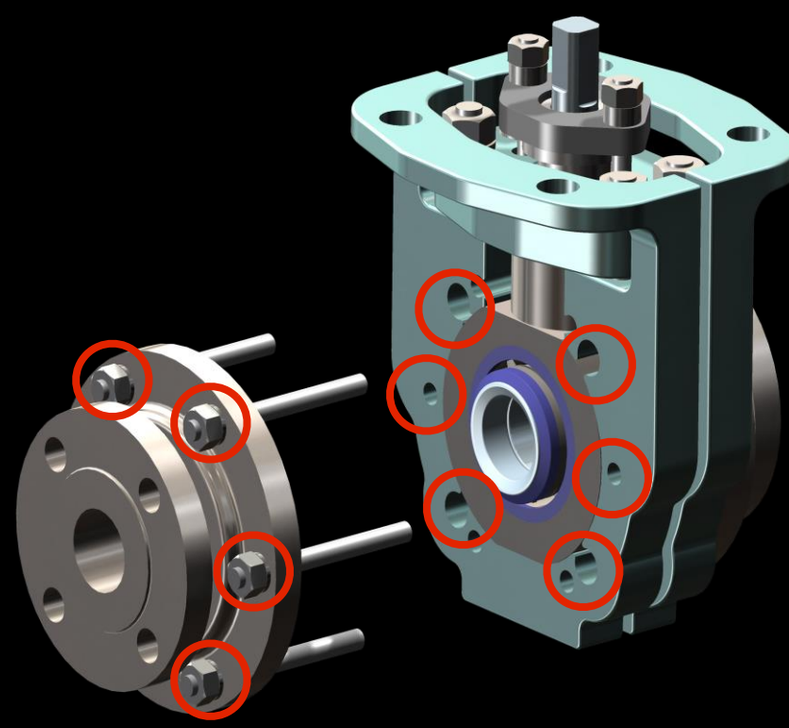
FABRICATED METAL SEATED BALL VALVES

gosco VALVES

WHAT IS THE ADVANTAGE?

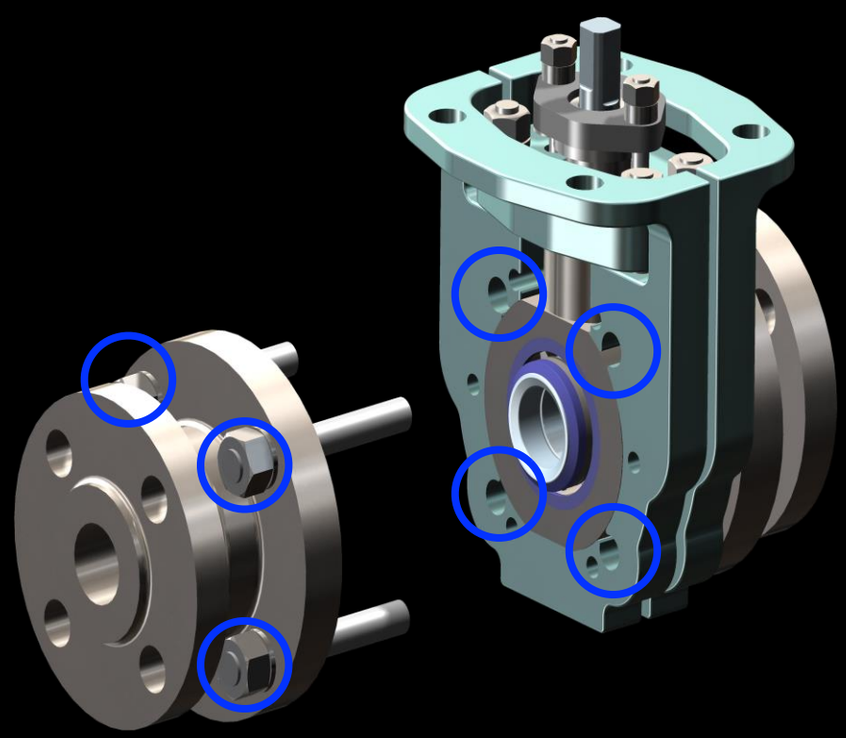
Common *body/bonnet plate* for Class 150, 300 and 600

CLASS 150/ 300



6pcs, 3/8” through holes (NPS 2 Valve)

CLASS 600

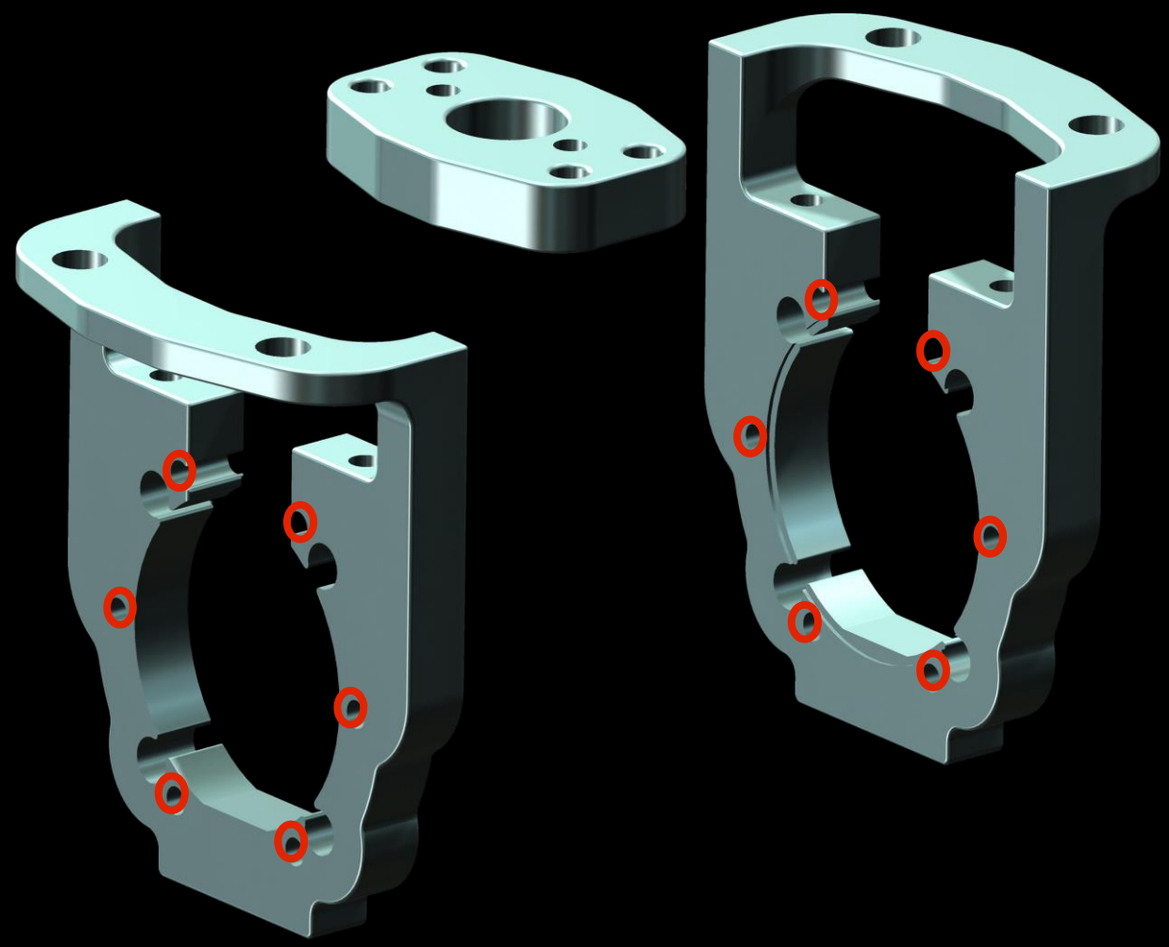


4pcs, 5/8” through holes (NPS 2 Valve)

WHAT IS THE ADVANTAGE?

Horseshoe Plates have dual bolting patterns

3/8” through holes (red)

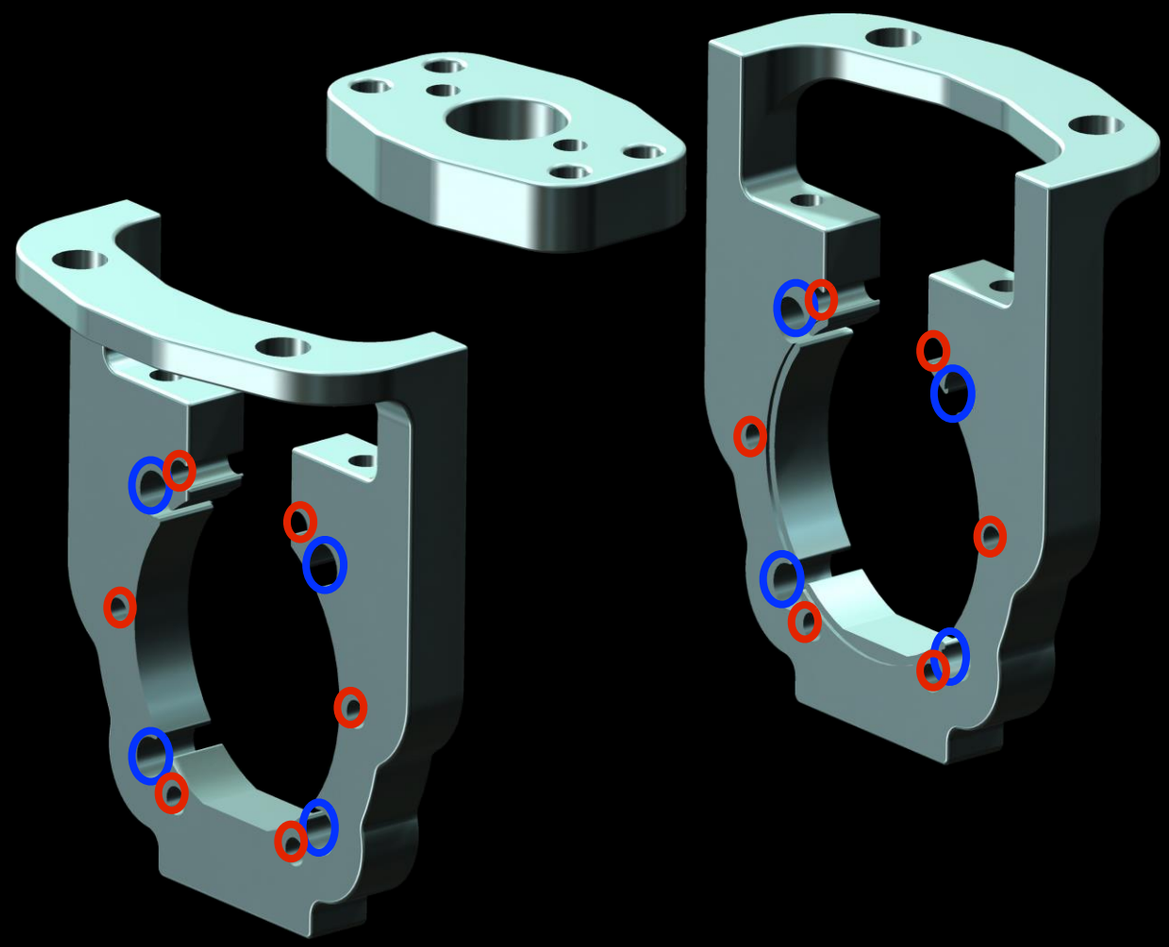


WHAT IS THE ADVANTAGE?

Horseshoe Plates have dual bolting patterns

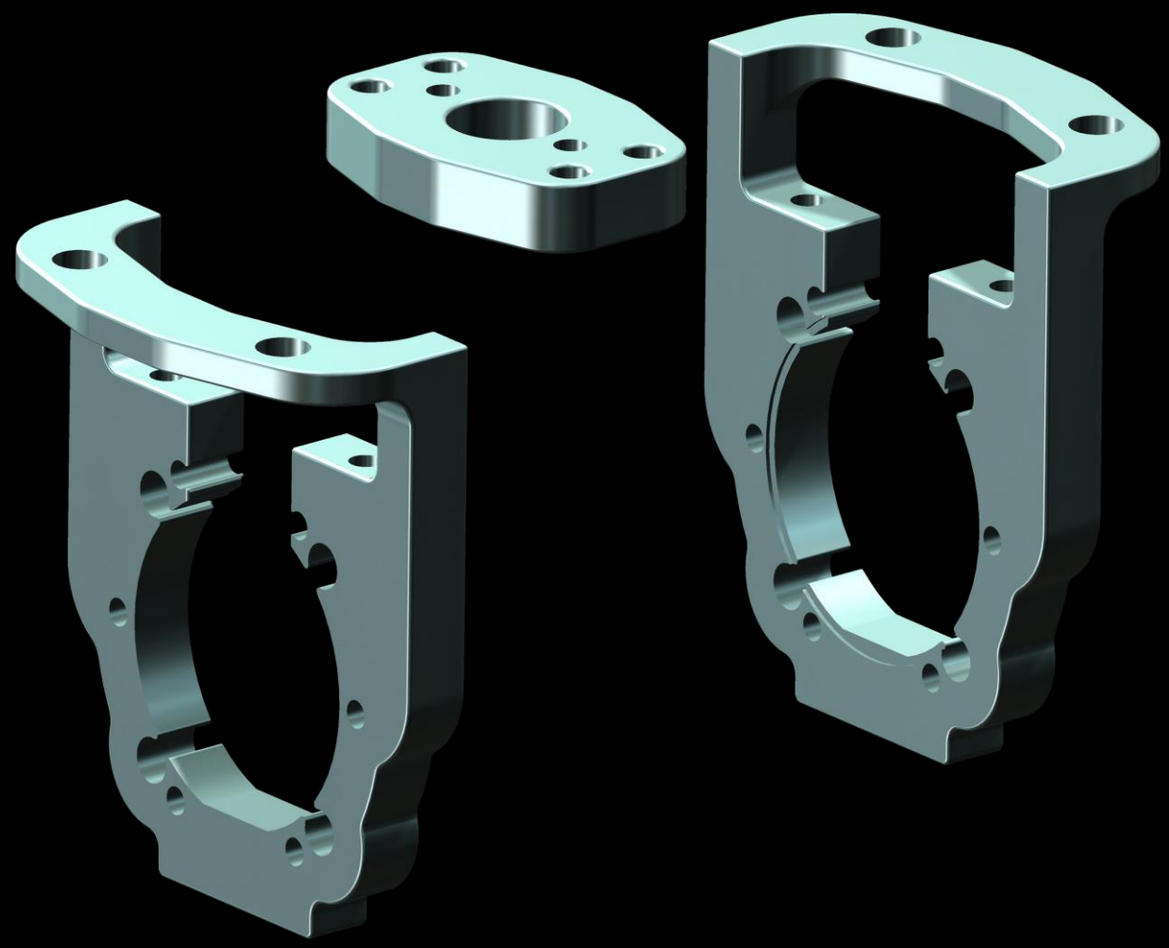
3/8” through holes (red)

5/8” through holes (blue)



WHAT IS THE ADVANTAGE?

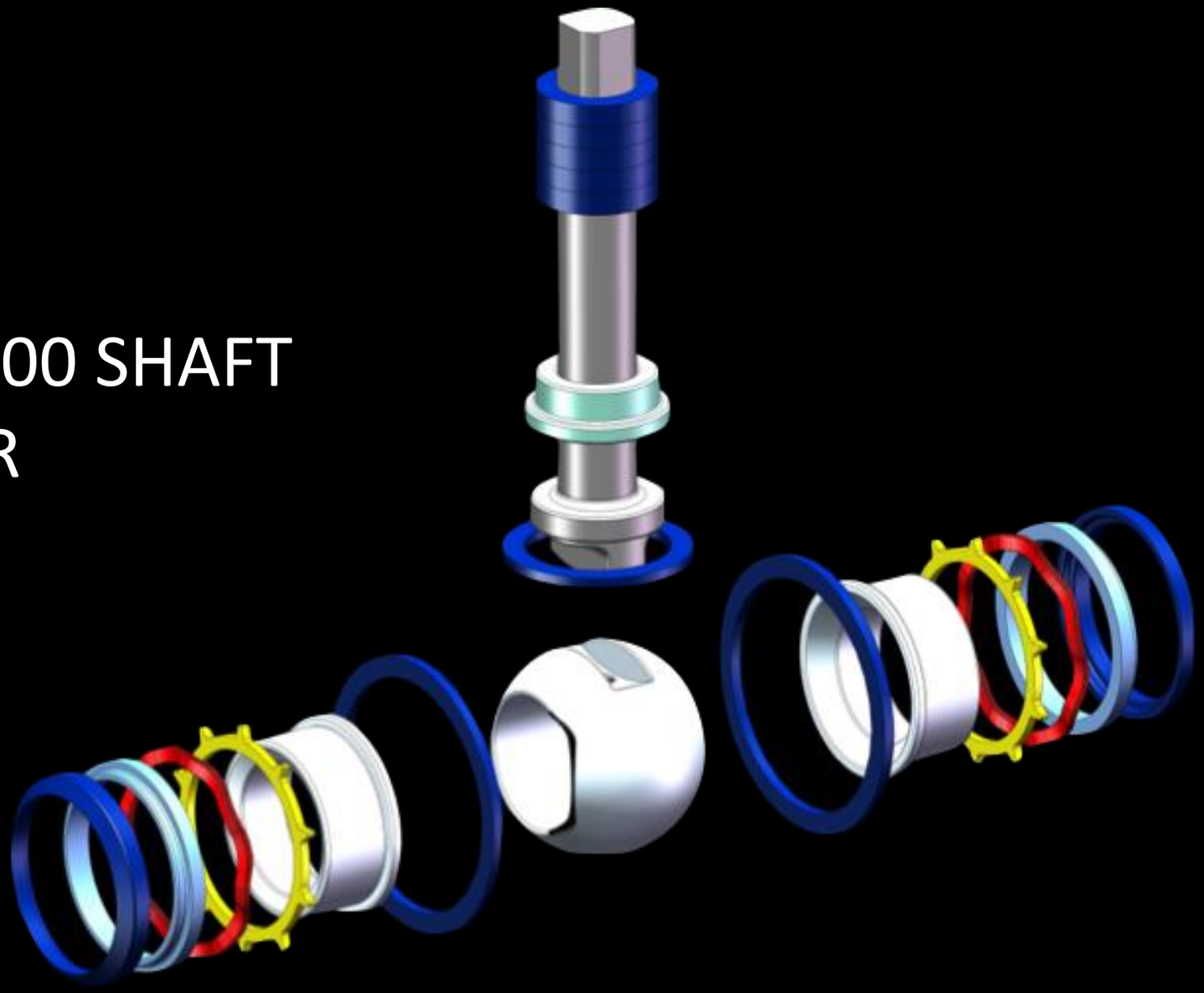
Horseshoe plates are the same for both single and dual packing configurations



WHAT IS THE ADVANTAGE?

Common *internals* for Class 150, 300 and 600

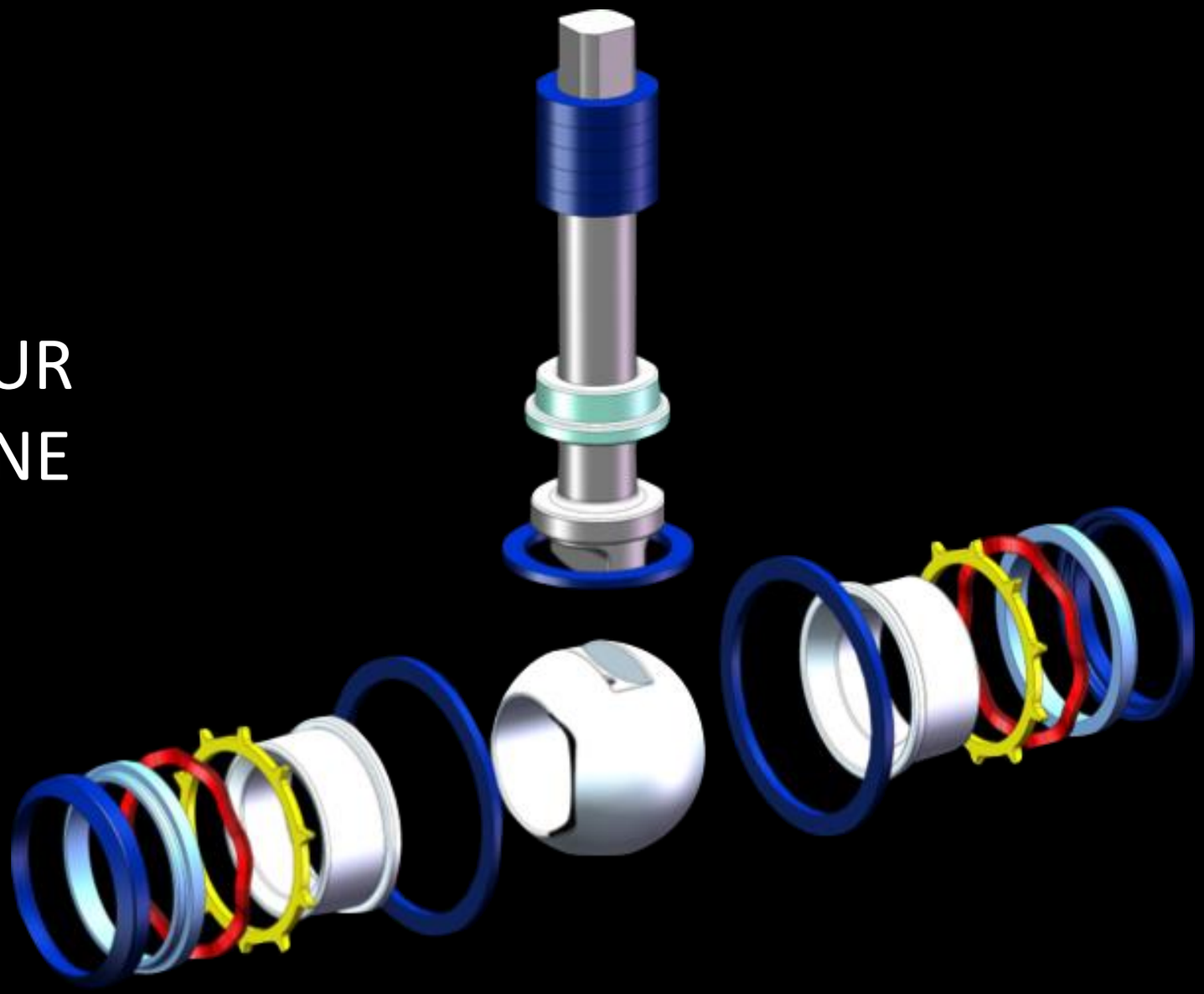
BASED ON CLASS 600 SHAFT DIAMETER



WHAT IS THE ADVANTAGE?

Common *internals* for Class 150, 300 and 600

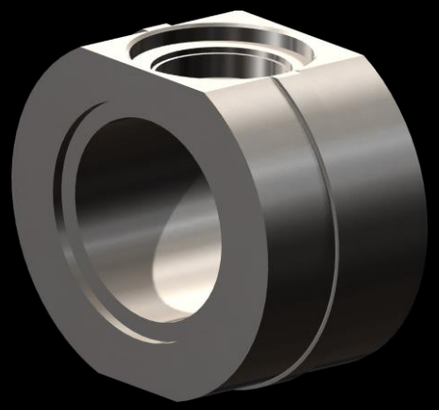
SAME AS OUR
M-CLASS LINE



WHAT IS THE ADVANTAGE?

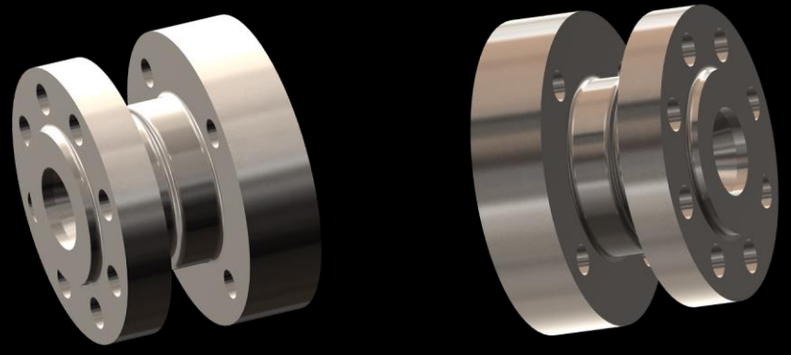
Only four components are manufactured for each application

BODY



MOSTLY LATHE WORK
MINIMAL MILLING
WORK

FLANGES



MOSTLY LATHE WORK
MINIMAL MILLING
WORK

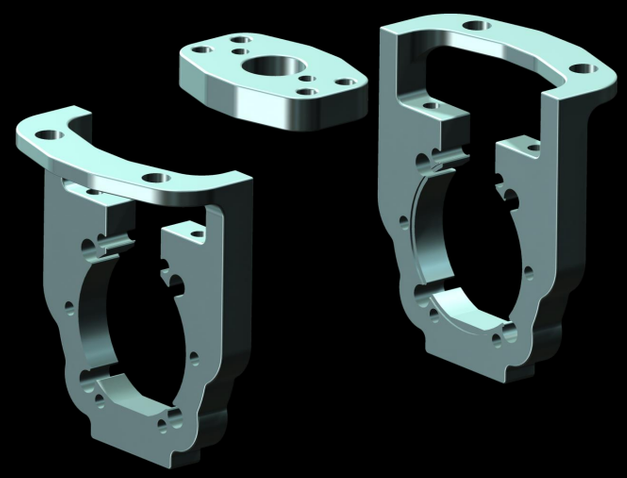
BONNET

(Single/Dual Packing Bonnet)

LATHE WORK ONLY

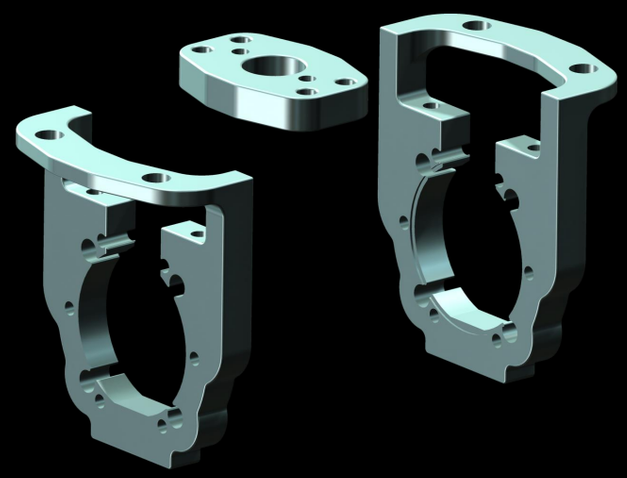
HOW DOES THAT HELP YOU?

All bolting containment components are common
(Class 150, 300, and 600)



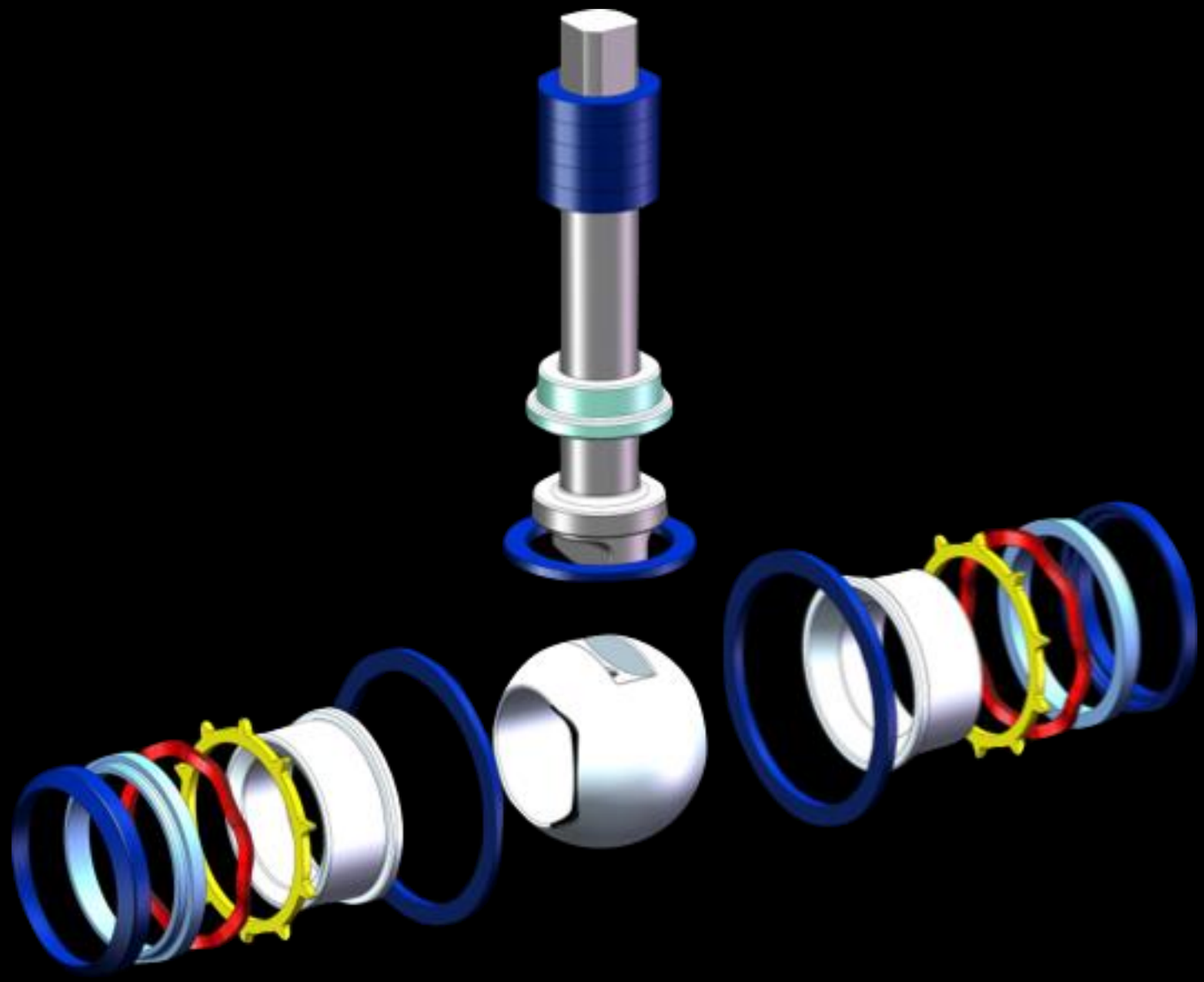
HOW DOES THAT HELP YOU?

