GUIDE VALVE LIMITED

Better By Design

Distributors/Agents