GOSCO stocks all bolting containment components



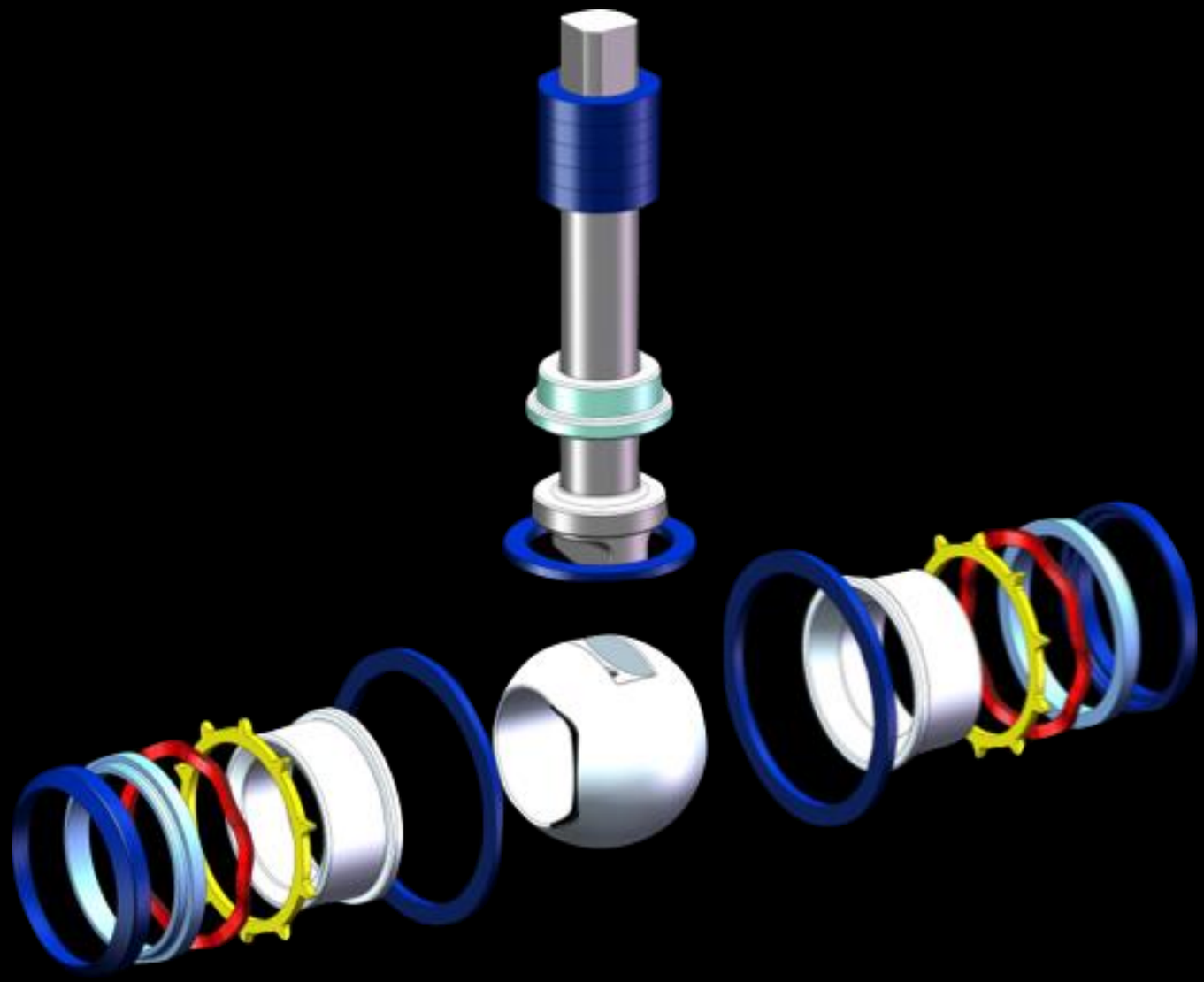
HOW DOES THAT HELP YOU?

All internal components are common
(Class 150, 300, 600 and M-CLASS)



HOW DOES THAT HELP YOU?

GOSCO stocks all internal components

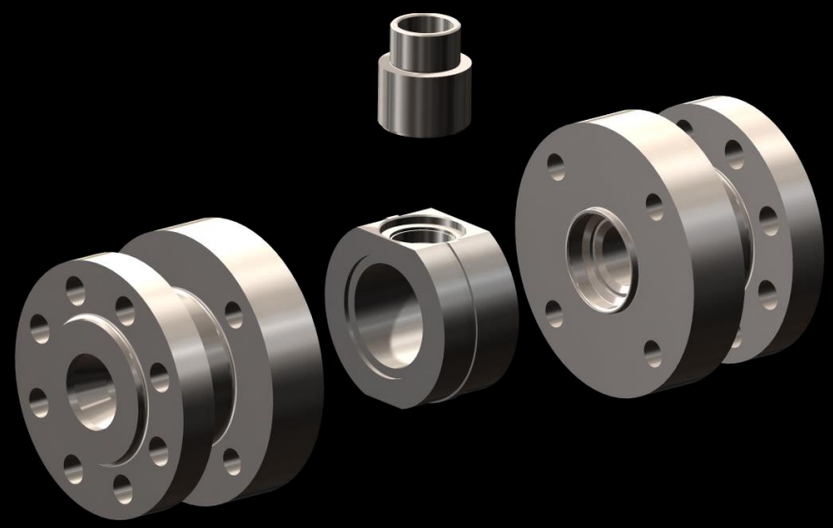


FAB VALVE

FABRICATED METAL SEATED BALL VALVES

HOW DOES THAT HELP YOU?

GOSCO ONLY manufactures four core components
for any valve configuration



HOW DOES THAT HELP YOU?

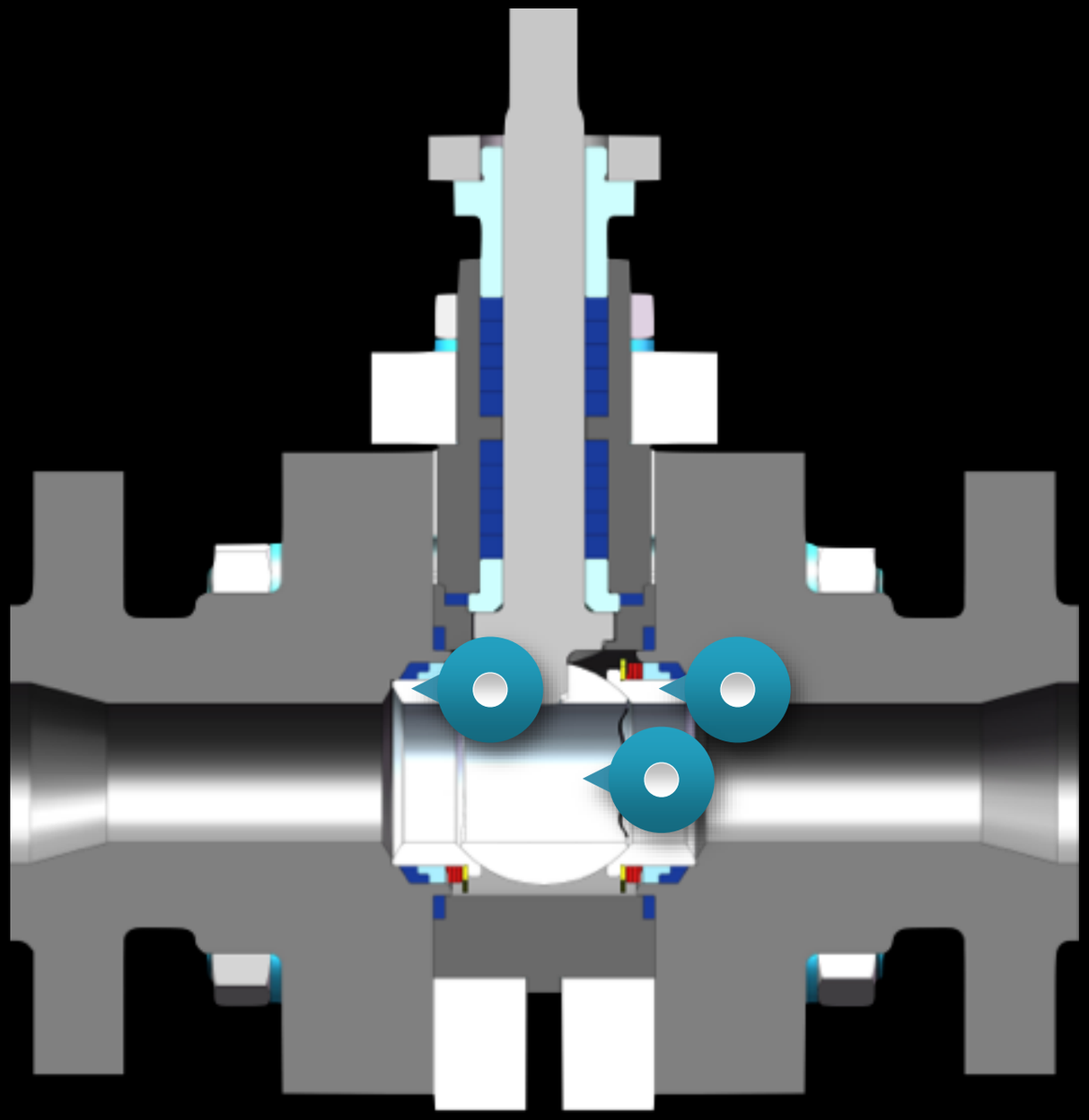
COMPETITIVE PRICING

HOW DOES THAT HELP YOU?

FAST DELIVERY

FAB VALVE

FEATURES



Superior Trim Hardening

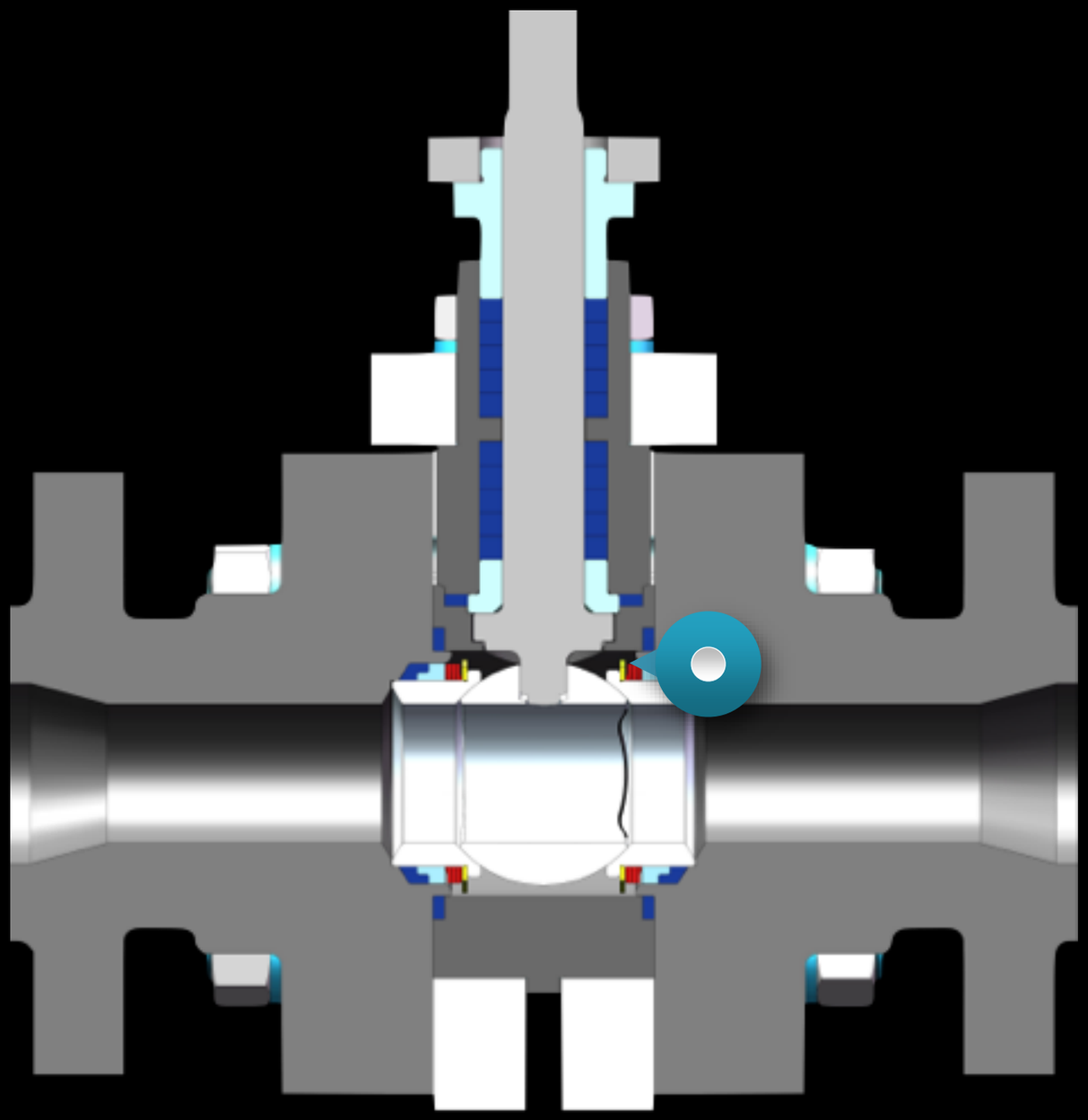
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“HARD ASS”

gosco VALVES

FAB VALVE



FEATURES

Superior Trim Hardening

Seat/Spring Design

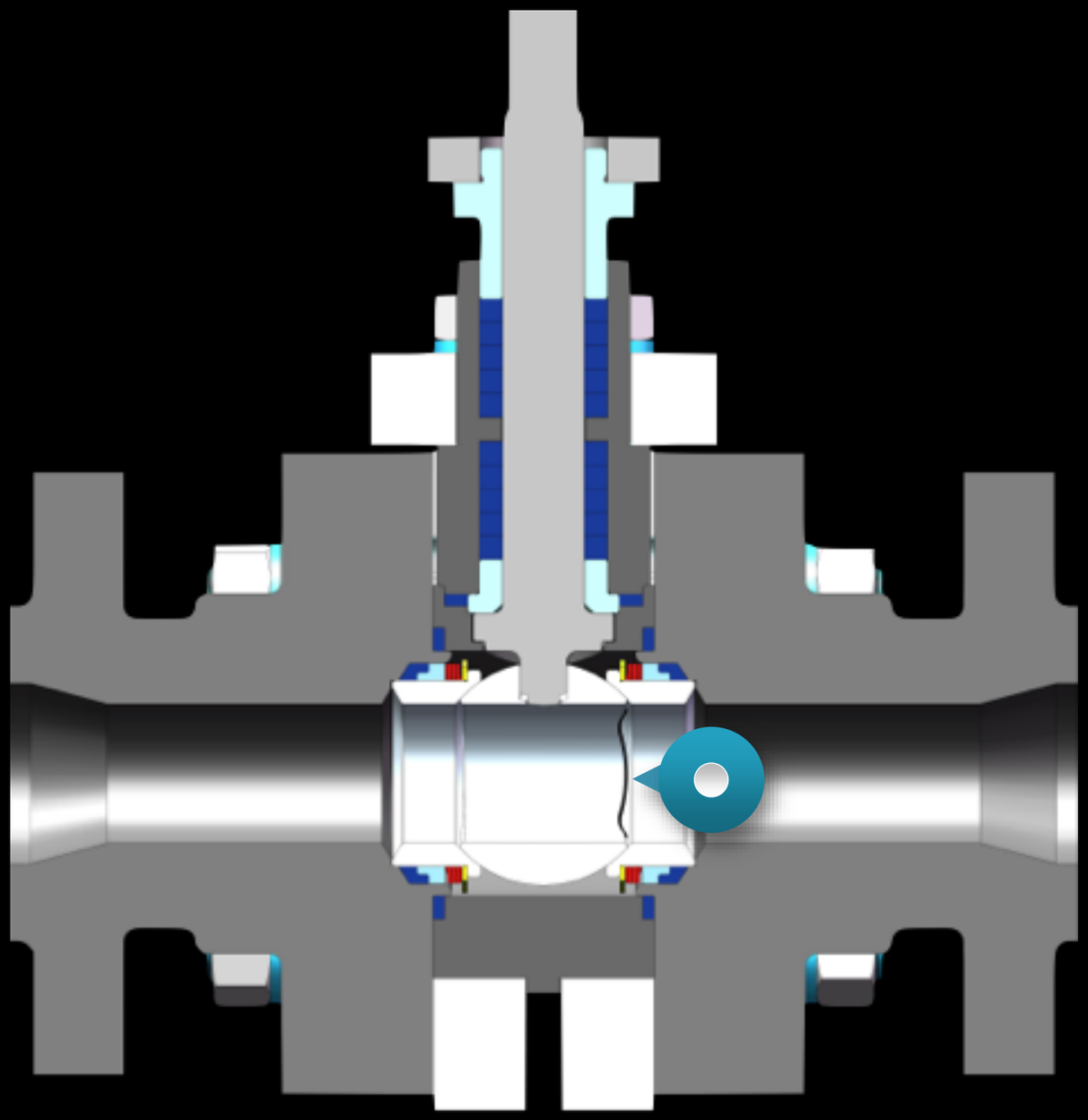
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

SMOOTH OPERATOR

gosco VALVES

FAB VALVE



FEATURES

Superior Trim Hardening

Seat/Spring Design

Arcuate Cut or Vari V Ball

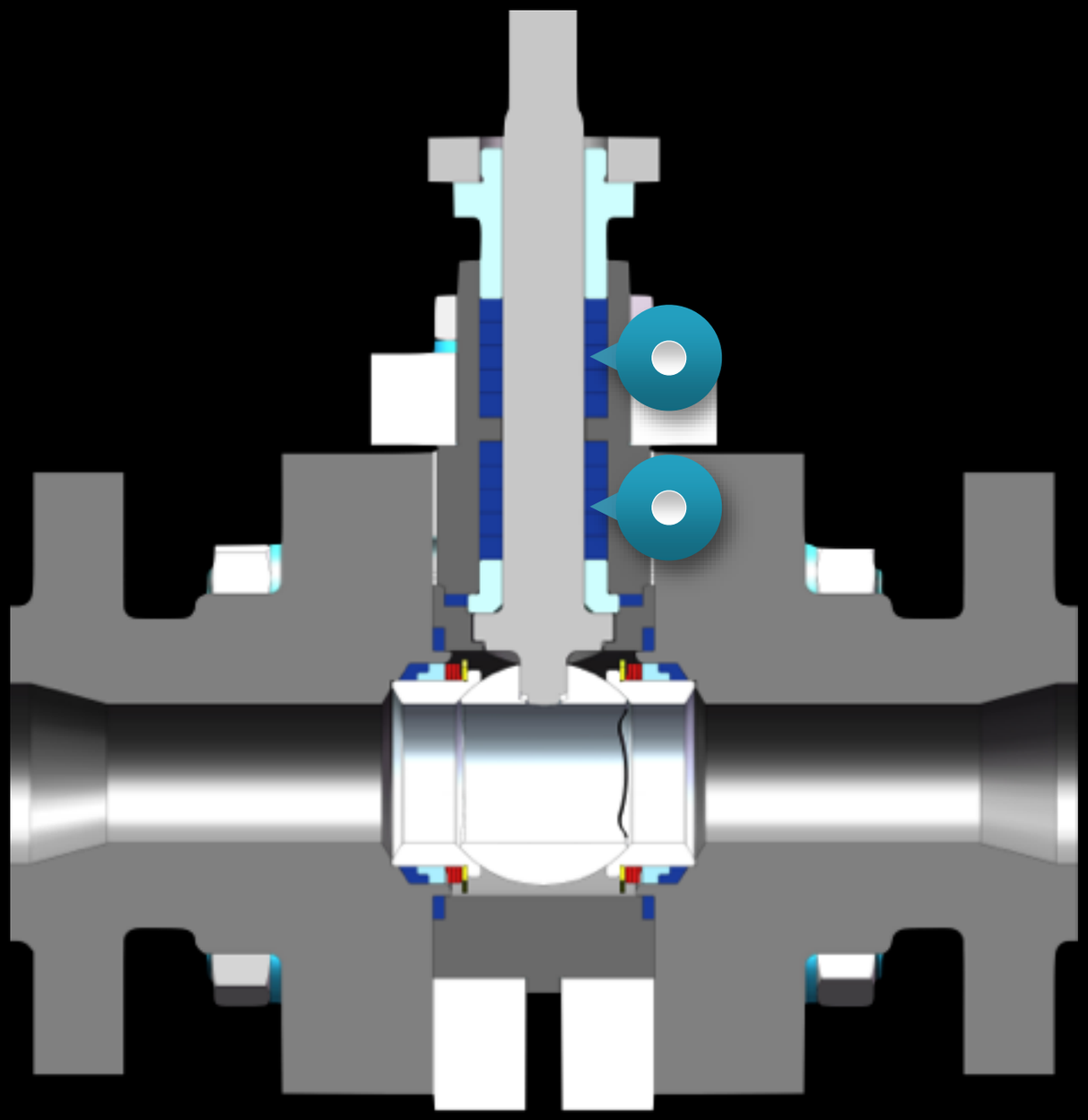
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“SLOW POKE / CONTROL FREAK”

gosco VALVES

FAB VALVE



FEATURES

Superior Trim Hardening

Seat/Spring Design

Arcuate Cut or Vari V Ball

Dual Shaft Packing

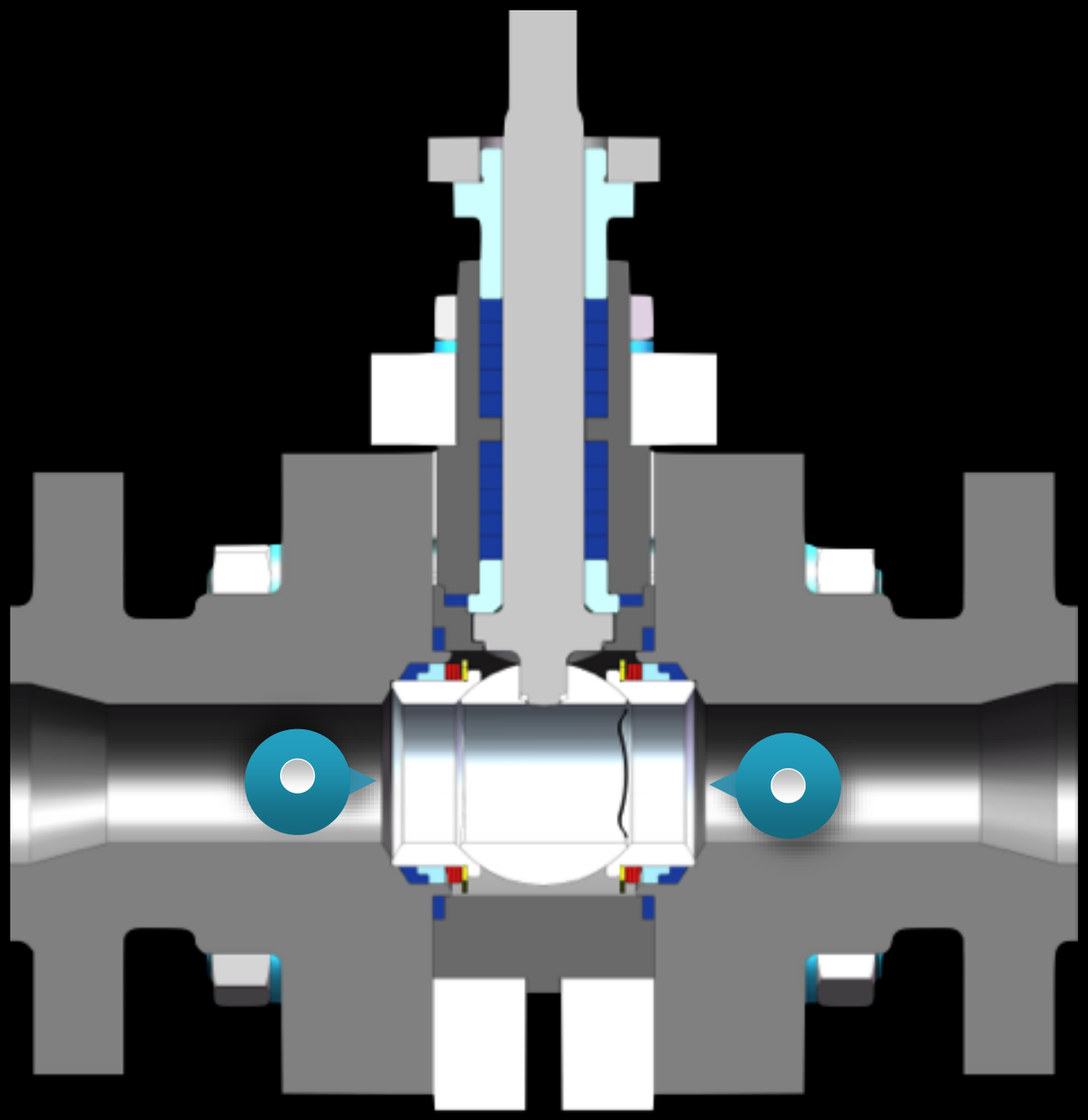
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“BACK UP PLAN”

gosco VALVES

FAB VALVE



FEATURES

Superior Trim Hardening

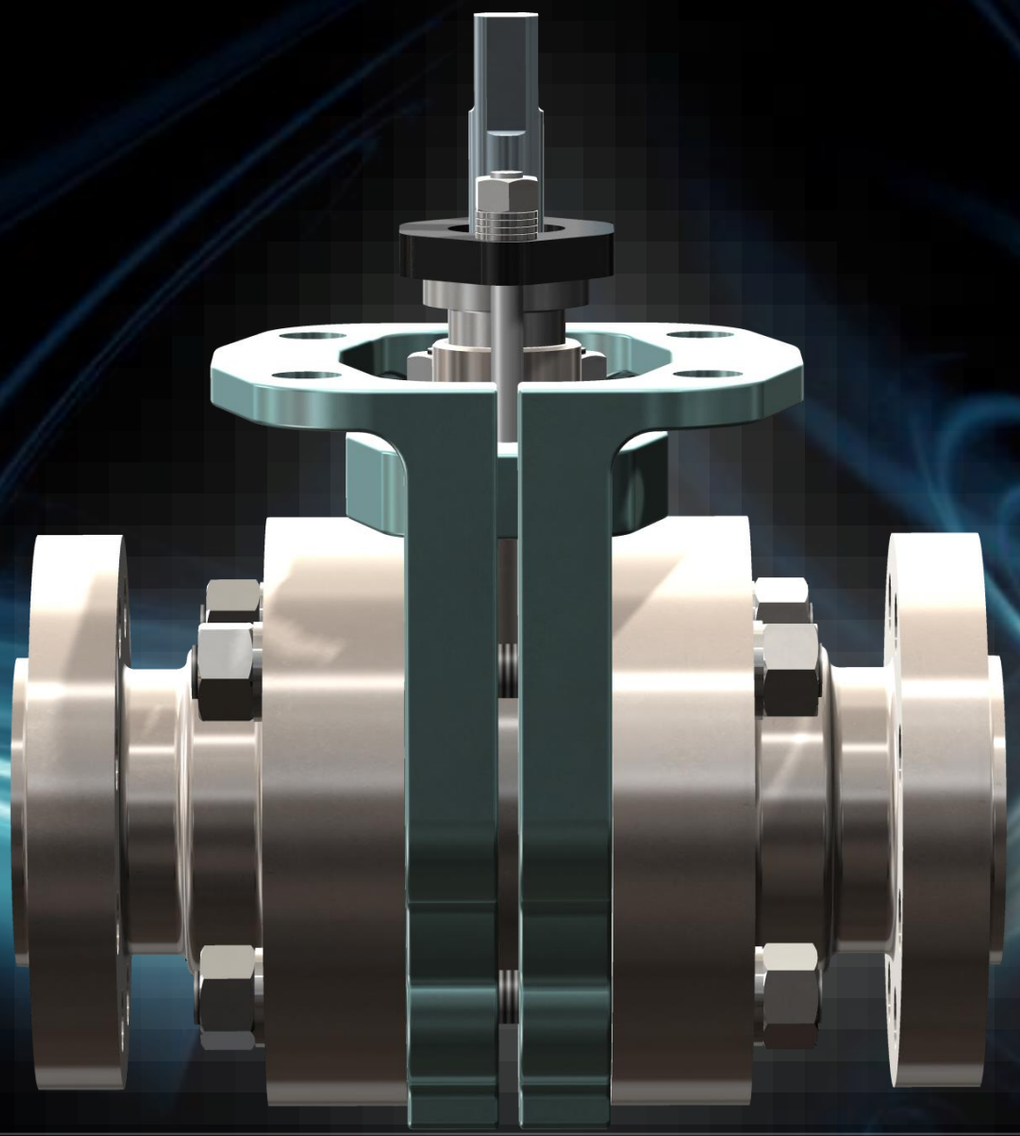
Seat/Spring Design

Arcuate Cut or Vari V Ball

Dual Shaft Packing

Bi-directional Sealing

SUPERIOR TRIM HARDENING



FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“HARD ASS”

gosco VALVES

COMPETITION – HVOF

HIGH VELOCITY OXYGEN FUEL

Uneven coating (line of sight)

Cracks / spalls

Coating is porous

Internal bore of ball can not be coated

BORONIZING

Proprietary Gosco Process

Thermo-chemical surface hardening process

Boron atoms are diffused into the surface

Results in a case layer that is extremely hard, corrosion resistant, and capable of handling high temperature shocks

Inconel 718, 200x magnification
.0035” solid layer, .007” partial layer

BORONIZING

STARTS WITH THE BASE MATERIAL

Inconel 718 is the best material for severe service applications

Designed for high temperature applications

Extremely hard

Very corrosion resistant

Has a high nickel content to eliminate stress corrosion cracking

THEN - IT'S ALL ABOUT PREPARATION OF THE PARTS

There are 6 steps before the trim sets are sent to be borided:

1. Rough machining
2. Stress relieving
3. Finish machining
4. Grinding
5. Four levels of lapping
6. Vacuum testing

LAST – IT'S ALL ABOUT THE BORONIZING PROCESS

1. Cleaned to eliminate any residue
2. Boronized using our proprietary boronizing process
3. Finished lapped
4. Vacuum tested

COMPETITOR ON COATINGS

APPLICATION NOTE ON COATINGS

Common Coatings

Method of Application	HVOF		Fusion	Plasma	Diffused		Patented
Material	Chromium Carbide	Tungsten Carbide	Chromium Carbide	Chromuim Oxide	Nitride	Boride	Nano Titanium Dioxide
Uses	General Severe Service, Power, Slurry Mining, Chemical	Specialized Severe Service, Mining, Food Processing, Corrosive Chemical	Specialized Severe Service, Power, Thermal Shock, Extreme Temperature	Corrosive Service, Gold Mining	General Service, Bearings, Hot Gas	Specialized Severe Service, Power Corrosive Services, Thermal Shock	Corrosive Service, Gold Mining, Nickel Mining, High Pressure Acid Leach
Base Metals	Any	Any	300 Series Stainless Nickel Alloys	Any, Duplex SS & Ti Typical	Iron-Based Alloys	Nickel-Based Alloys	Any, Duplex SS & Ti Typical
Advantages	High Strain to Fracture, Erosion-Resistant, Extreme Temperature	Erosion-Resistant, Wear-Resistant	Erosion-Resistant, Non-Porous, Thermal Shock, Metallurgical Bond, Corrosion Resistant	Very Corrosion Resistant at lower temperatures	Inexpensive Metallurgical Bond	Extremely Hard, Metallurgical Bond, Non-Porous, Corrosion Resistant	Very Corrosion Resistant at low and high temperatures, superior wear to conventional ceramic coatings
Disadvantages	Some Porosity, Mechanical Bond	Some Porosity, Mechanical Bond, Thermal Cycling Can Produce Cracking	Not Suitable on 410 SS 17-4PH Carbon Steel, Expensive	Poor Thermal Shock, Poor Bond Strength, Porosity, & Cracking are Typical	Reduces Corrosion Resistance, Lower Abrasion & Wear Resistance than HVOF Coatings	Very Thin .001" Finished, Bore Size Limit 1.5"	Ceramic coatings are not as tough as HVOF cermets

COMPETITOR ON COATINGS

Method of Application	HVOF	
Material	Chromium Carbide	Tungsten Carbide
Uses	General Severe Service, Power, Slurry Mining, Chemical	Specialized Severe Service, Mining, Food Processing, Corrosive Chemical
Base Metals	Any	Any
Advantages	High Strain to Fracture, Erosion-Resistant, Extreme Temperature	Erosion-Resistant, Wear-Resistant
Disadvantages	Some Porosity, Mechanical Bond	Some Porosity, Mechanical Bond, Thermal Cycling Can Produce Cracking

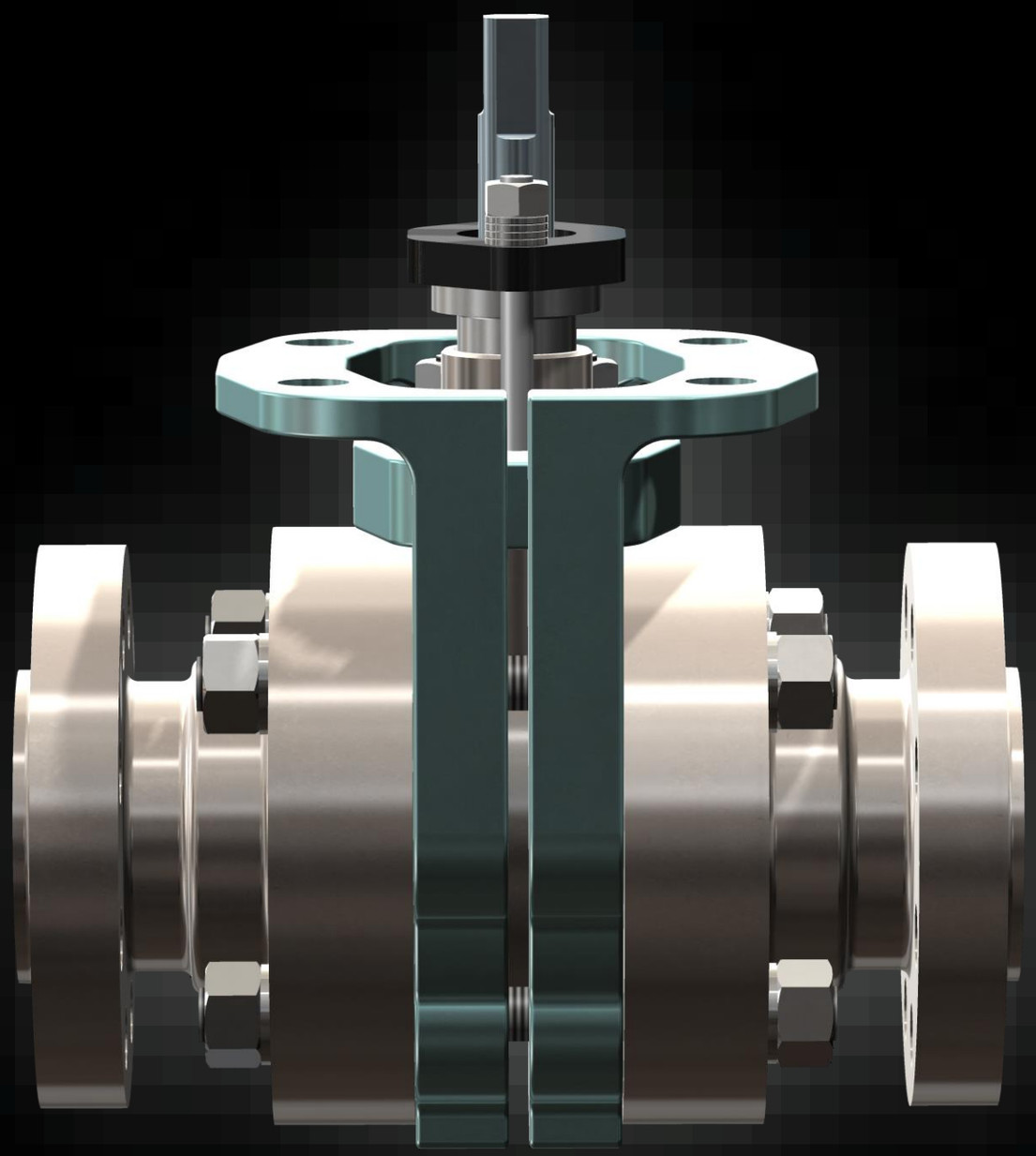
	Plasma	Diffused		Patented
	Chromuim Oxide	Nitride	Boride	Nano Titanium Dioxide
	Corrosive Service, Gold Mining	General Service, Bearings, Hot Gas	Specialized Severe Service, Power Corrosive Services, Thermal Shock	Corrosive Service, Gold Mining, Nickel Mining, High Pressure Acid Leach
	Any, Duplex SS & Ti Typical	Iron-Based Alloys	Nickel-Based Alloys	Any, Duplex SS & Ti Typical
	Very Corrosion Resistant at lower temperatures	Inexpensive Metallurgical Bond	Extremely Hard, Metallurgical Bond, Non-Porous, Corrosion Resistant	Very Corrosion Resistant at low and high temperatures, superior wear to conventional ceramic coatings
	Poor Thermal Shock, Poor Bond Strength, Porosity, & Cracking are Typical	Reduces Corrosion Resistance, Lower Abrasion & Wear Resistance than HVOF Coatings	Very Thin .001" Finished, Bore Size Limit 1.5"	Ceramic coatings are not as tough as HVOF cermets

COMPETITOR ON COATINGS

Method of Application	HVOF	
Material	Chromium Carbide	Tungsten Carbide
Uses	General Severe Service, Power, Slurry Mining, Chemical	Specialized Severe Service, Mining, Food Processing, Corrosive Chemical
Base Metals	Any	Any
Advantages	High Strain to Fracture, Erosion-Resistant, Extreme Temperature	Erosion-Resistant, Wear-Resistant
Disadvantages	Some Porosity, Mechanical Bond	Some Porosity, Mechanical Bond, Thermal Cycling Can Produce Cracking

Method of Application	Diffused	
Material	Nitride	Boride
Uses	General Service, Bearings, Hot Gas	Specialized Severe Service, Power Corrosive Services, Thermal Shock
Base Metals	Iron-Based Alloys	Nickel-Based Alloys
Advantages	Inexpensive Metallurgical Bond	Extremely Hard, Metallurgical Bond, Non-Porous, Corrosion Resistant
Disadvantages	Reduces Corrosion Resistance, Lower Abrasion & Wear Resistance than HVOF Coatings	Very Thin .001" Finished, Bore Size Limit 1.5"

GOSCO'S PROPRIETARY BORONIZING PROCESS

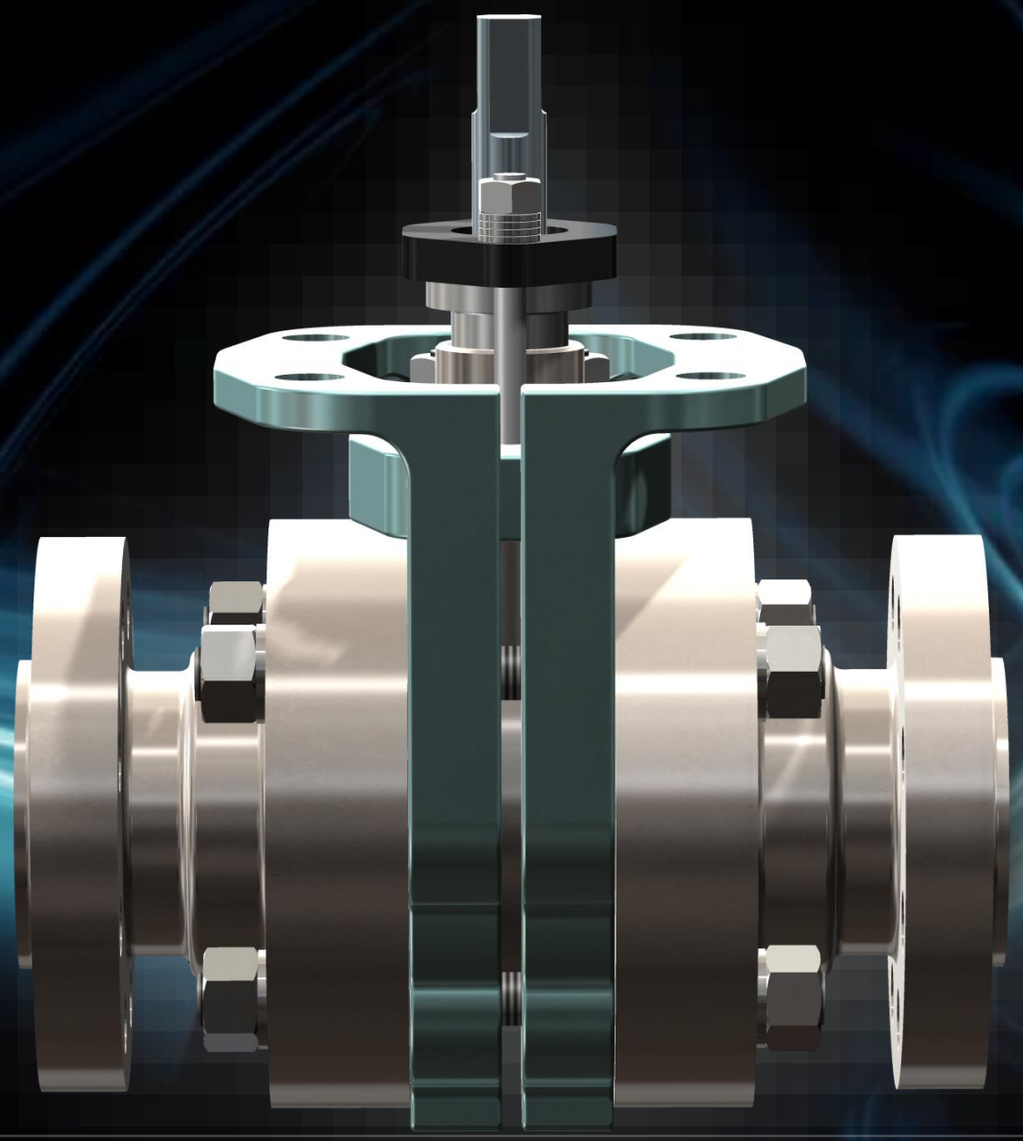


0.003" to 0.005" depth

No size limit

All the advantages, no disadvantages

SEAT DESIGN



FAB VALVE

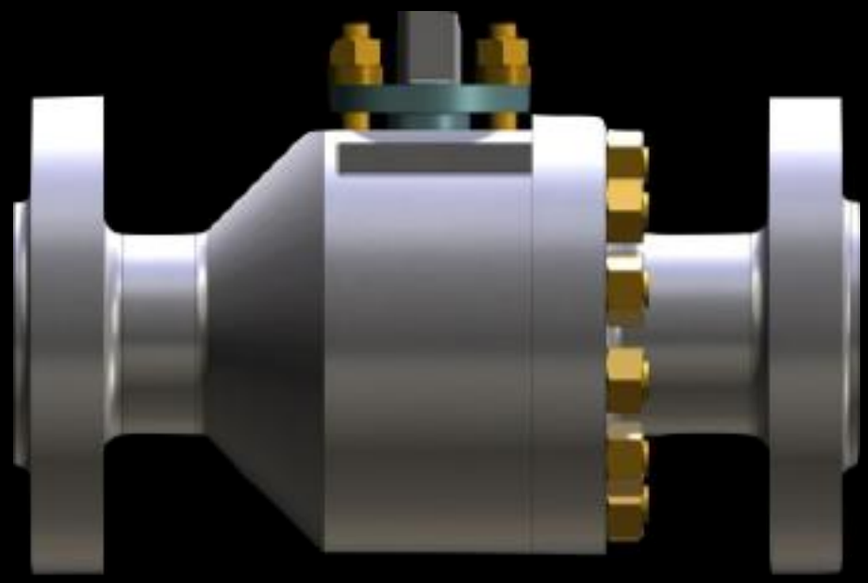
FABRICATED METAL SEATED BALL VALVES

“SMOOTH OPERATOR”

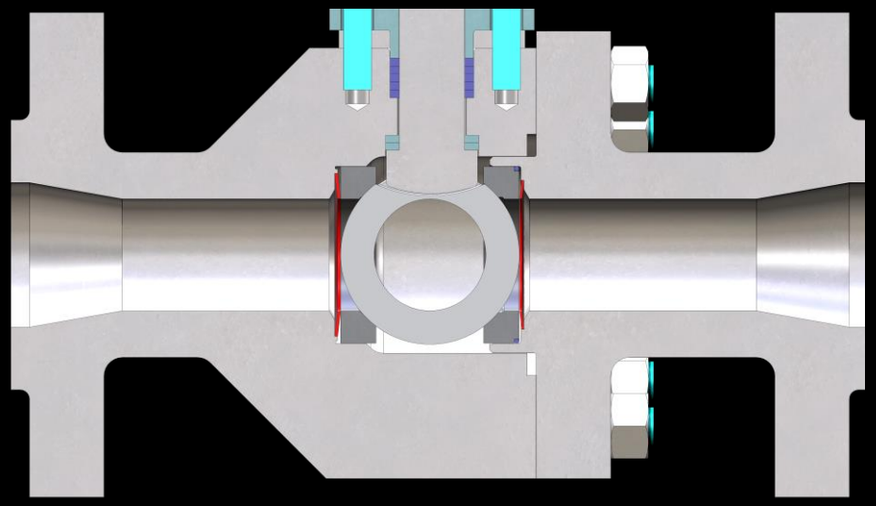
gosco VALVES

COMPETITORS’ SEAT/SPRING DESIGN

COMPETITORS’ SEAT/SPRING DESIGN

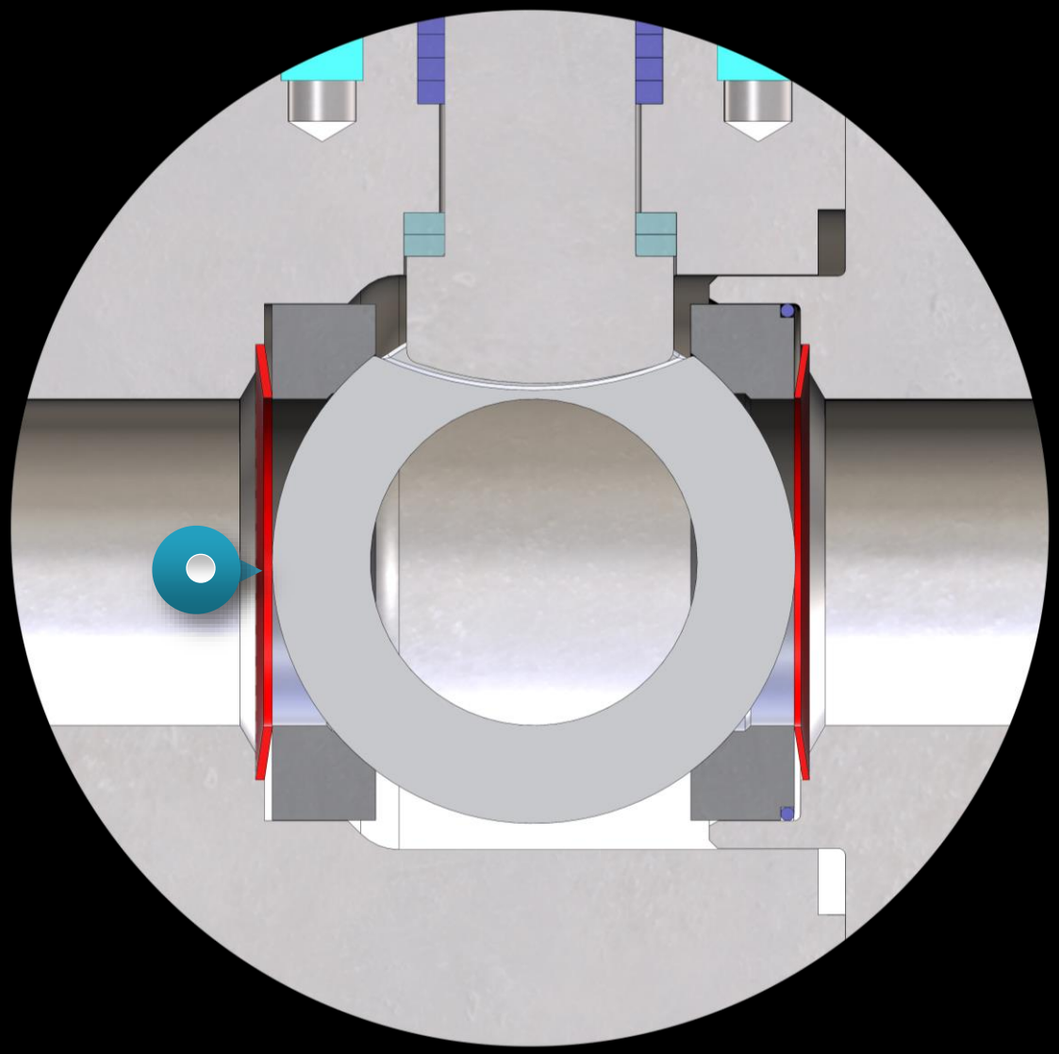


COMPETITORS’ SEAT/SPRING DESIGN

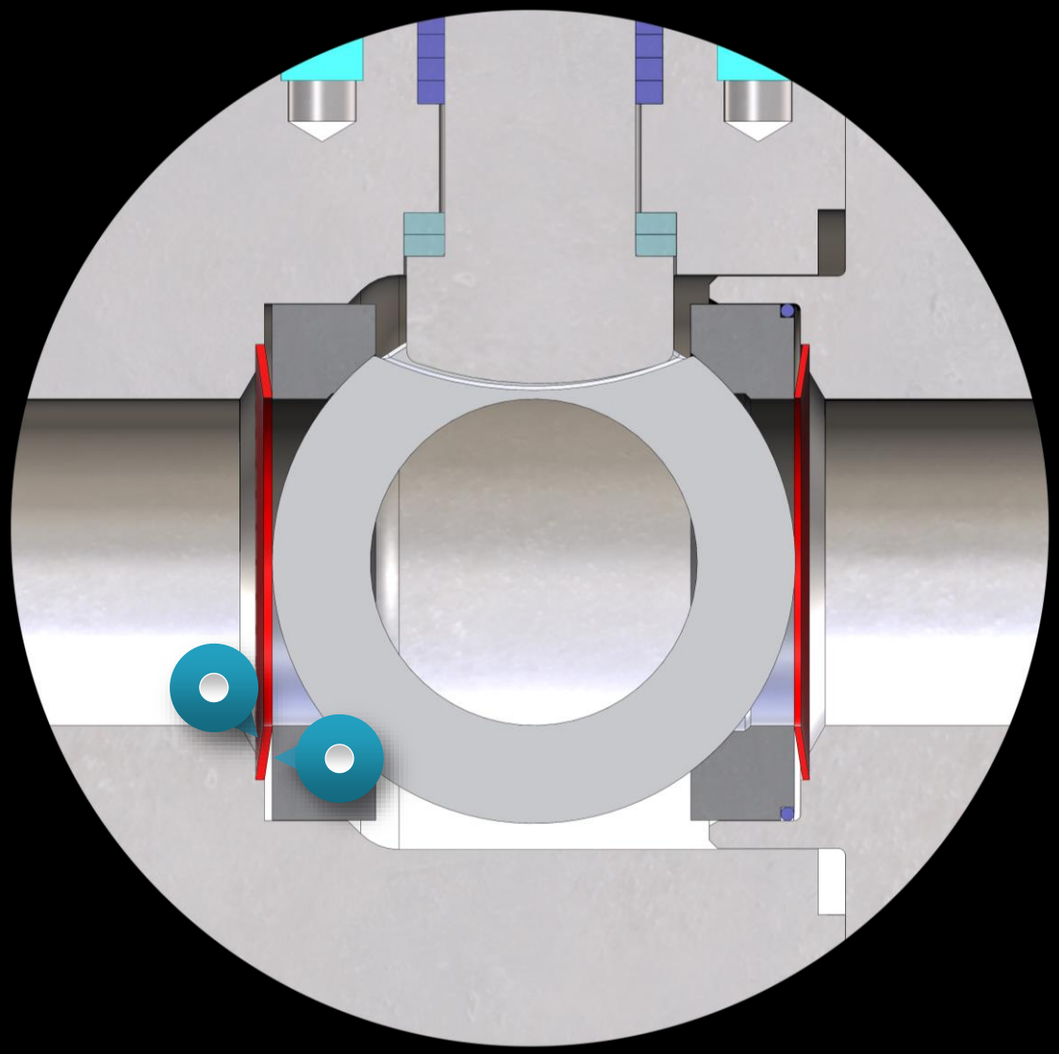


COMPETITORS’ SEAT/SPRING DESIGN

Belleville spring

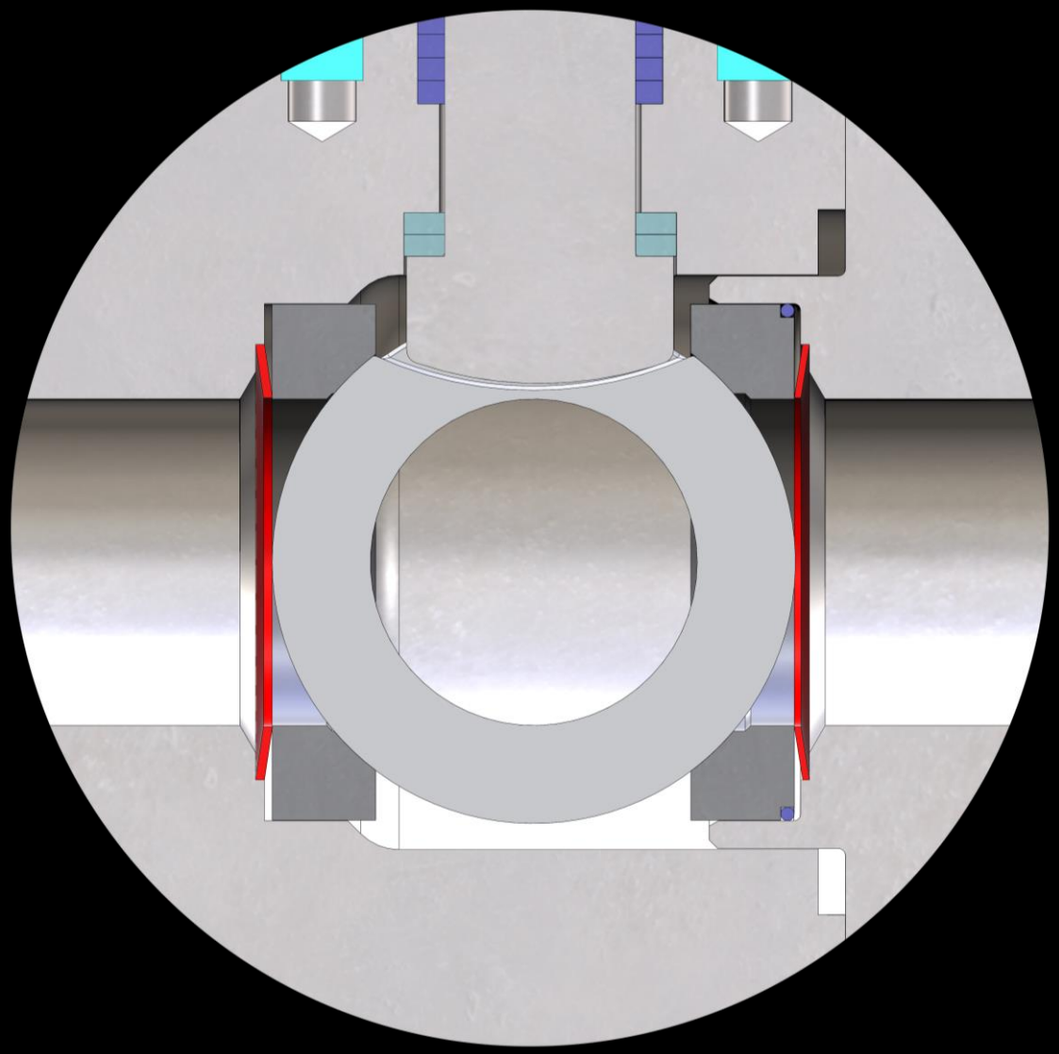


COMPETITORS’ SEAT/SPRING DESIGN



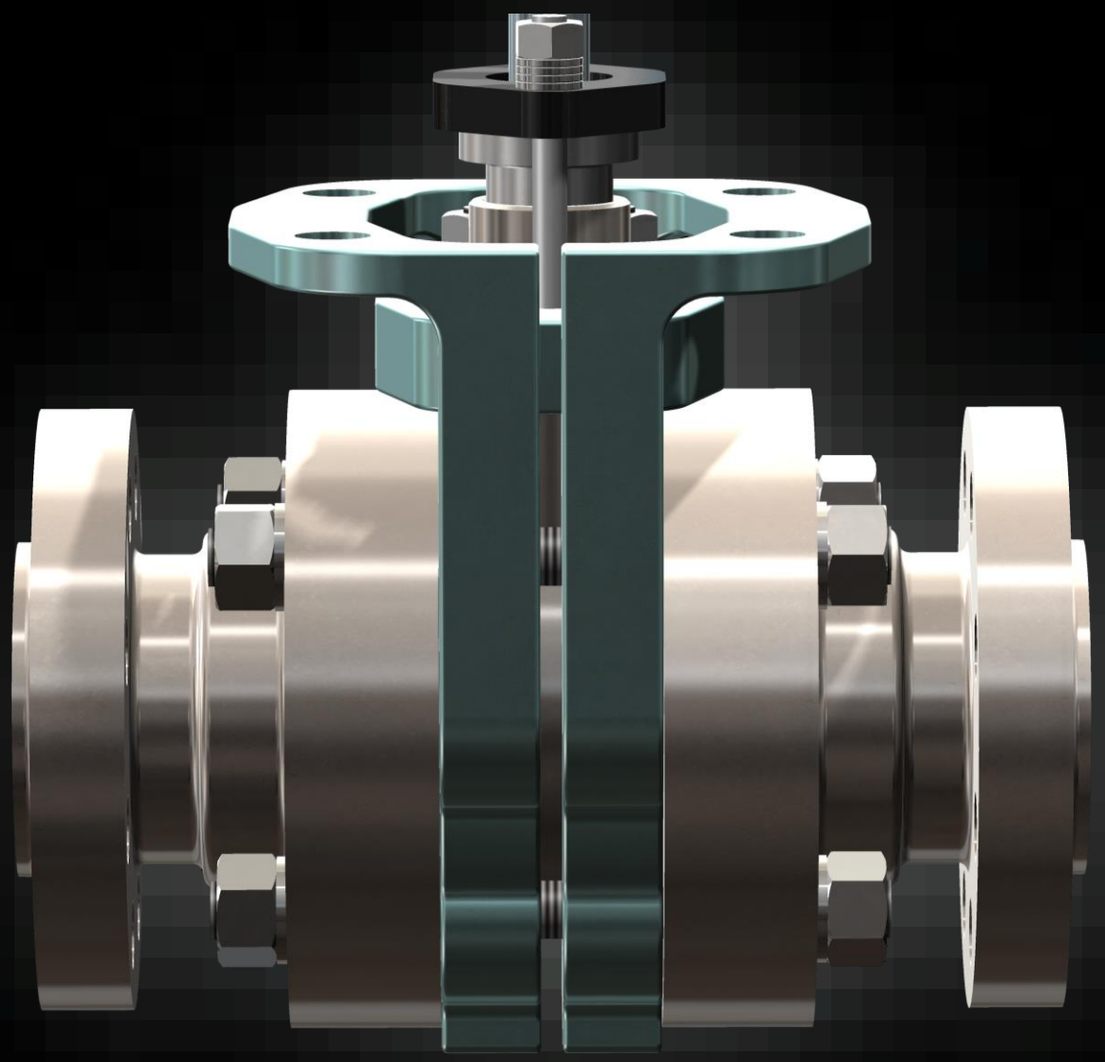
Media gets trapped around the Belleville

COMPETITORS’ SEAT/SPRING DESIGN



Valve locks up
(Floating ball design)

GOSCO’S SEAT/SPRING DESIGN



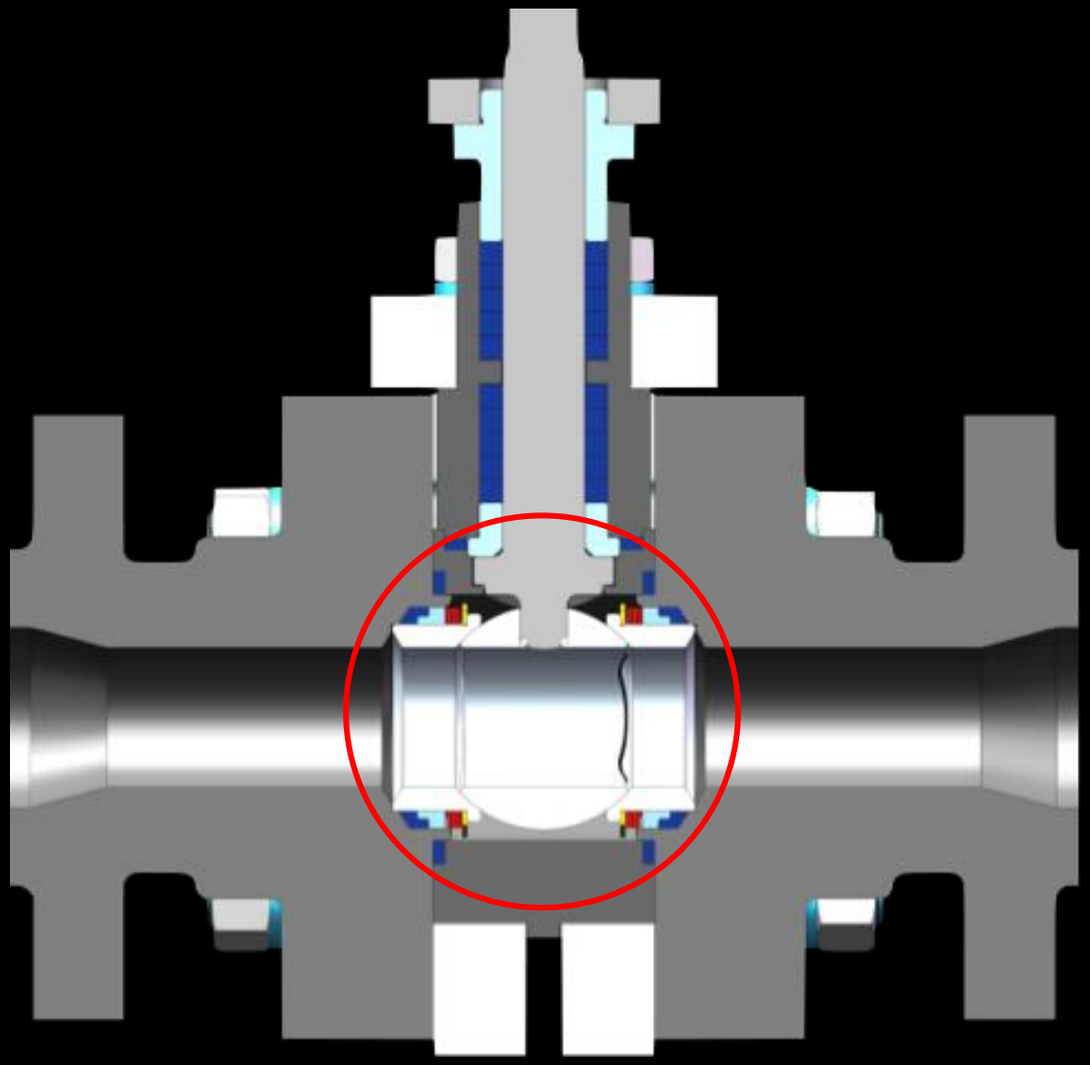
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“SMOOTH OPERATOR”

gosco VALVES

GOSCO'S SEAT/SPRING DESIGN



FAB VALVE

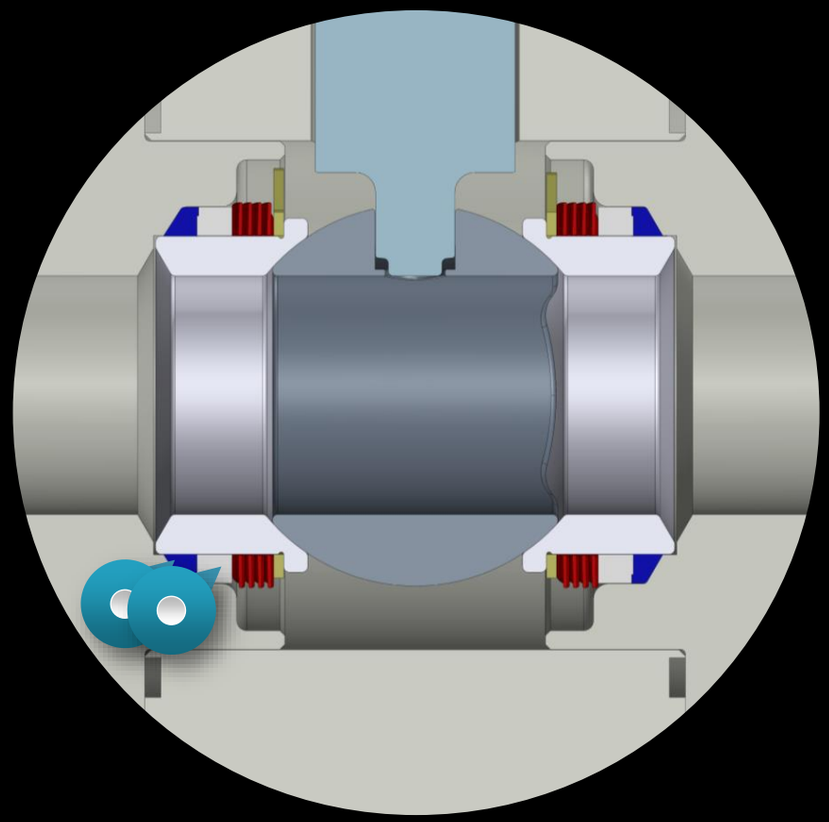
FABRICATED METAL SEATED BALL VALVES

"SMOOTH OPERATOR"

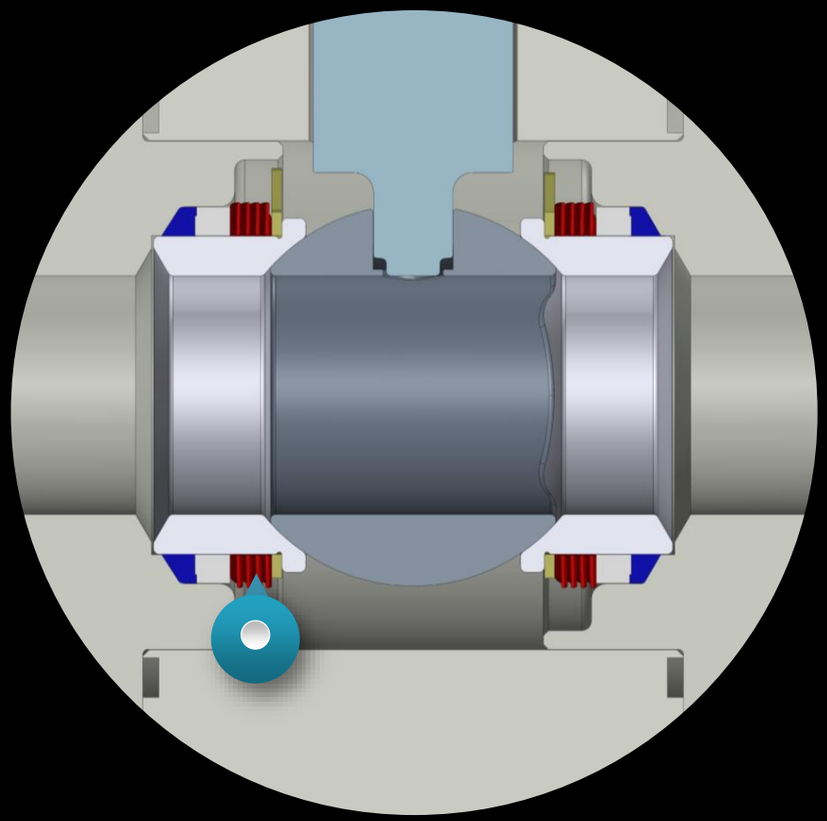
gosco VALVES

GOSCO'S SEAT/SPRING DESIGN

Graphite wedge seal and
compression ring
(Secured in the valve flange)



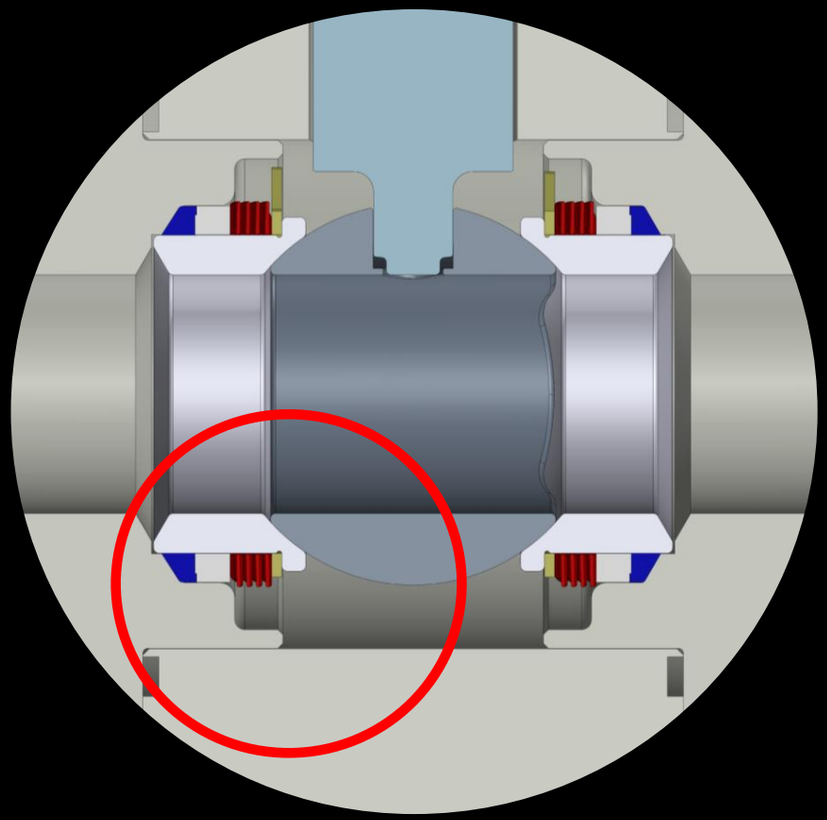
GOSCO'S SEAT/SPRING DESIGN



Nested wave spring
(Downstream of wedge seal)

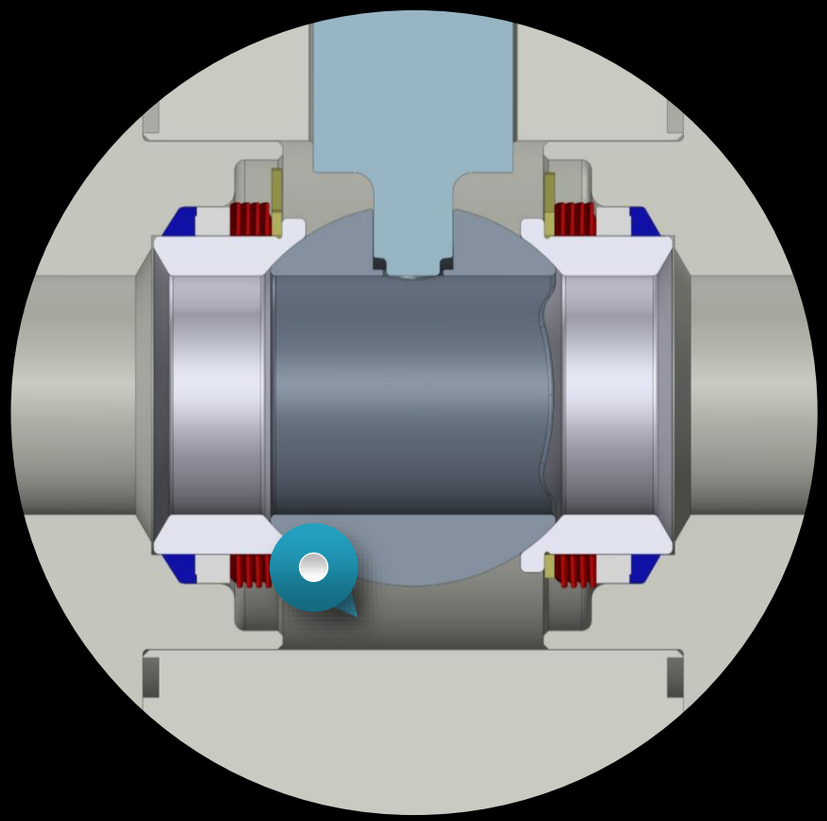
GOSCO'S SEAT/SPRING DESIGN

Spring is completely open to media

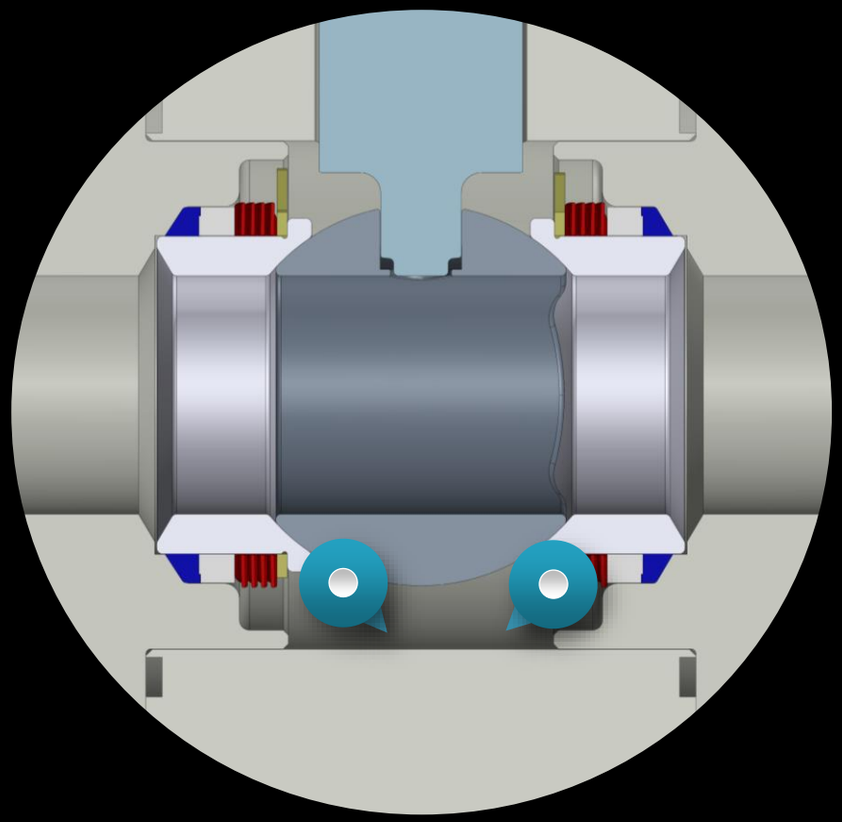


GOSCO'S SEAT/SPRING DESIGN

Media can get in to the spring cavity, but also escapes just as easily



GOSCO'S SEATS



Media flows freely around the springs

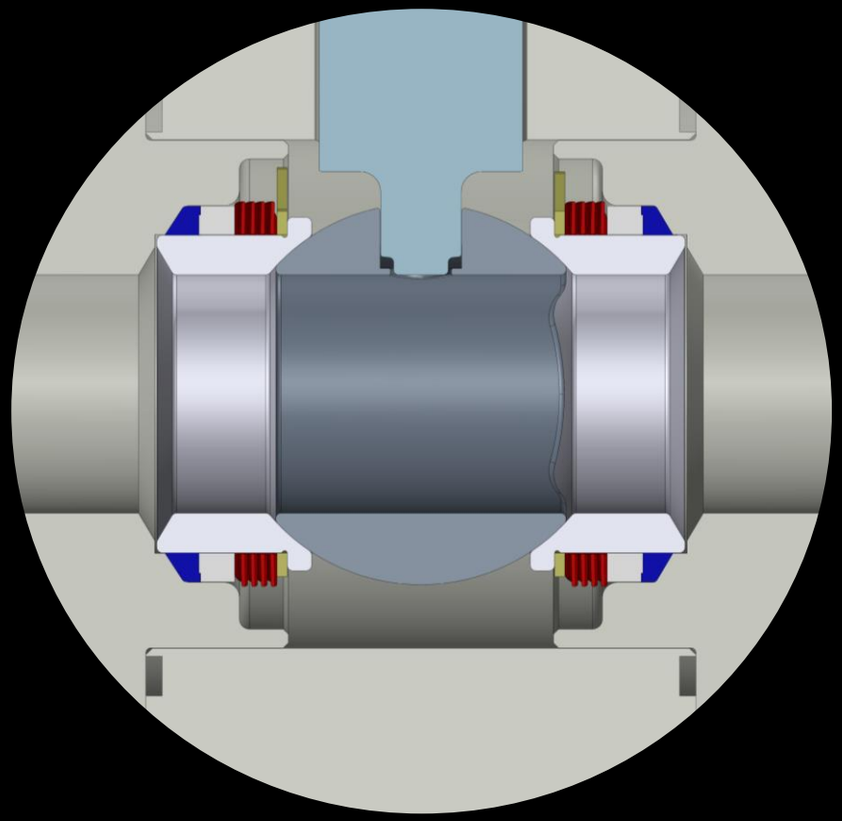
"SMOOTH OPERATOR"

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES

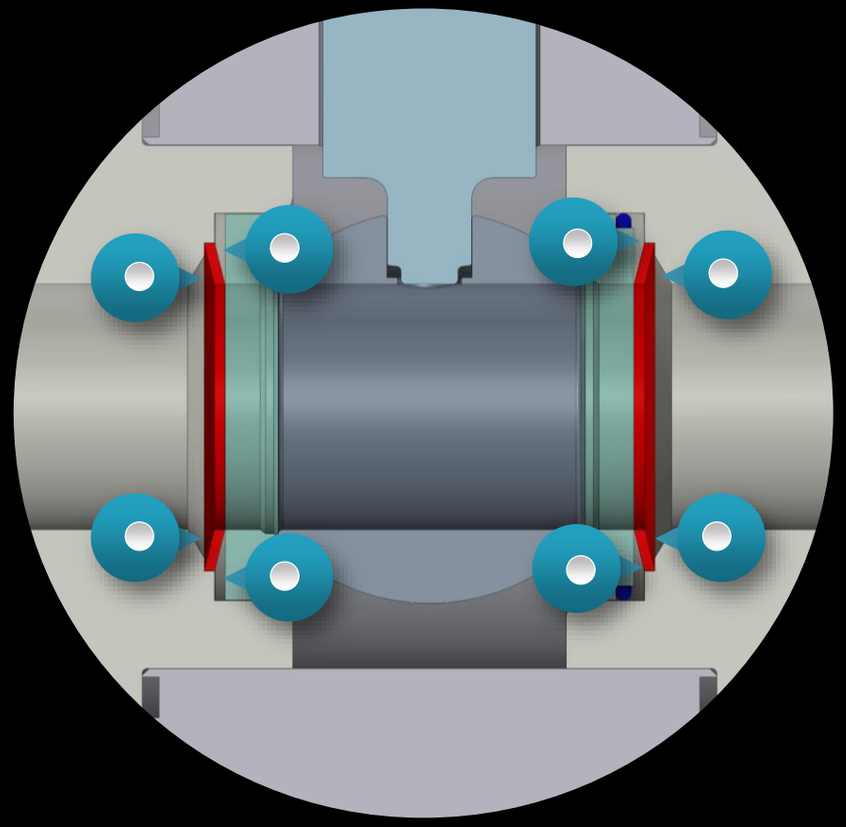
GOSCO'S SEATS



Media flows freely around the springs

"SMOOTH OPERATOR"

COMPETITOR'S SEATS



Media compacts around the Bellevilles

"ALL PLUGGED UP"

FAB VALVE

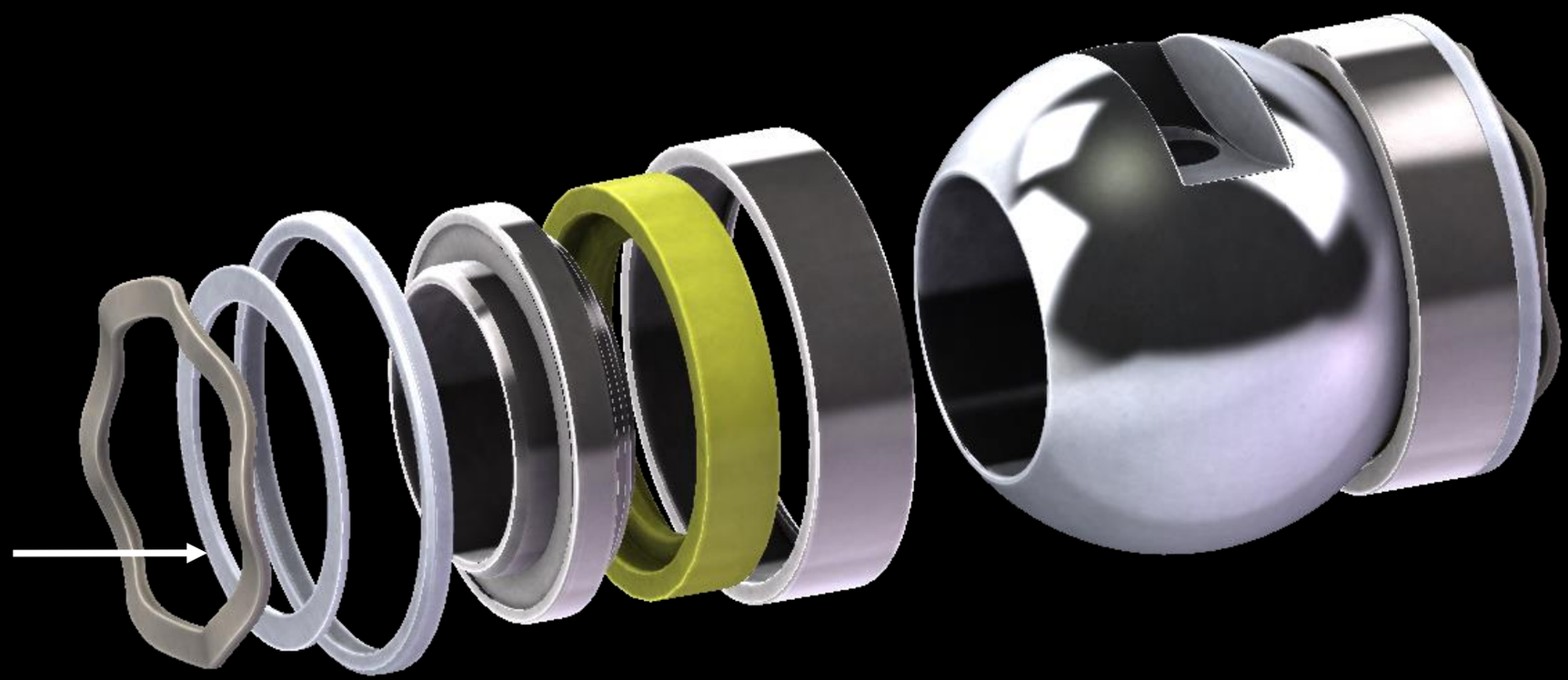
FABRICATED METAL SEATED BALL VALVES

gosco VALVES

Encapsulated Seats

Wave Spring provides ”Live-load” on the seat assembly

Encapsulated Seats



Compression Ring for API 607 fire-safe applications

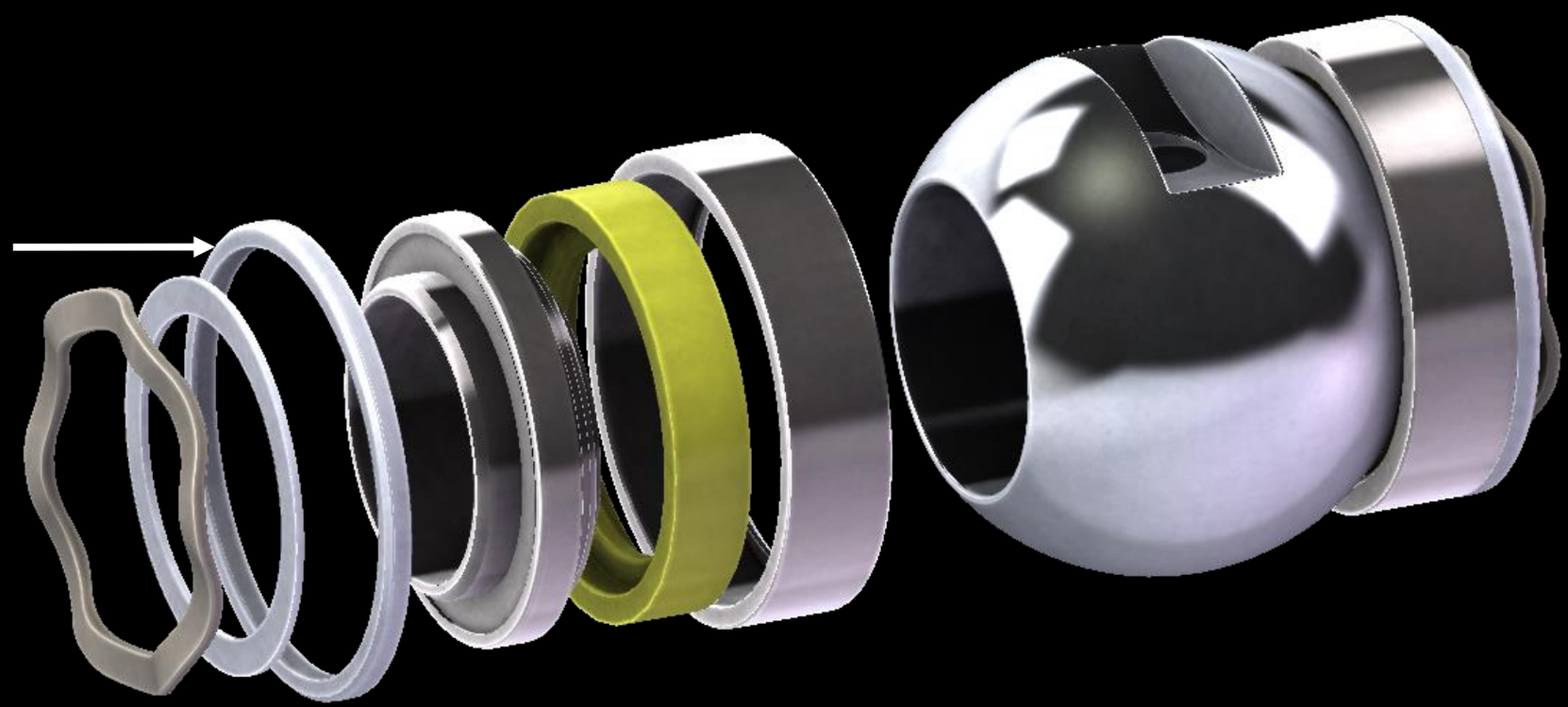
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“STRAIGHT JACKET”

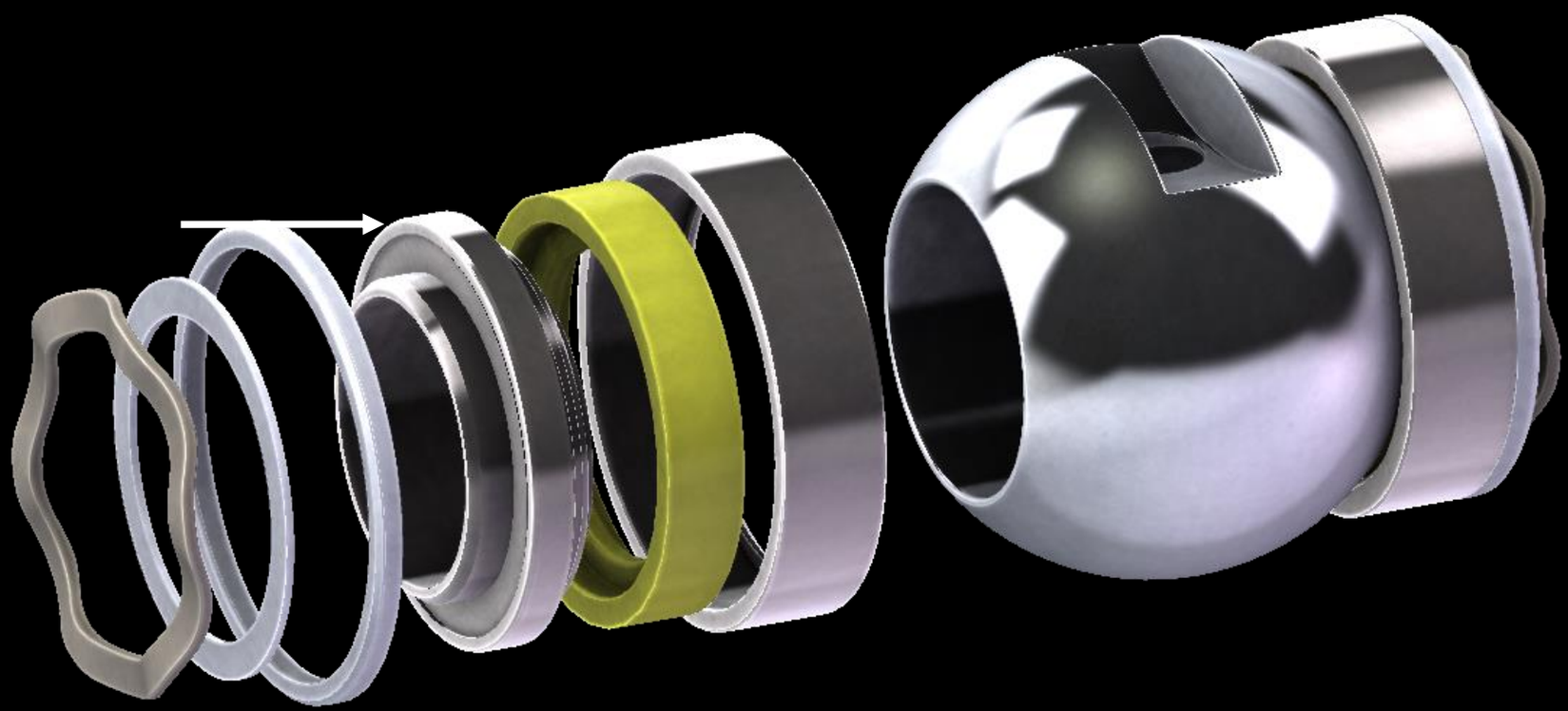
gosco VALVES

Encapsulated Seats



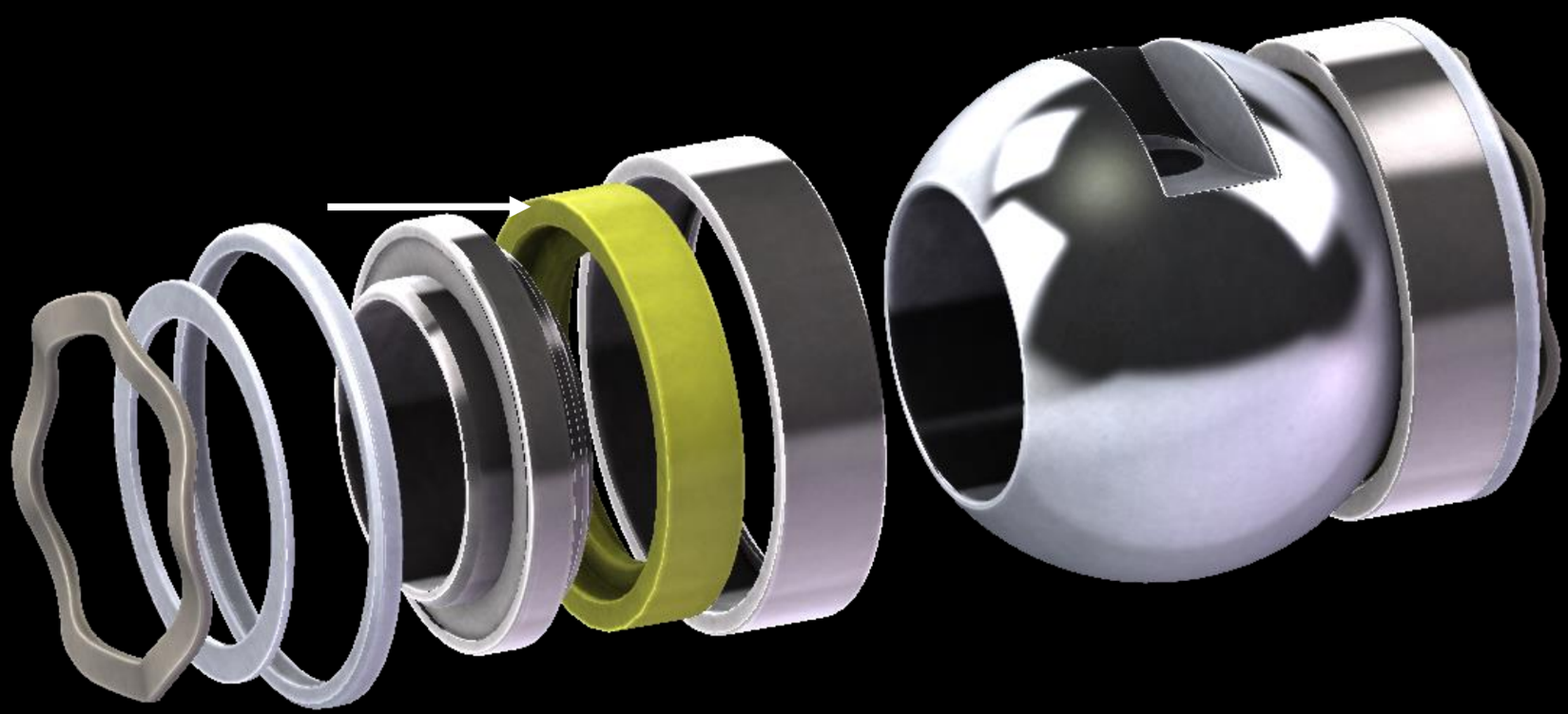
Spring loaded Outer Seal provides sealing on the seat assembly circumference

Encapsulated Seats



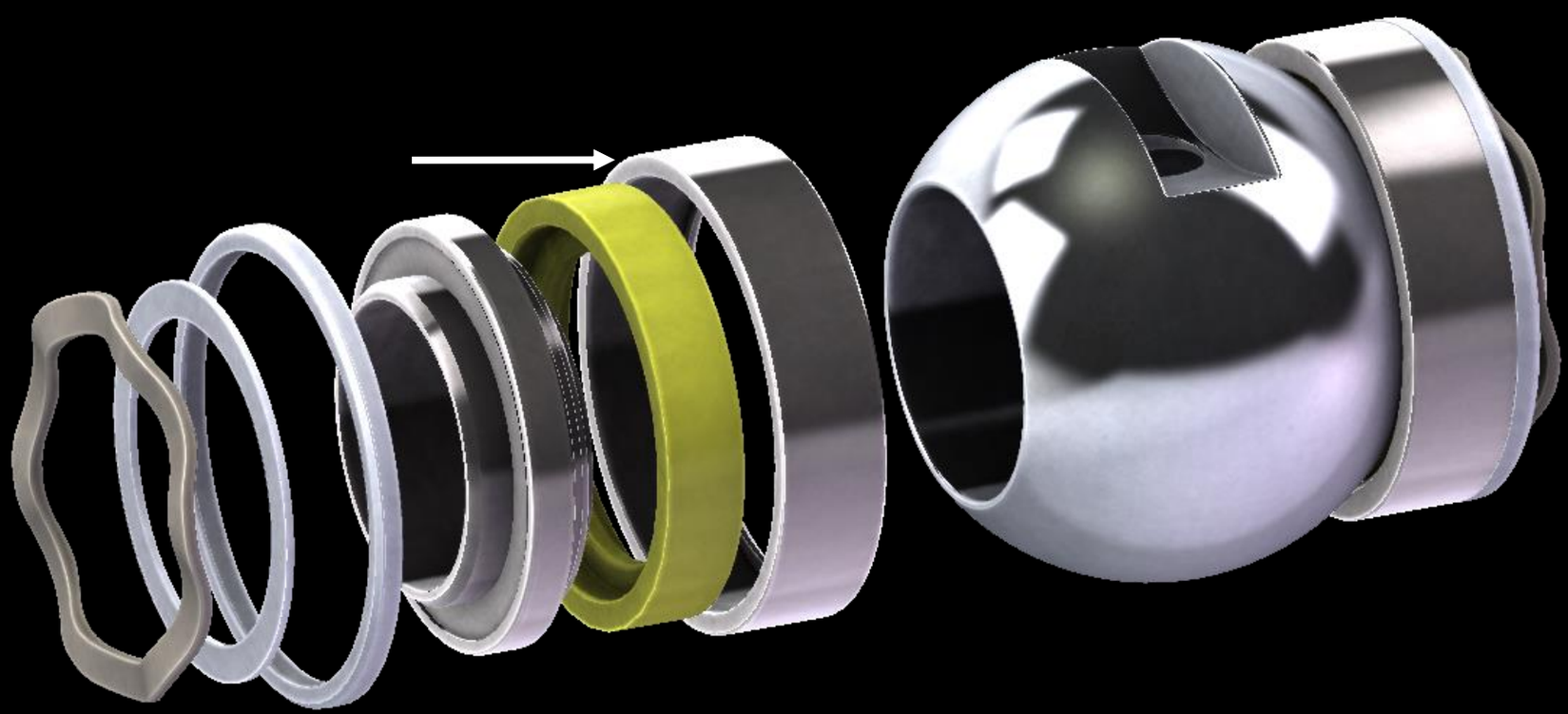
Inner Carrier encapsulates the seat insert on the inner circumference

Encapsulated Seats



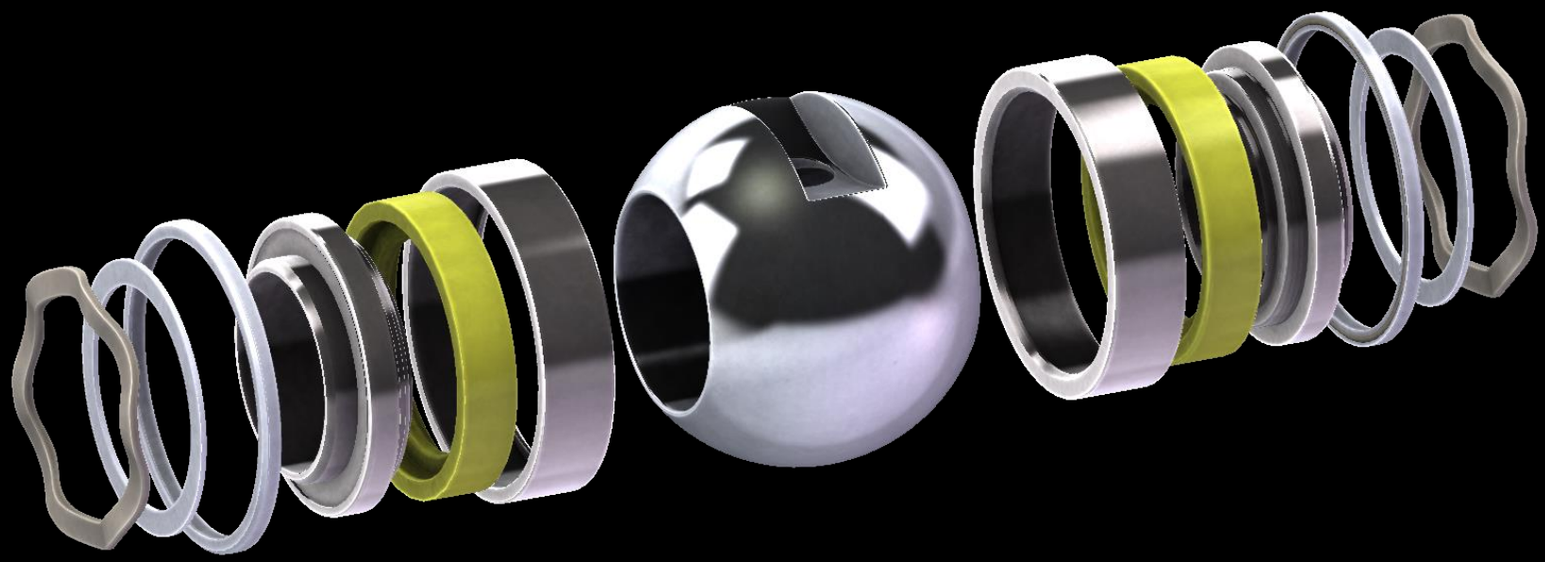
Seat Insert seals against the ball

Encapsulated Seats



Outer Carrier encapsulates seat insert on the outer circumference

Encapsulated Seats



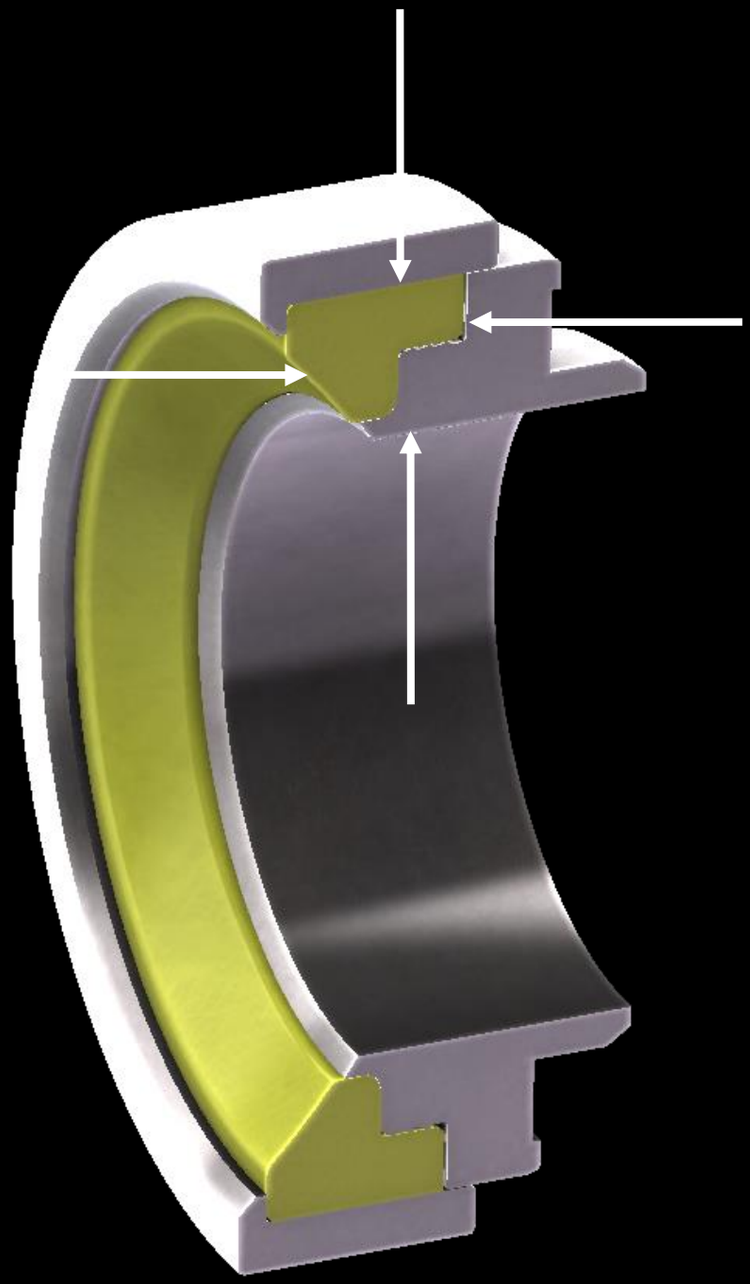
Proprietary Gosco Design

Live-loaded for sealing at low pressures

Utilized in high temperatures and/or pressures

Encapsulates “Soft” insert on all 4 sides

Encapsulated Seats



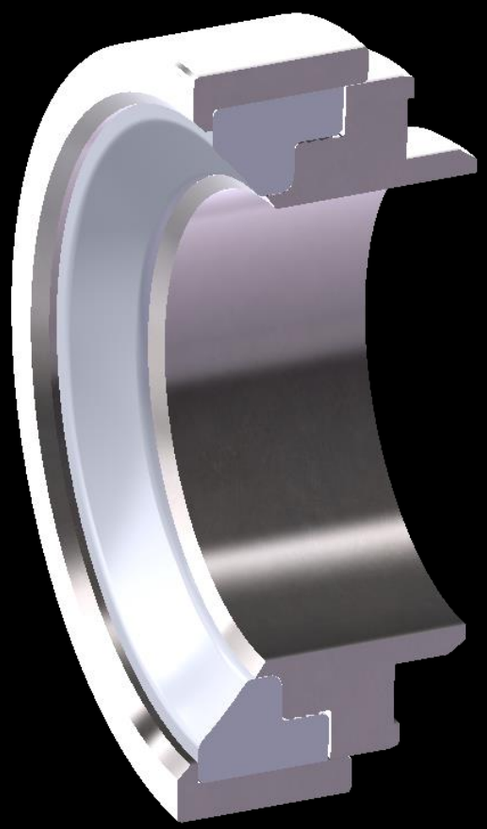
Encapsulates “Soft” insert on all 4 sides

Encapsulated Seats

"Soft" insert can be different materials depending on the application

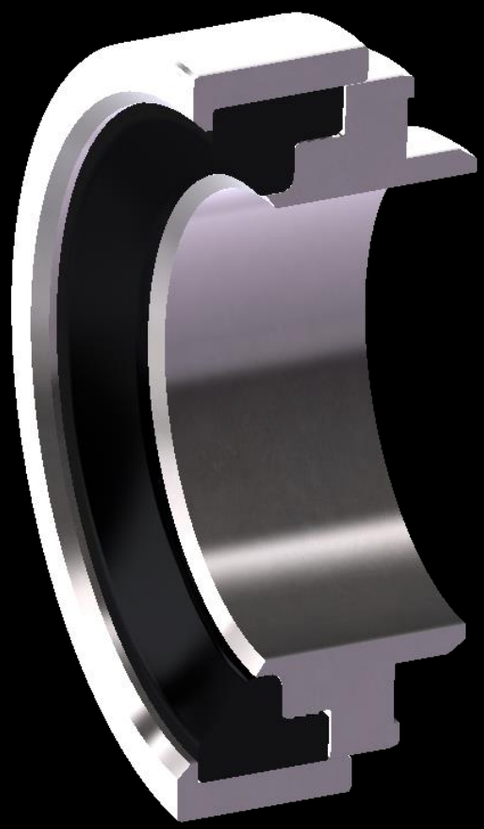
Encapsulated Seats

Teflon/TFM 1600 (Standard applications)



Devlon (Abrasive/High cycle applications)

PEEK/Graphite (High temperature applications)



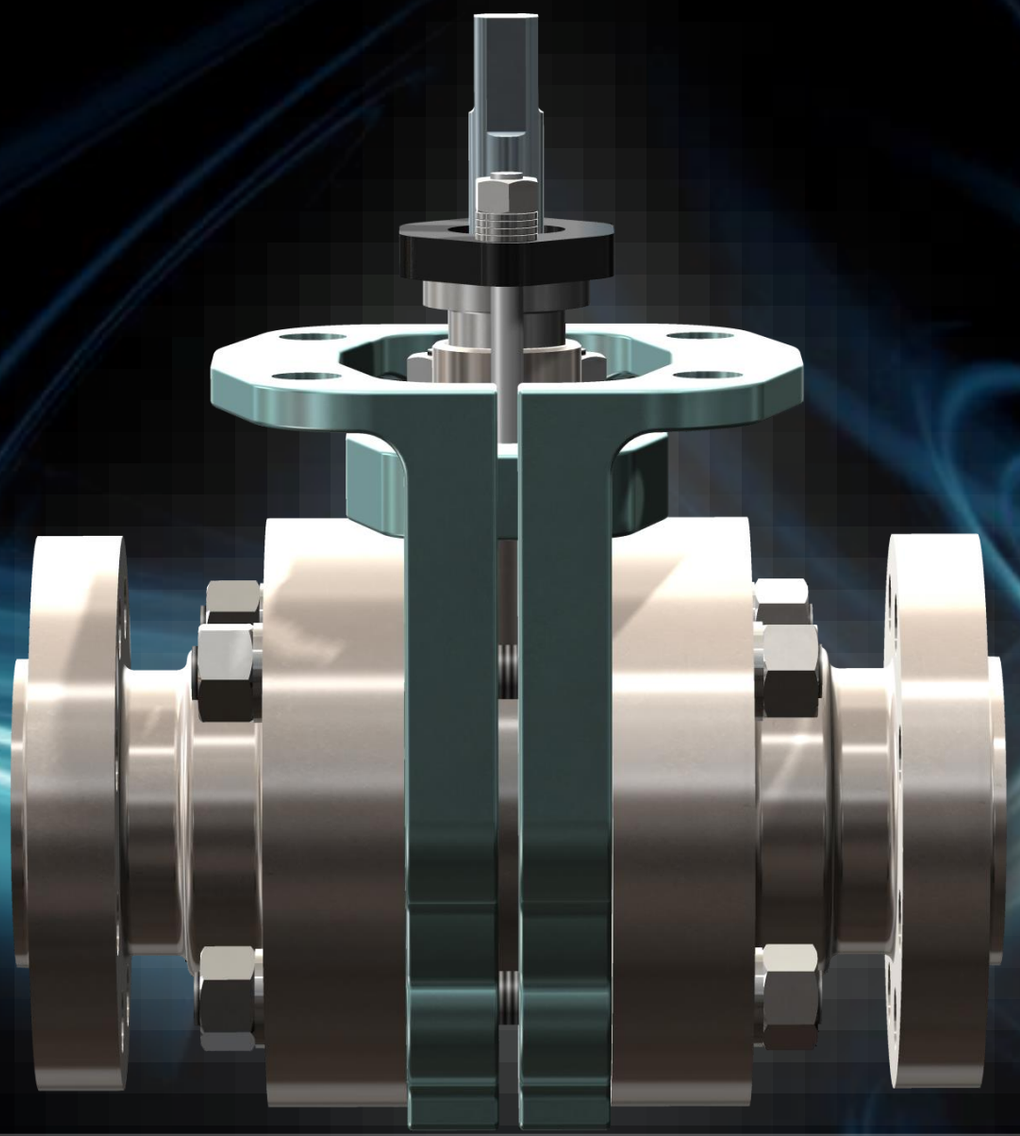
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“STRAIGHT JACKET”

gosco VALVES

BALL DESIGN



FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“SLOW POKE”

gosco VALVES

GOSCO'S ARCUATE CUT BALL

Specific profile is cut on the ball to reduce velocities

GOSCO'S ARCUATE CUT BALL

Arcuate cut is then hardened in the boronizing process

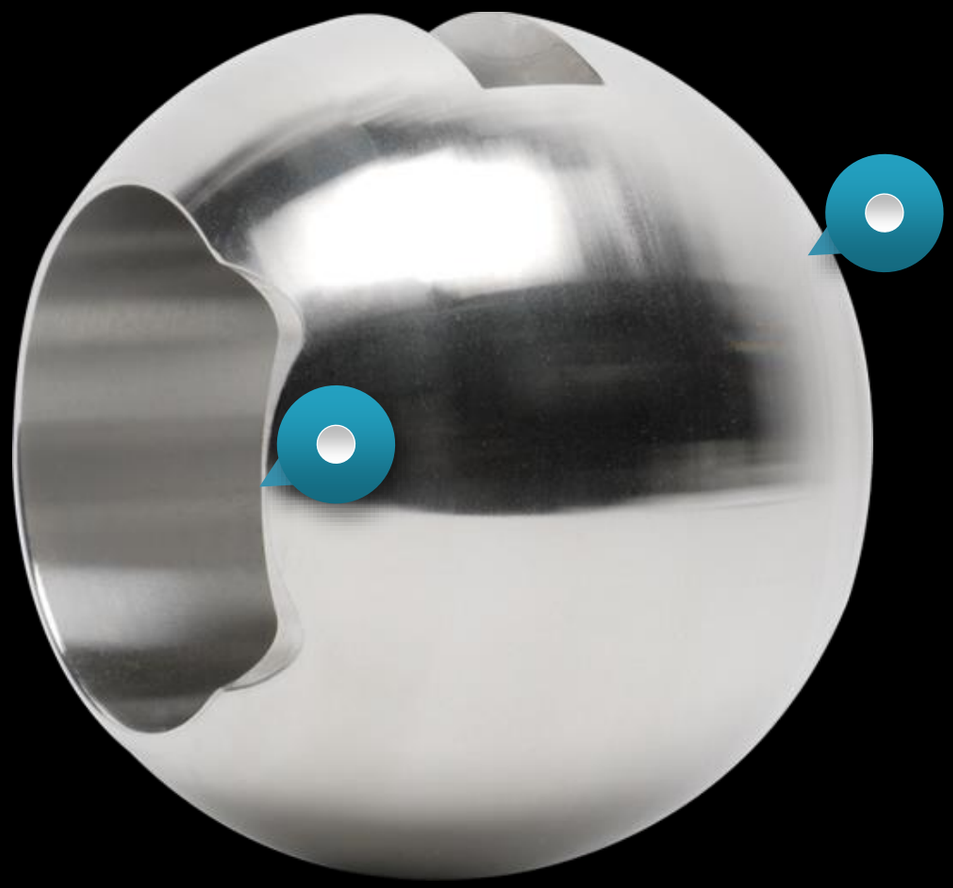
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

"SLOW POKE"

gosco VALVES

GOSCO'S ARCUATE CUT BALL



Both sides of ball have an arcuate cut (not visible in image)

STANDARD BALL vs ARCUATE CUT

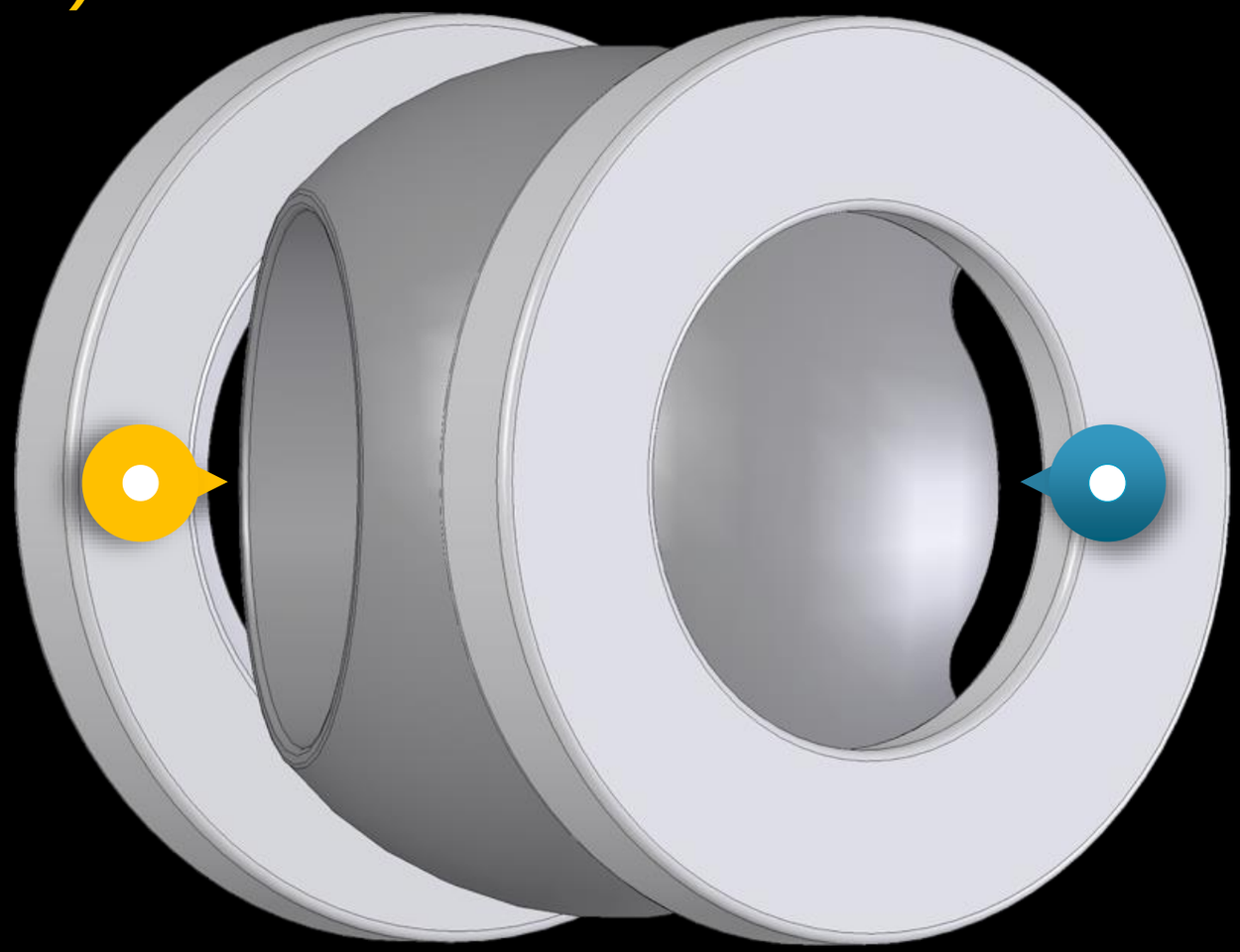
Illustration below shows a ball at 10% open.

STANDARD BALL (Competition)

Small opening

High velocities

Trim damage



ARCUATE CUT BALL (Gosco Valves)

3 times larger opening

Velocities reduced by 2/3

Less trim damage
(Flow is spread out)

GOSCO VARI-V BALLS

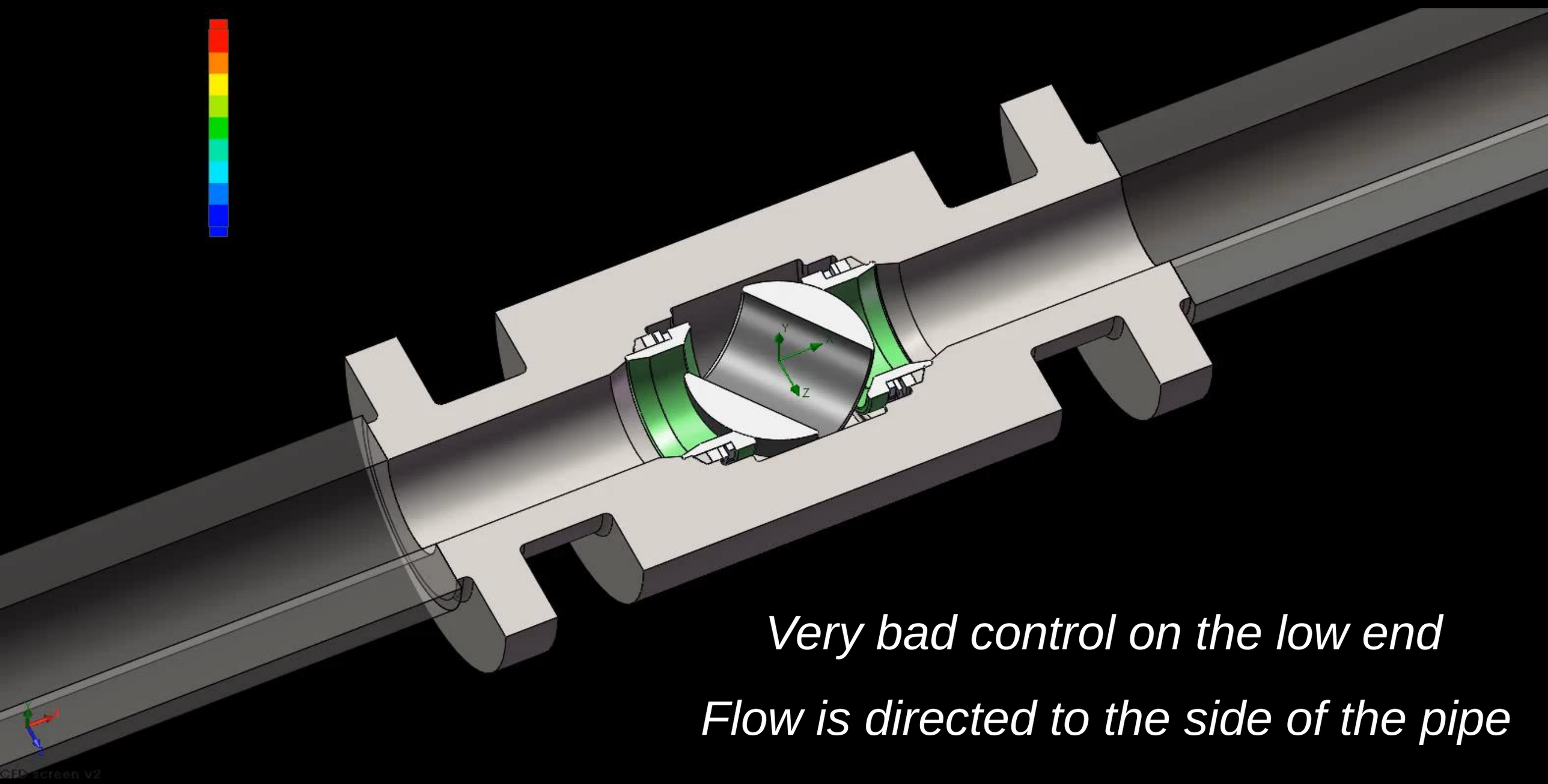
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“CONTROL FREAK”

gosco VALVES

CONVENTIONAL BALL



Very bad control on the low end

Flow is directed to the side of the pipe

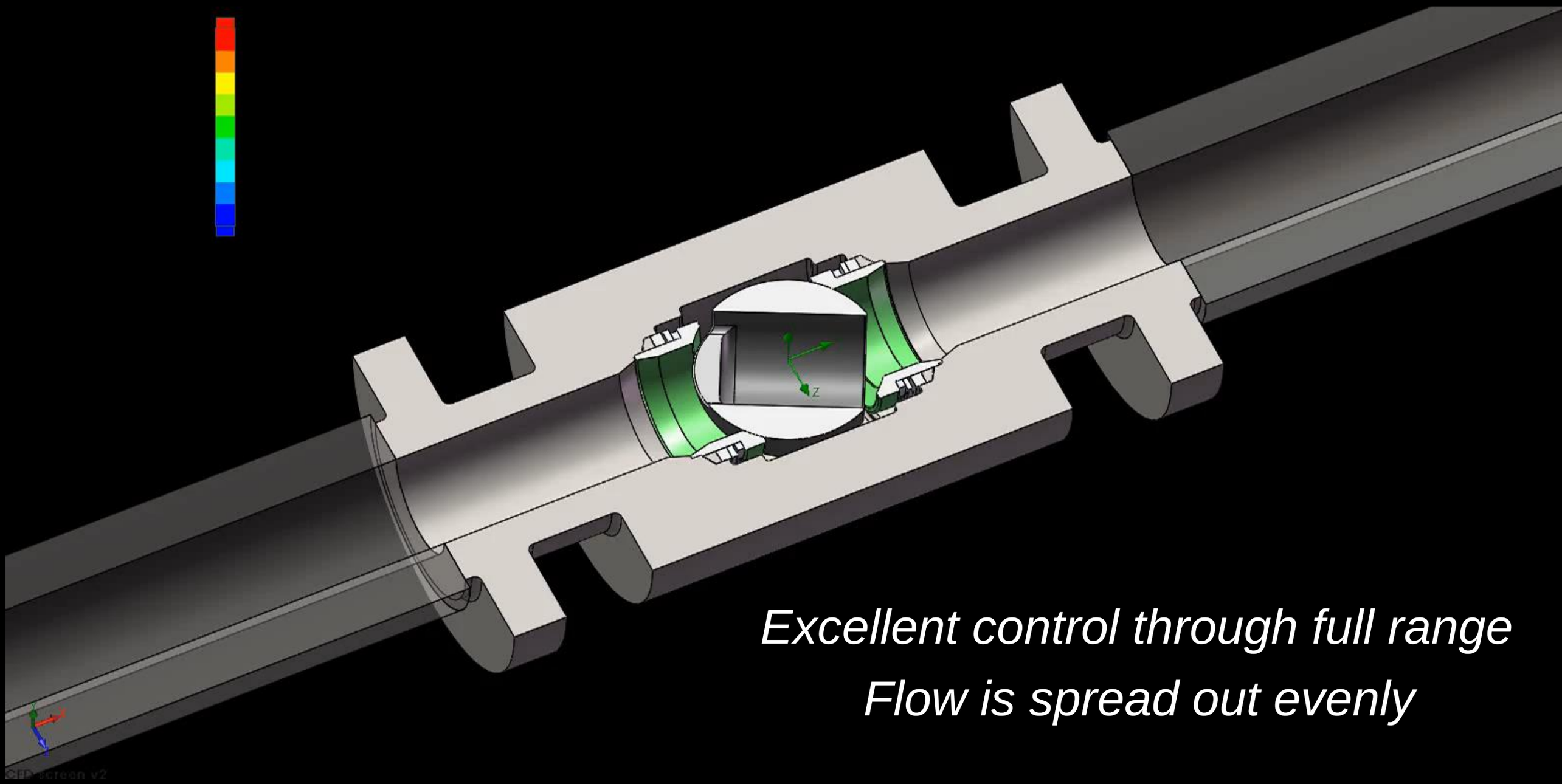
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“OUT OF CONTROL”

GOSCO VALVES

GOSCO VARI-V BALL



Excellent control through full range

Flow is spread out evenly

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“CONTROL FREAK”

gosco VALVES

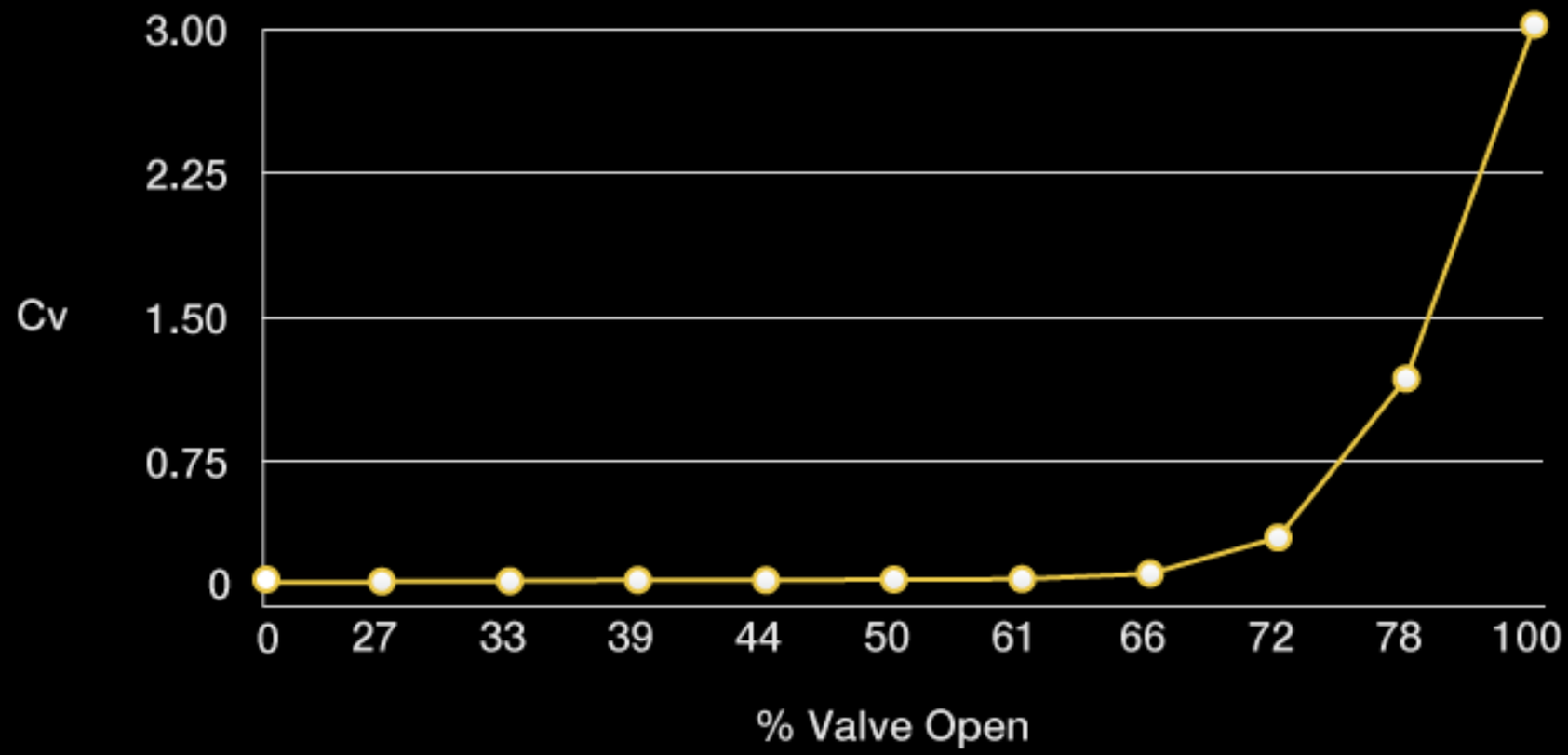
CUSTOM VARI-V BALLS

GOSCO can custom design any profile for your application

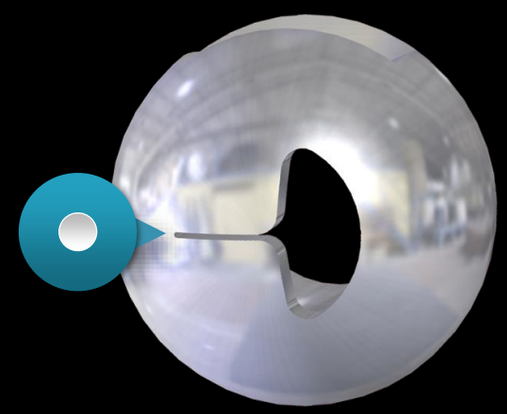
CUSTOM V-BALL C_V CURVE

CUSTOM V-BALL C_V CURVE

Flow requirements for one of our custom V-balls.



SLOT WIDTH WAS ALMOST AS THIN AS A HUMAN HAIR



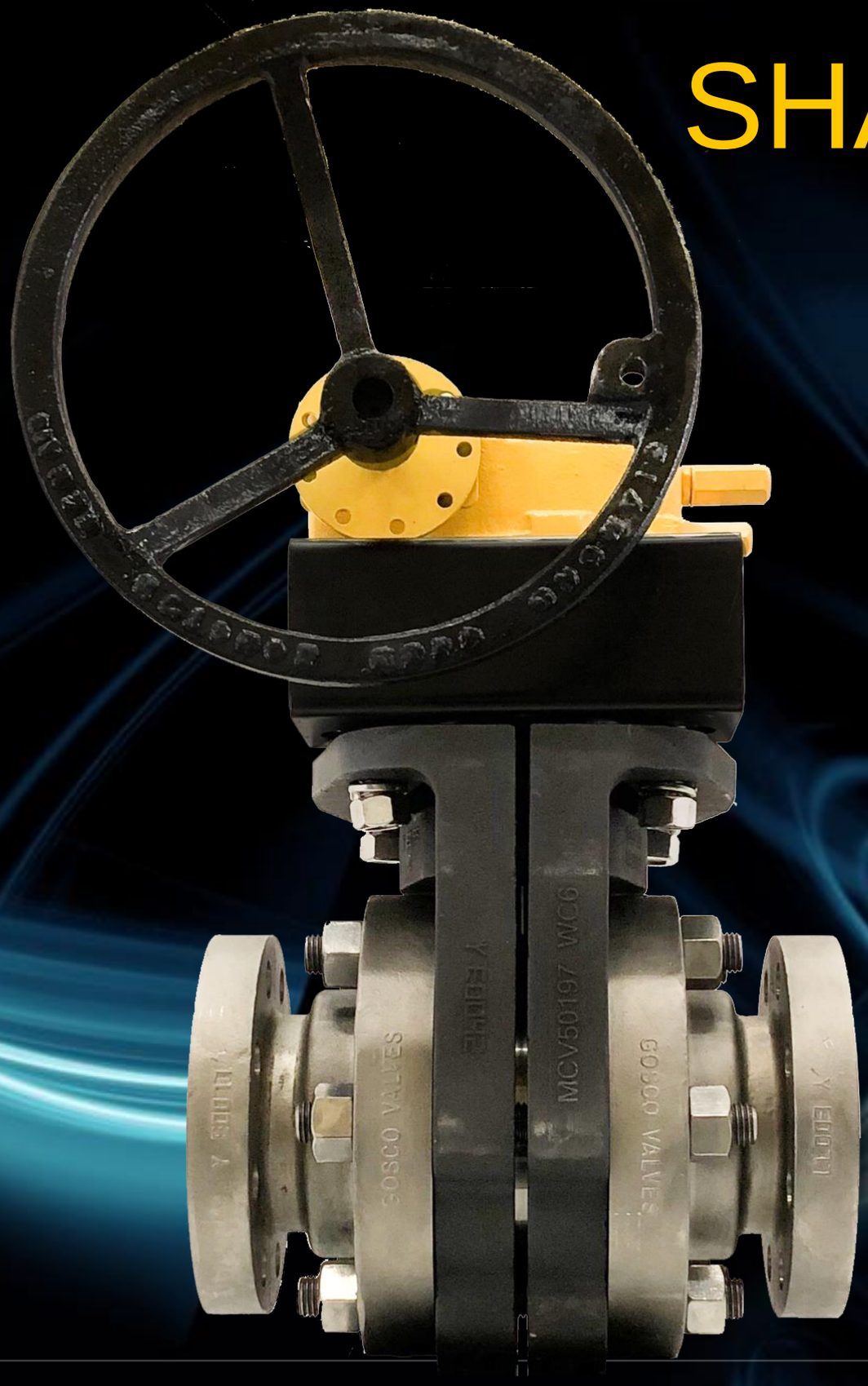
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

"CONTROL FREAK"

gosco VALVES

SHAFT PACKING

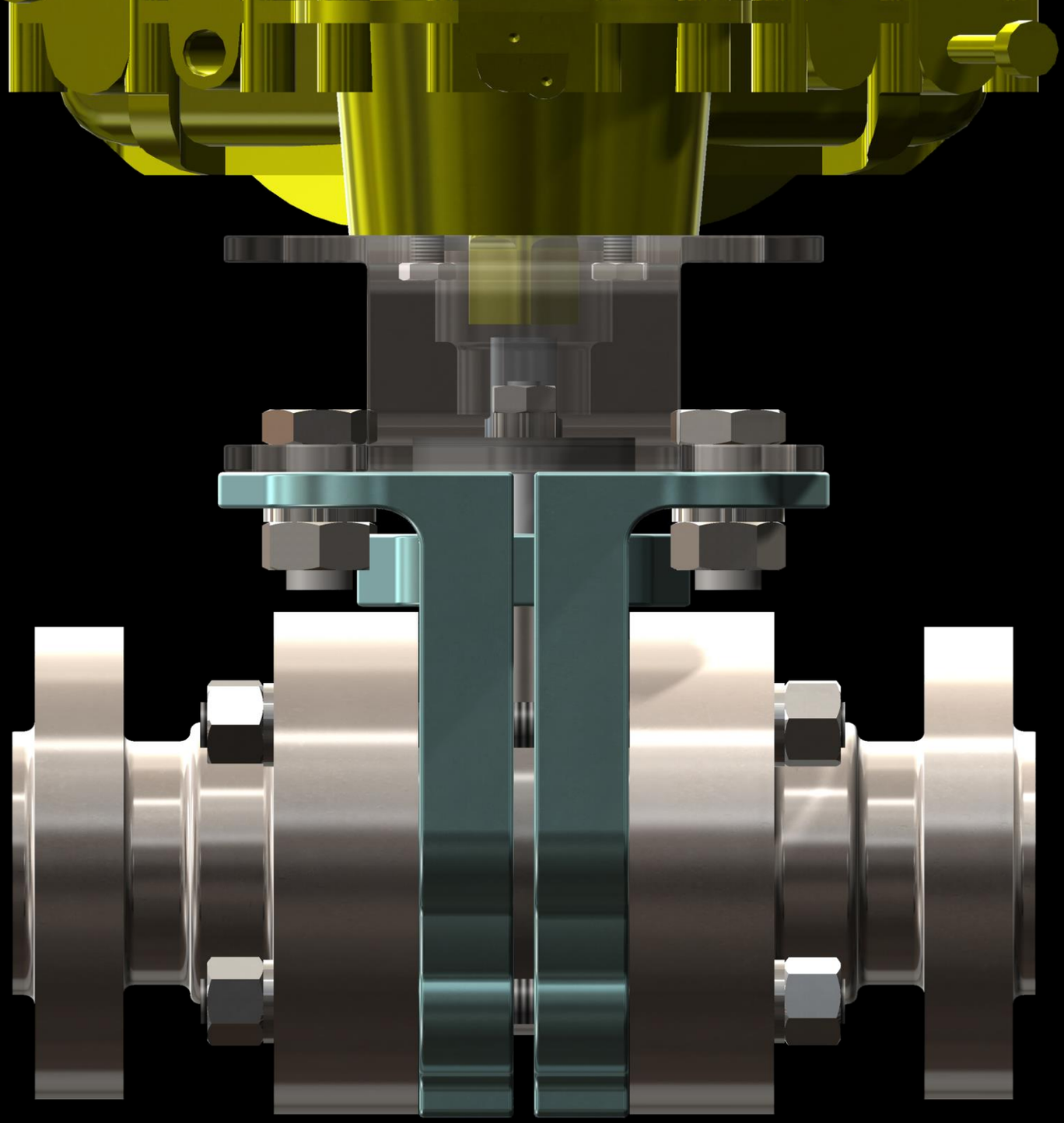


FAB VALVE

FABRICATED METAL SEATED BALL VALVES

"THE BUCK STOPS HERE"

gosco VALVES



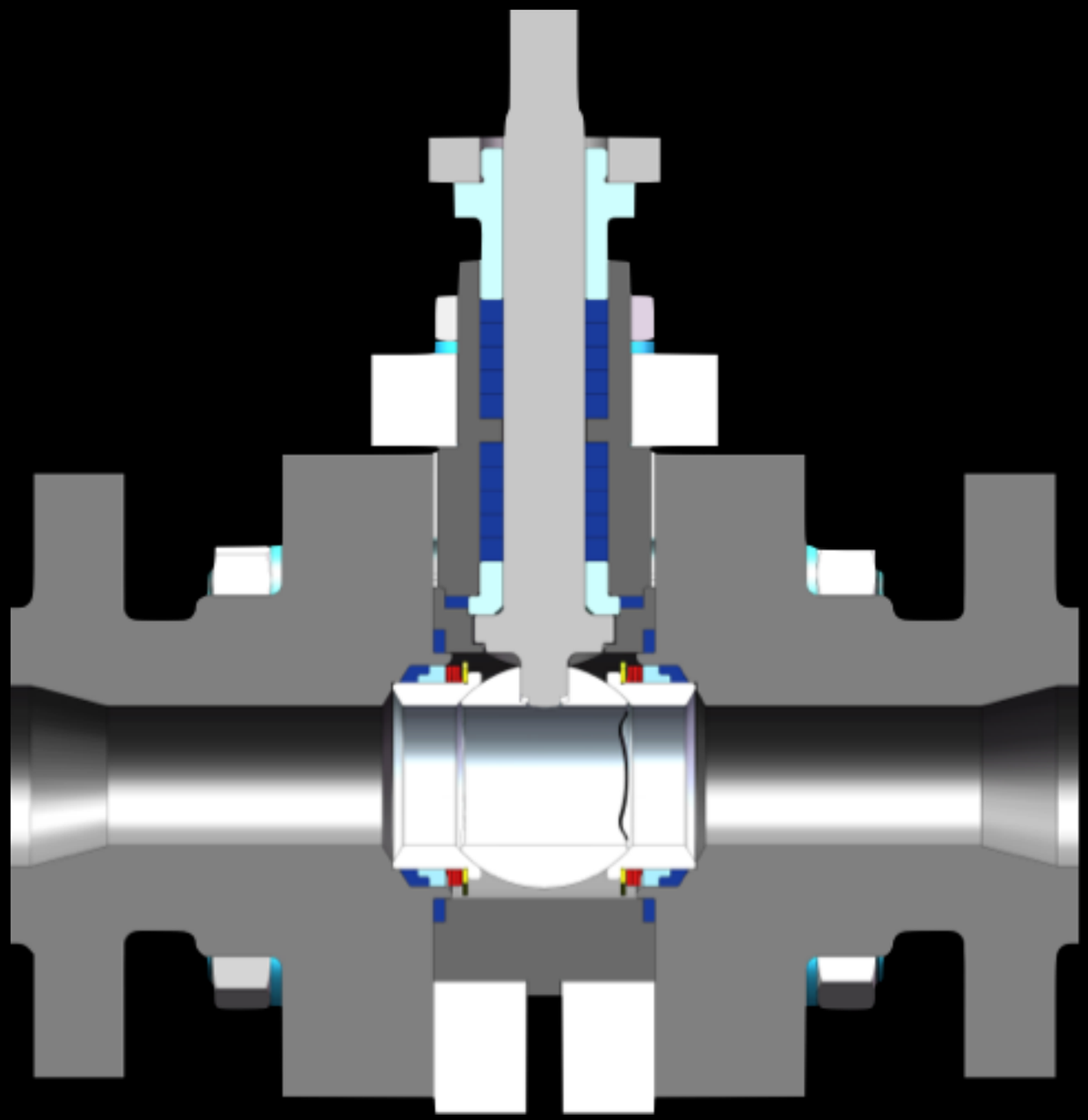
DUAL PACKING

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“THE BUCK STOPS HERE”

gosco VALVES



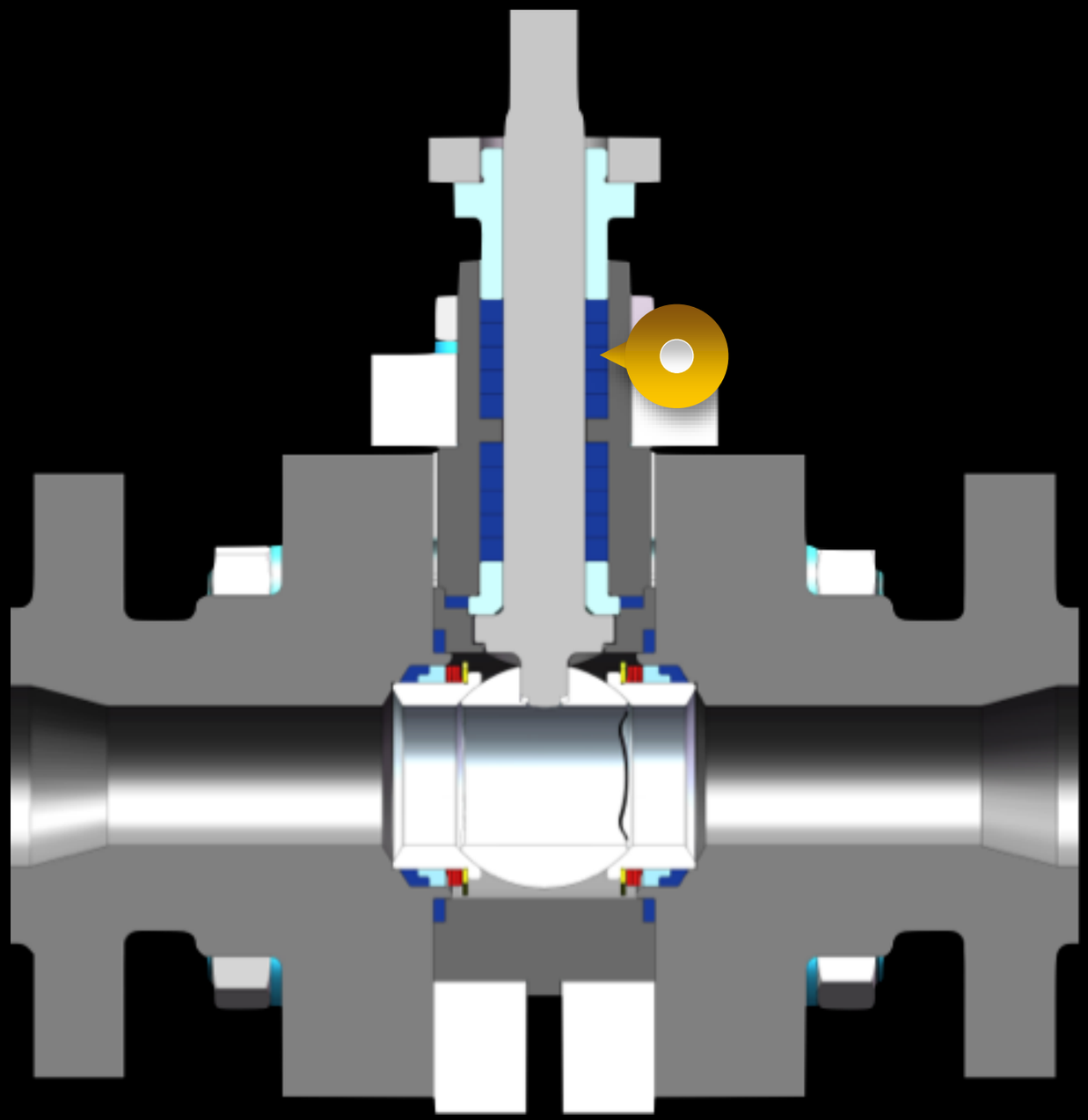
DUAL PACKING

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“THE BUCK STOPS HERE”

gosco VALVES



DUAL PACKING

Our PREMIUM version uses a dual packing design for shaft sealing

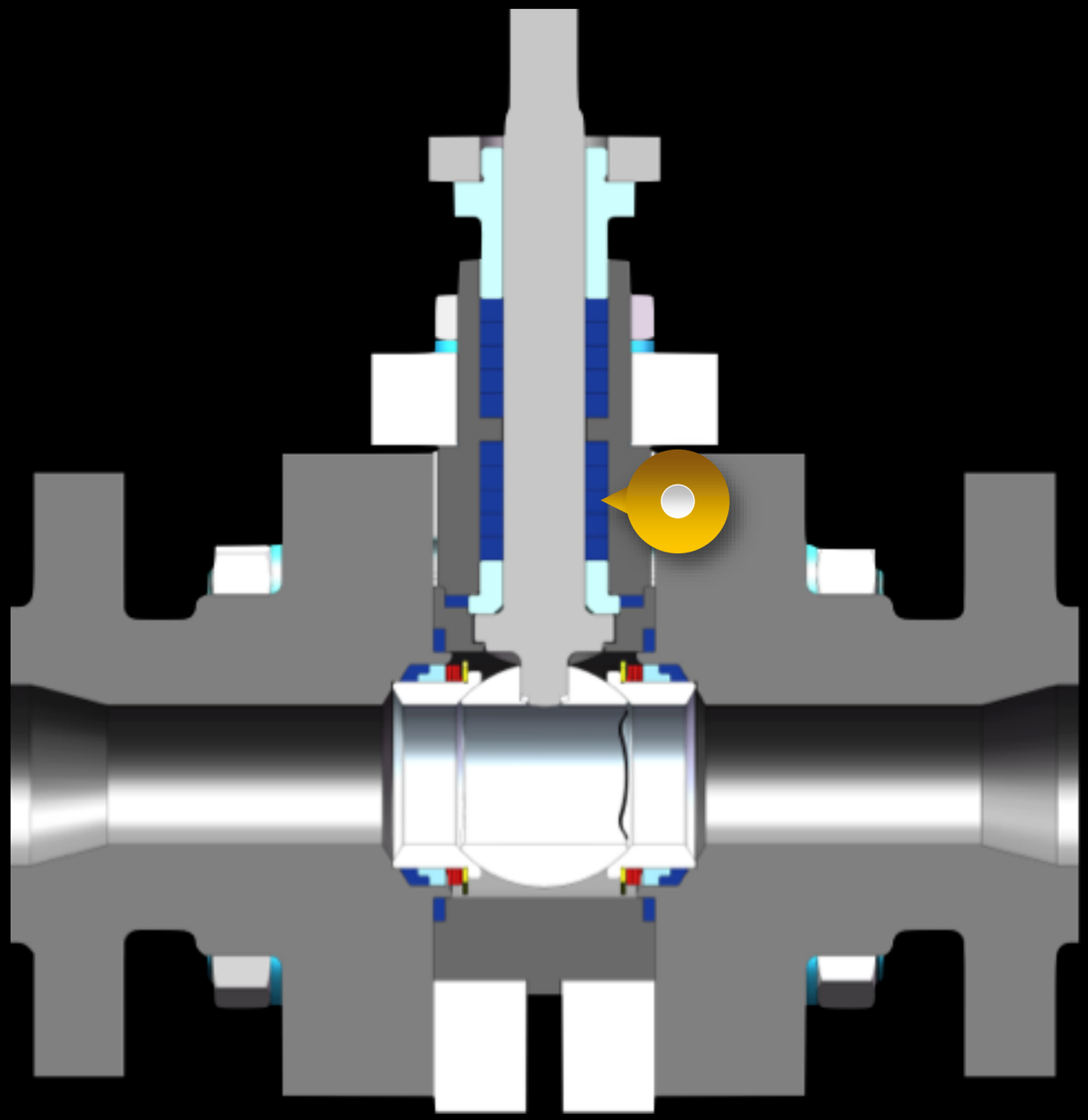
Live loaded upper packing

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

“THE BUCK STOPS HERE”

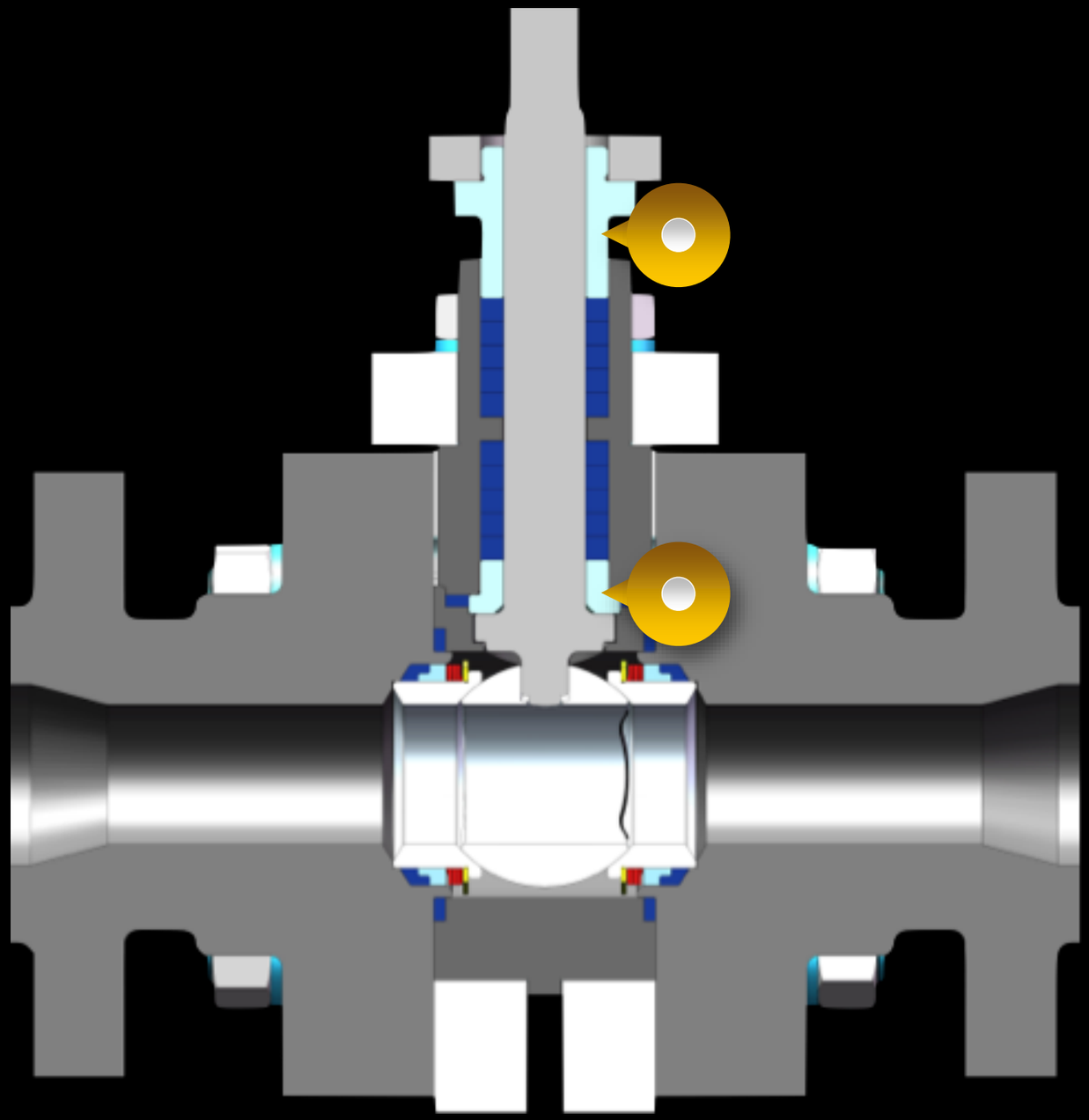
GOSCO VALVES



DUAL PACKING

Our PREMIUM version uses a dual packing design for shaft sealing

SmartPak™ lower packing



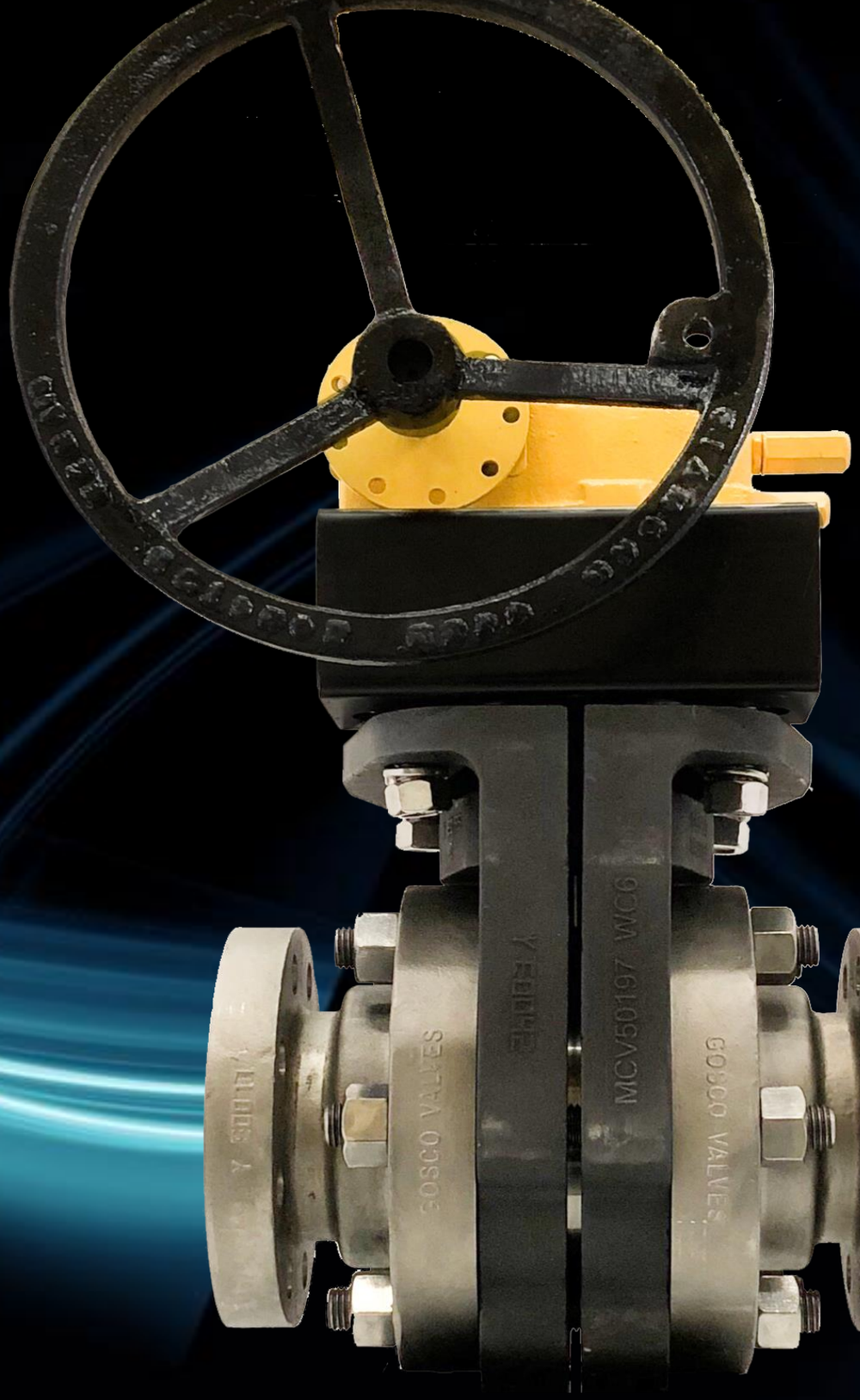
DUAL PACKING

Our PREMIUM version uses a dual packing design for shaft sealing

Dual shaft guides

“THE BUCK STOPS HERE”

ALLOY OPTIONS



FAB VALVE

FABRICATED METAL SEATED BALL VALVES

"CHAMELEON"

gosco VALVES

Alloy options

Hastelloy

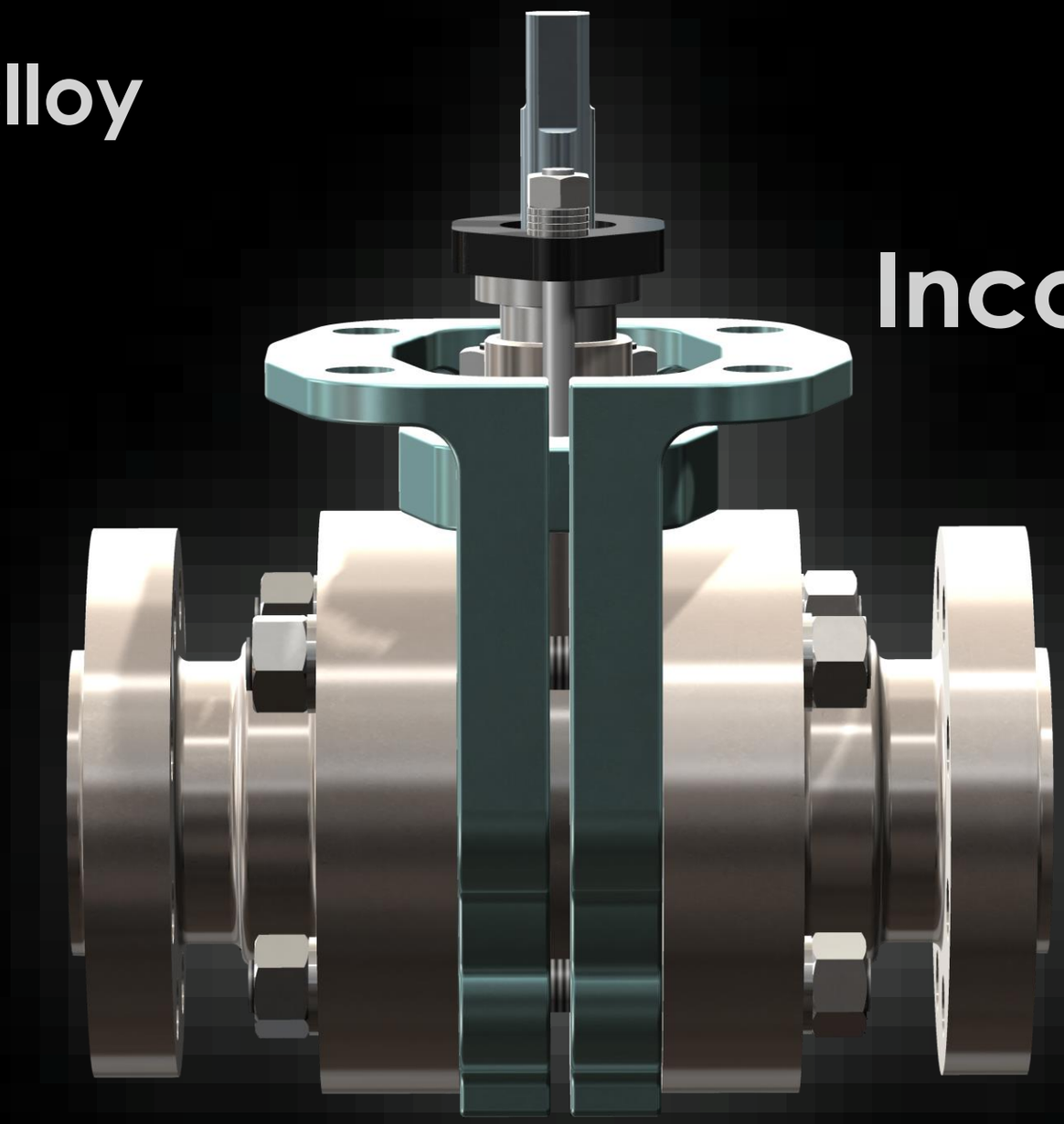
DUPLEX

INCONEL

Incoloy

Carbon Steel

Alloy 20



Tantalum

Titanium

MONEL

Super Duplex

CUSTOMER SPECIFIED

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

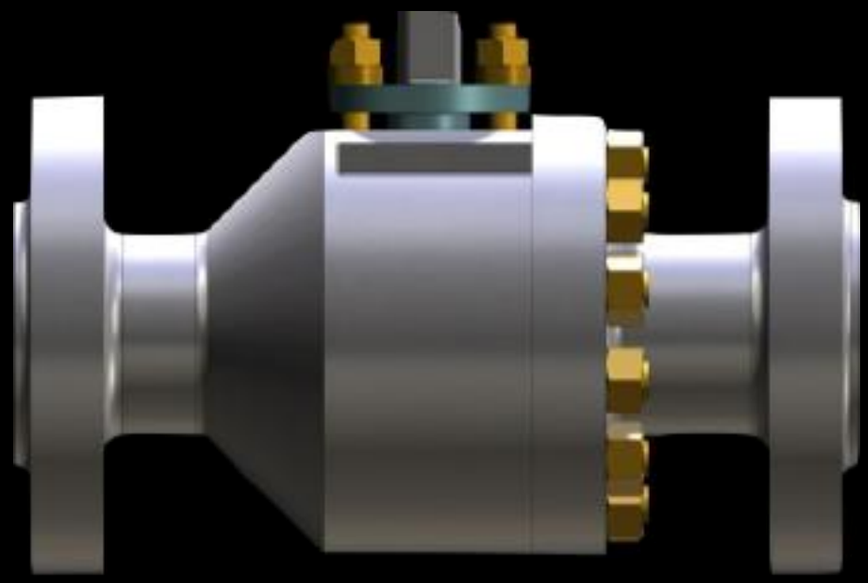
gosco VALVES

COMPETITOR’S VALVE

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

COMPETITOR’S VALVE

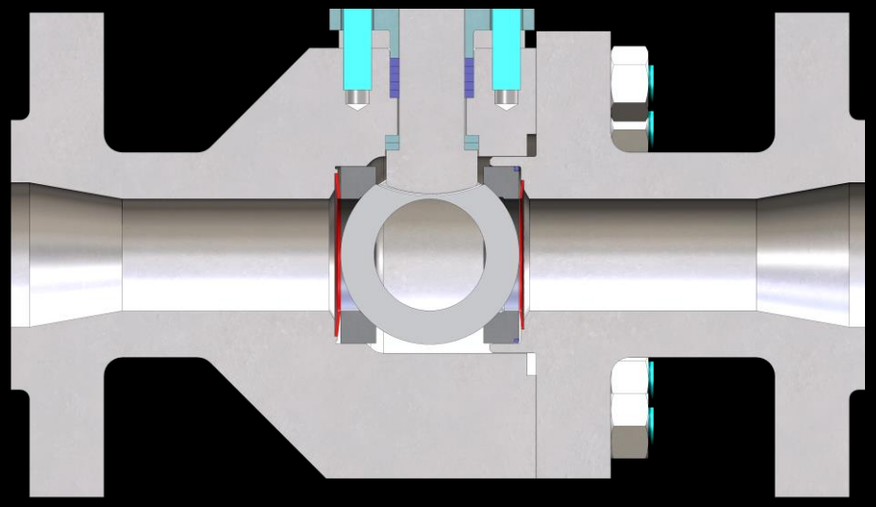


FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES

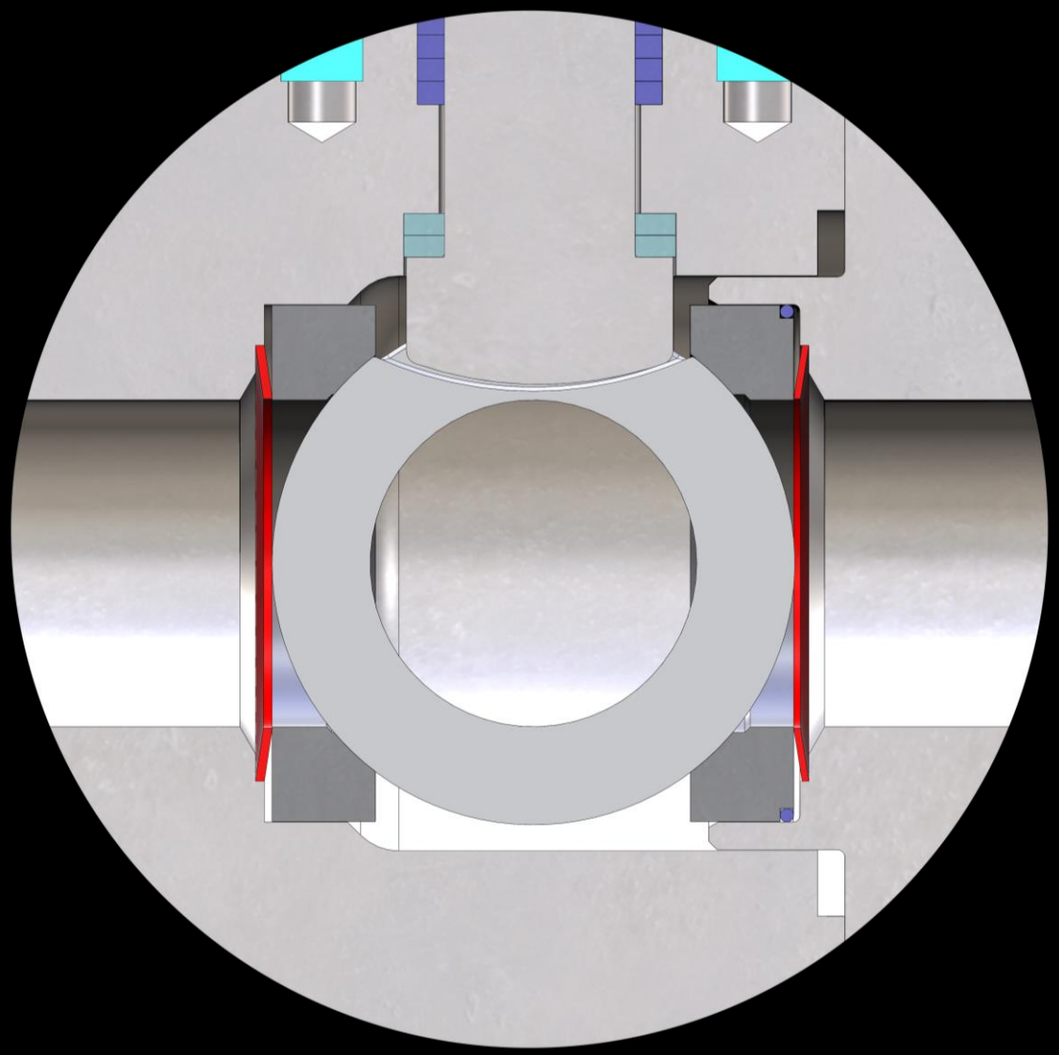
COMPETITOR’S VALVE



FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES



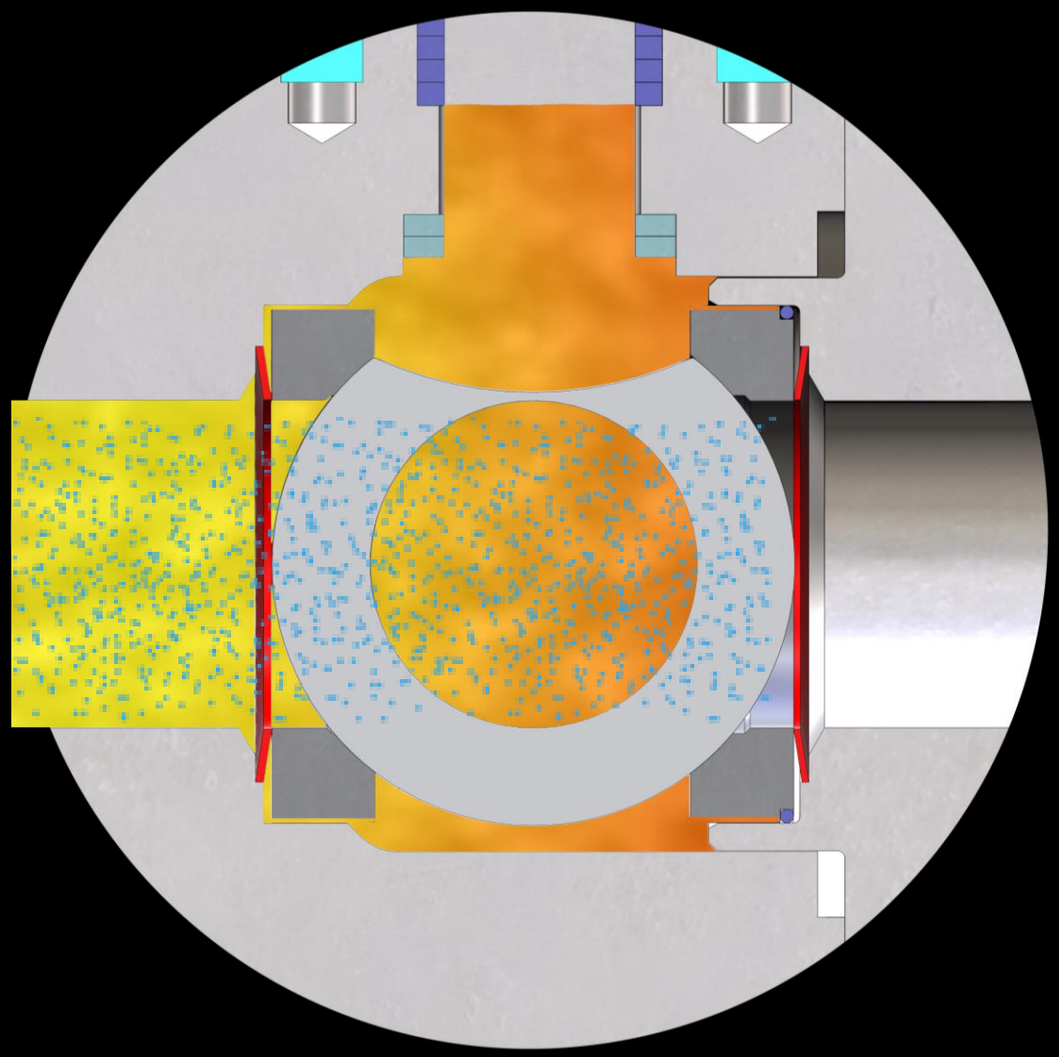
COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

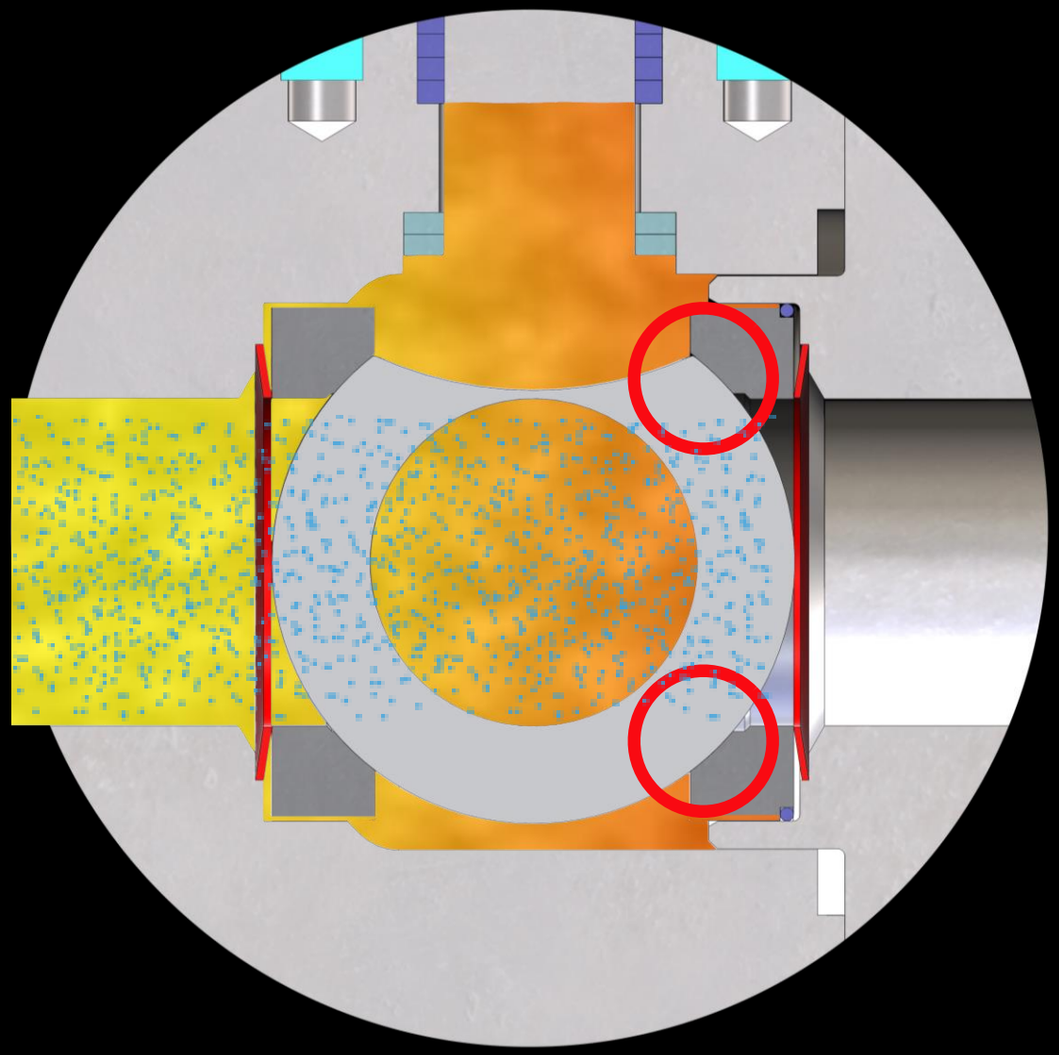
"ONE WAY STREET"

gosco VALVES



COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)

With upstream flow



COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)

Seal is created between the downstream seat and ball

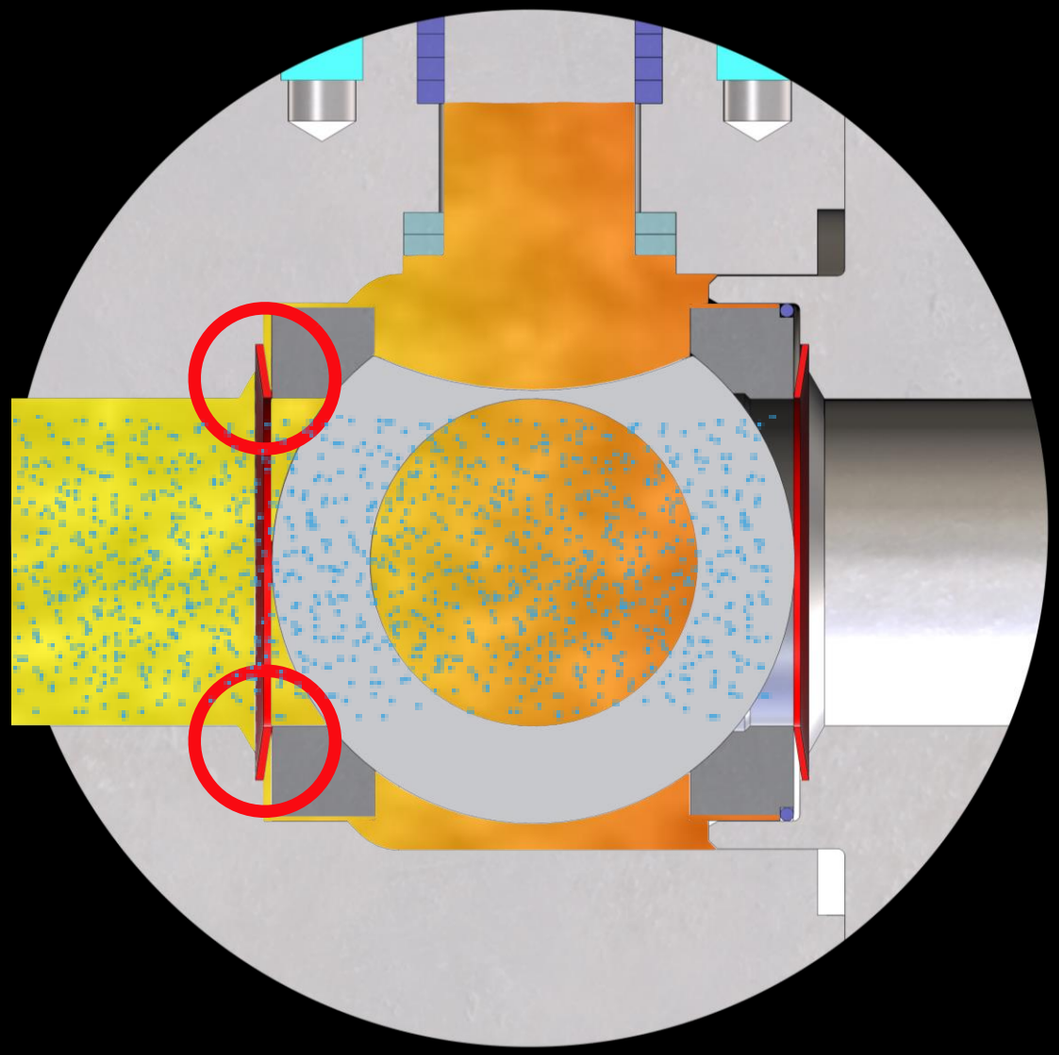
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

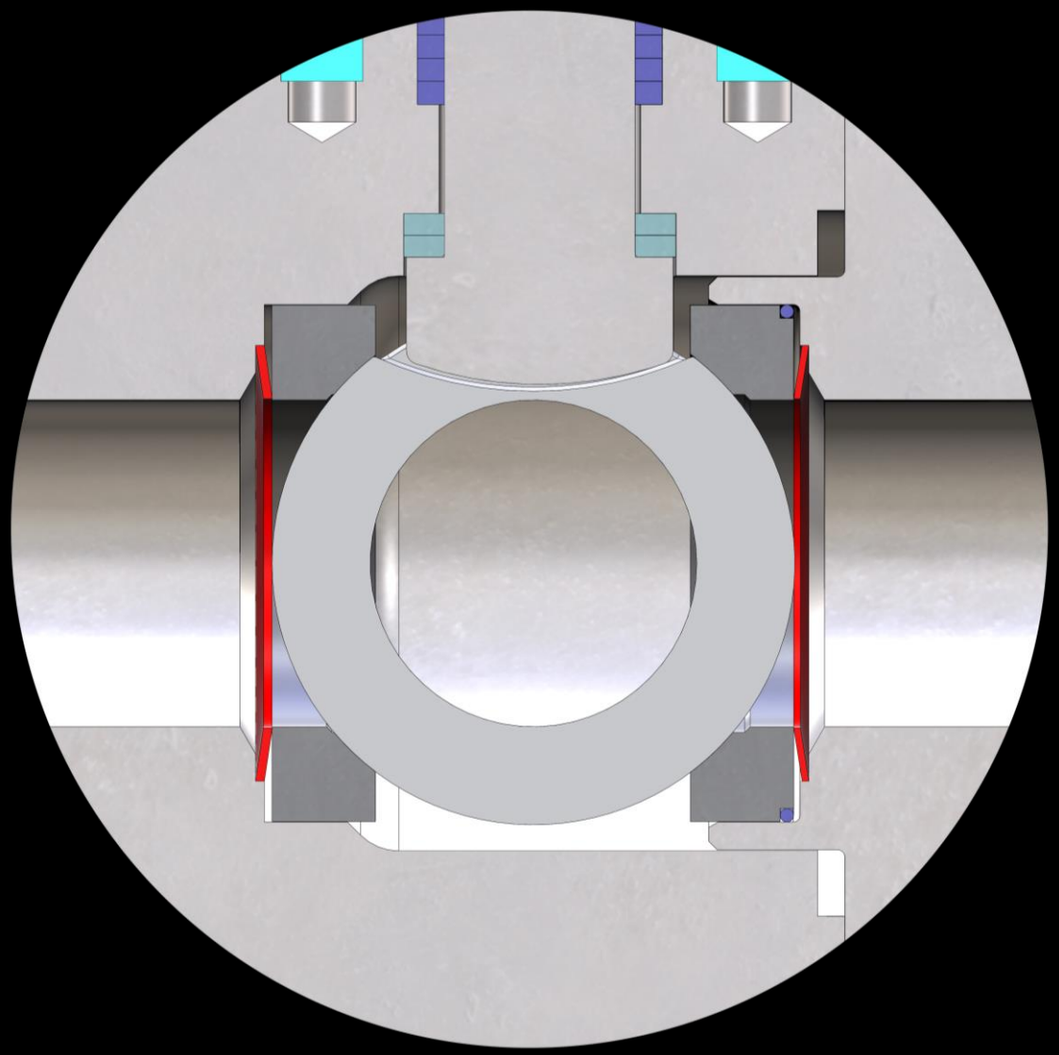
"ONE WAY STREET"

gosco VALVES

COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)



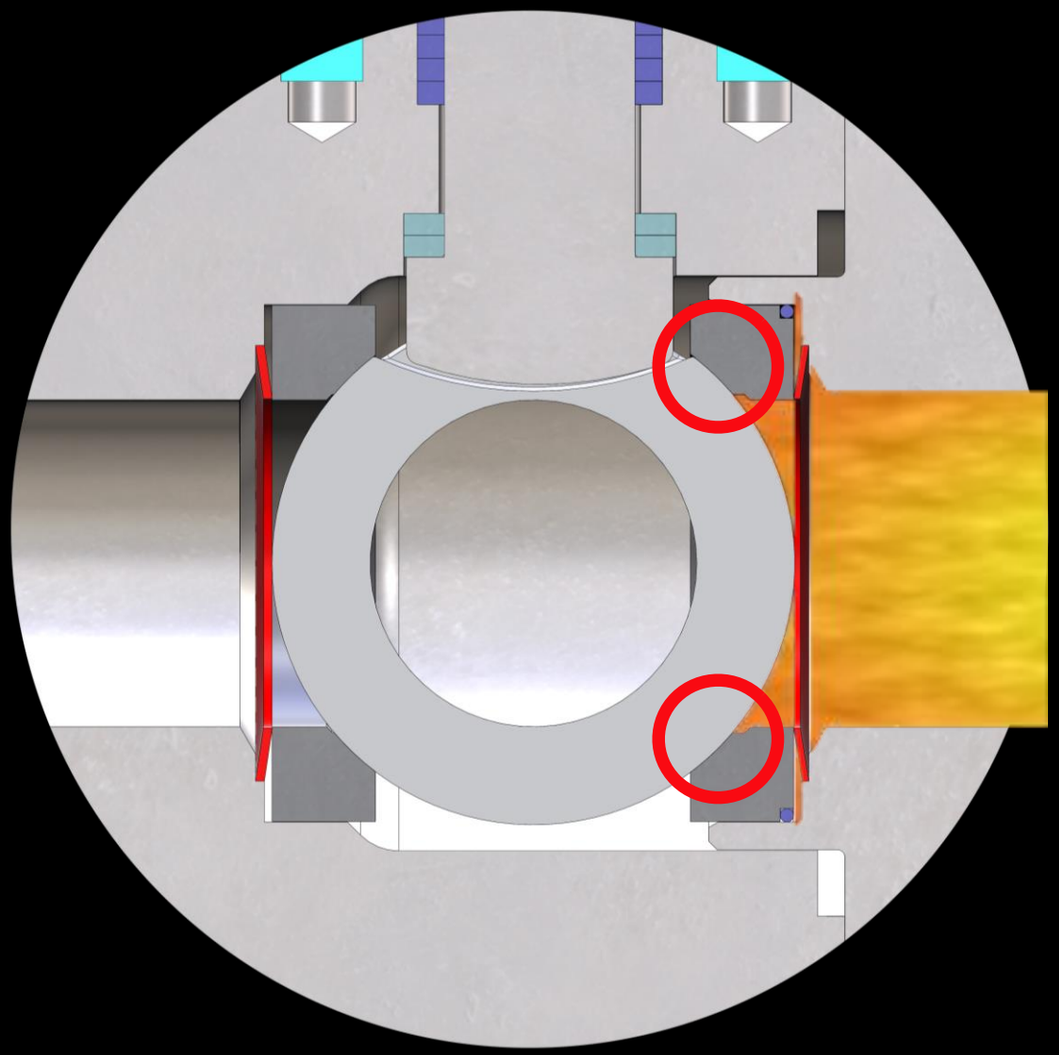
Spring is still exerting force on the upstream seat



COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)

However, with back-pressure or reverse flow, the valve fails

BACK PRESSURE or REVERSE FLOW



COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)

Back-pressure pushes the ball back and flattens the spring

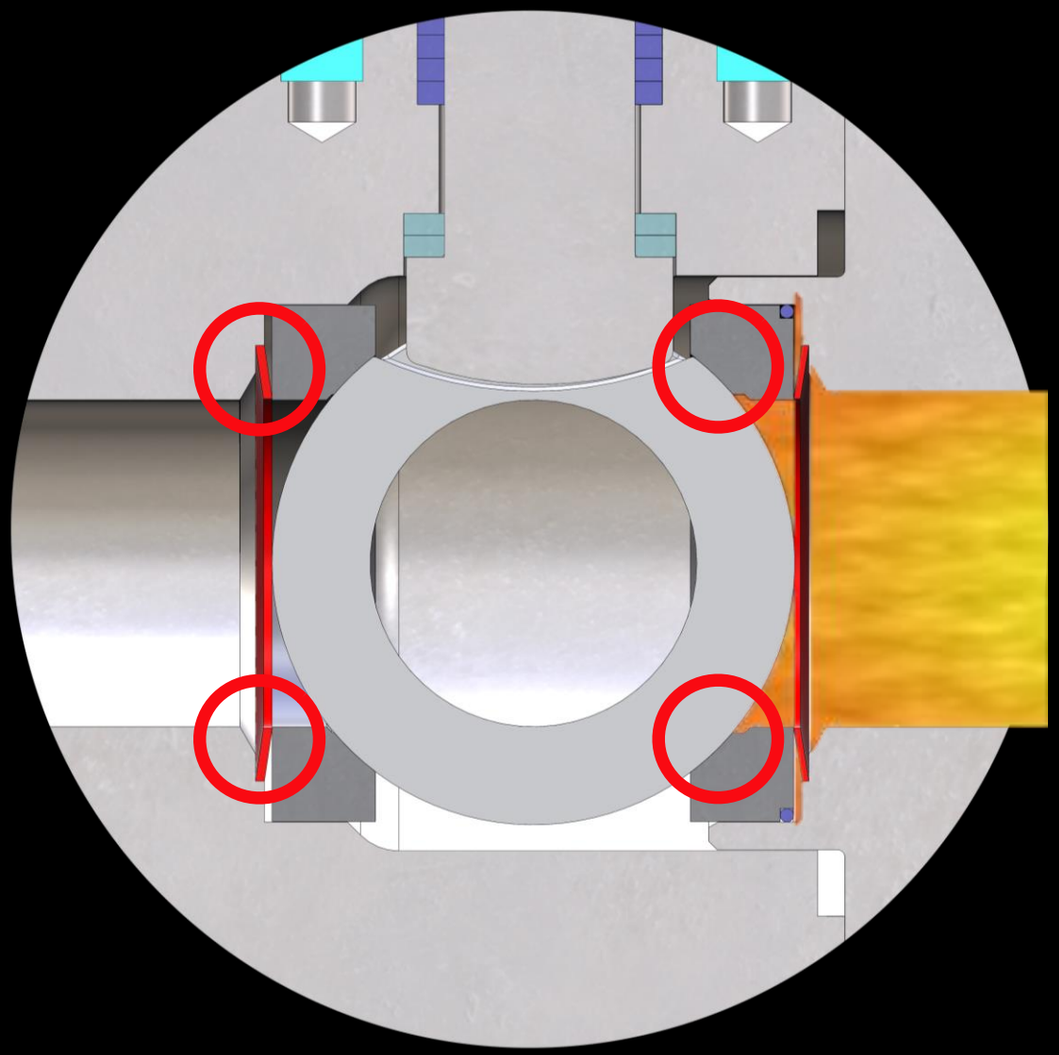
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

"ONE WAY STREET"

GOSCO VALVES

BACK PRESSURE or REVERSE FLOW



COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)

Back-pressure pushes the ball back and flattens the spring

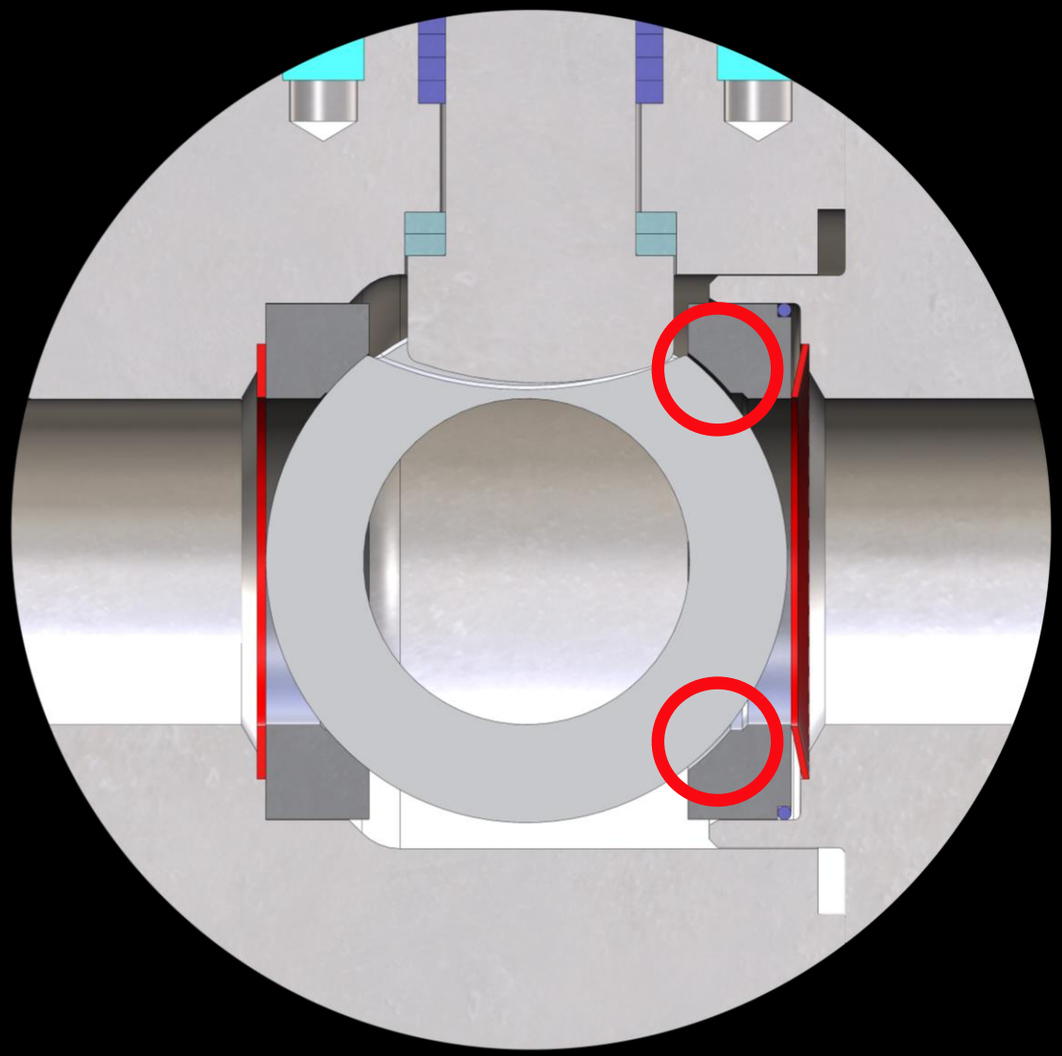
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

"ONE WAY STREET"

GOSCO VALVES

BACK PRESSURE or REVERSE FLOW



COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)

A gap is created between the ball and seats

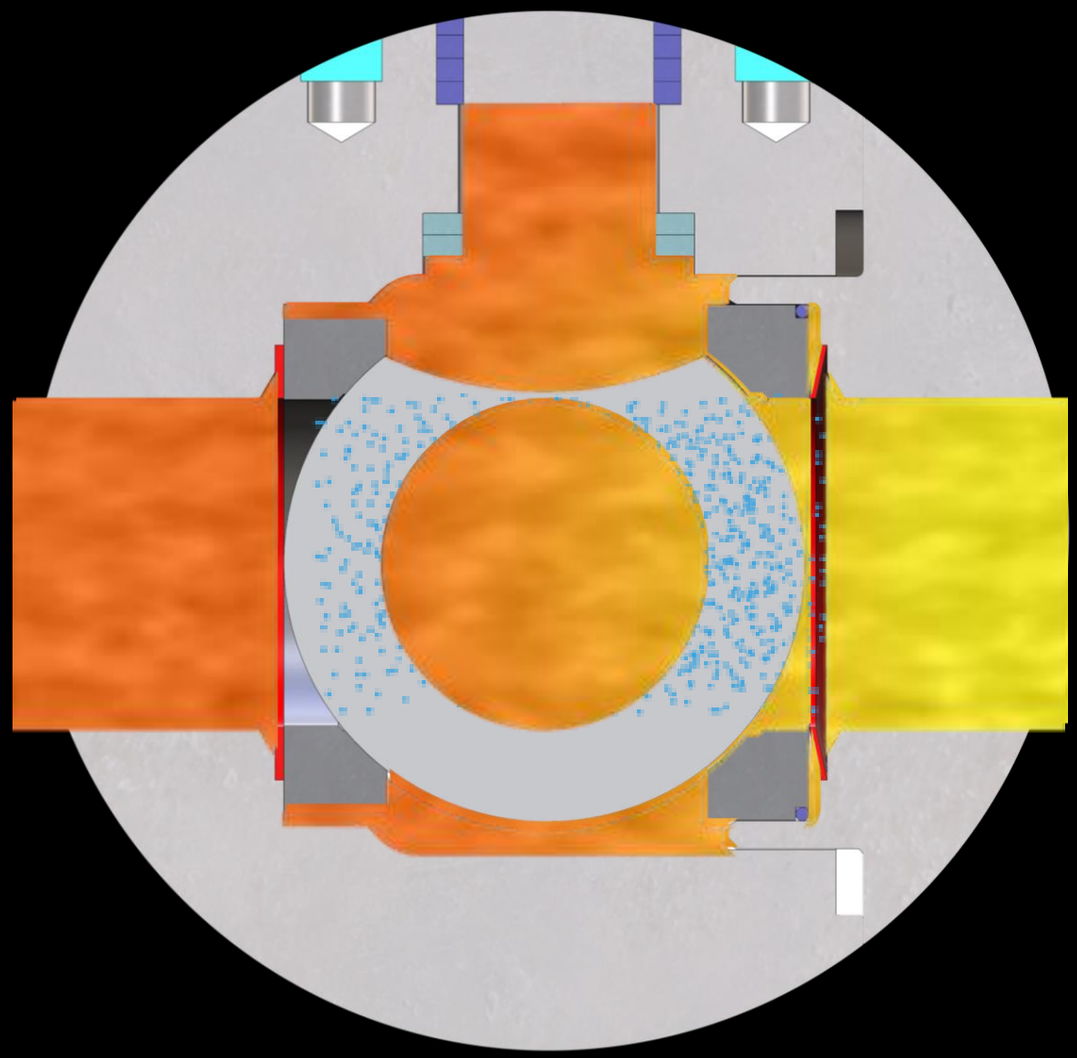
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

"ONE WAY STREET"

GOSCO VALVES

BACK PRESSURE or REVERSE FLOW



COMPETITOR'S VALVE
(UNI–DIRECTIONAL SEALING)

Valve leaks past the seats

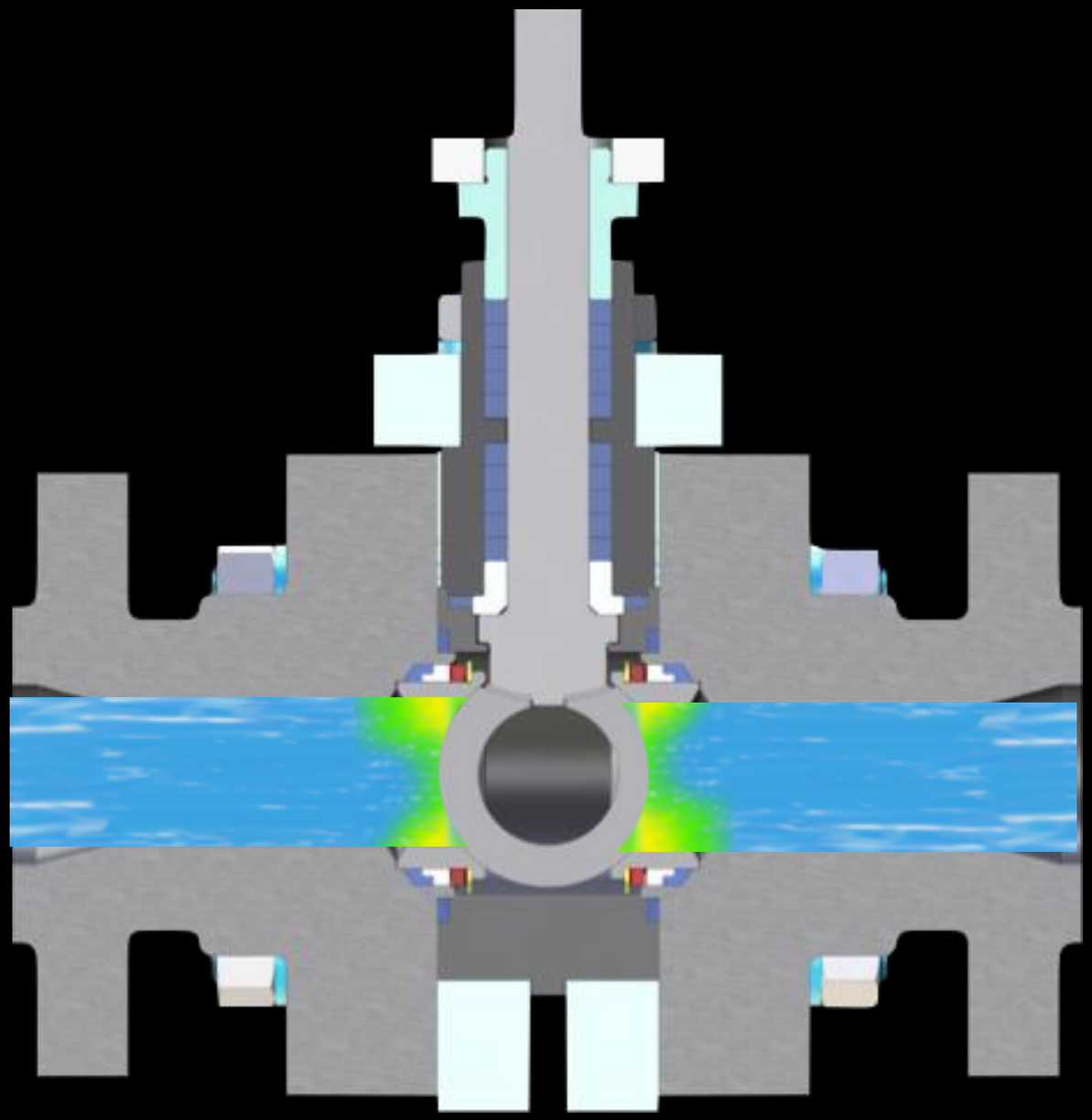
FAB VALVE

FABRICATED METAL SEATED BALL VALVES

"ONE WAY STREET"

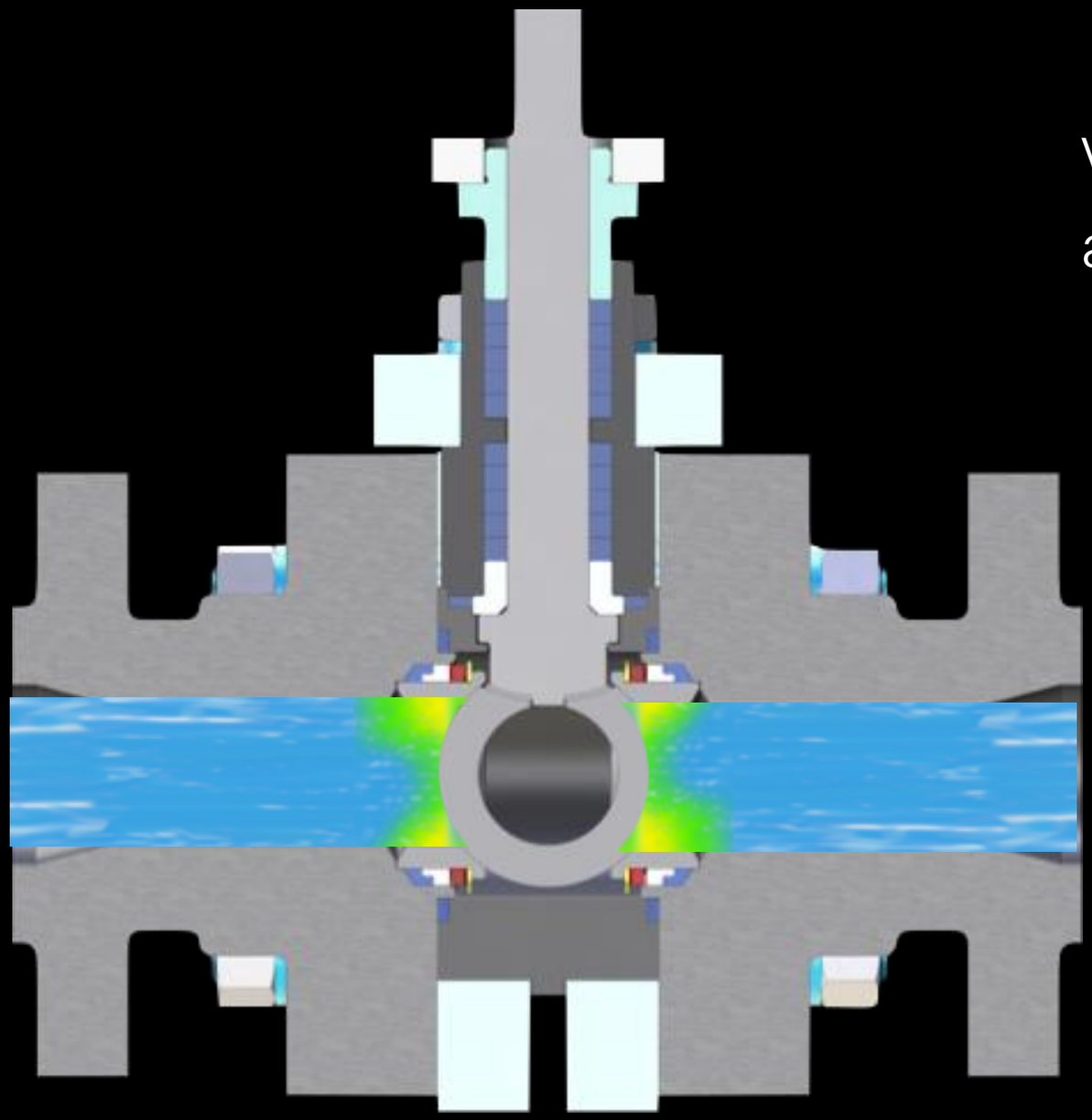
GOSCO VALVES

BI-DIRECTIONAL SEALING



Valve can withstand pressure
from upstream or downstream

BI-DIRECTIONAL SEALING



Valve design is completely symmetrical, and seals bubble tight in both directions

Seals with full differential pressure

Seals with 1 psi differential pressure

FAST TRACK

Expedited machining/assembly/shipping

Fee is based on costs incurred

Not on time? No Fast Track charge

SATISFIED CUSTOMERS

SUNCOR ENERGY

OPTI CANADA INC.

nexen

noranda

EXXON

ConocoPhillips

中国石化 SINOPEC

GE

Chevron Phillips Chemical Company

JIM BEAM

NASA

DUPONT

The miracles of science™

OTHER VALVES (M-CLASS/S-CLASS)

ON/OFF

VARI-V CONTROL

CRYOGENIC

3-WAY DIVERTER/ 3-WAY

BLOCK & BLEED

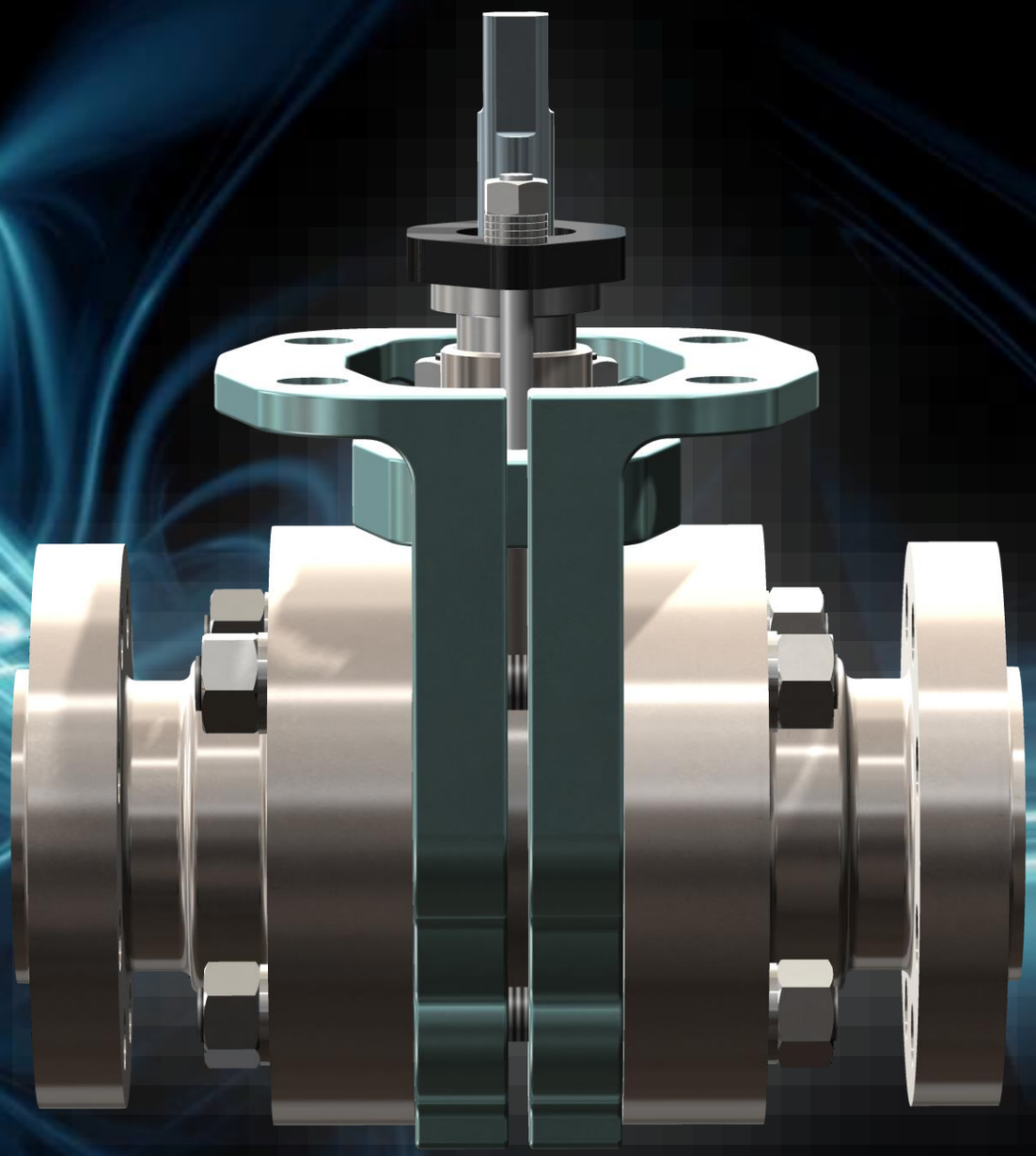
CUSTOM

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES

Fab Valve



NPS ½ to NPS 6 (DN15 to DN150)

-58° F/ -50° C to 1100° F/593° C

Class 150, 300 and 600

Extremely Fast Delivery
(Including Exotic Materials)

FAB VALVE

FABRICATED METAL SEATED BALL VALVES

gosco VALVES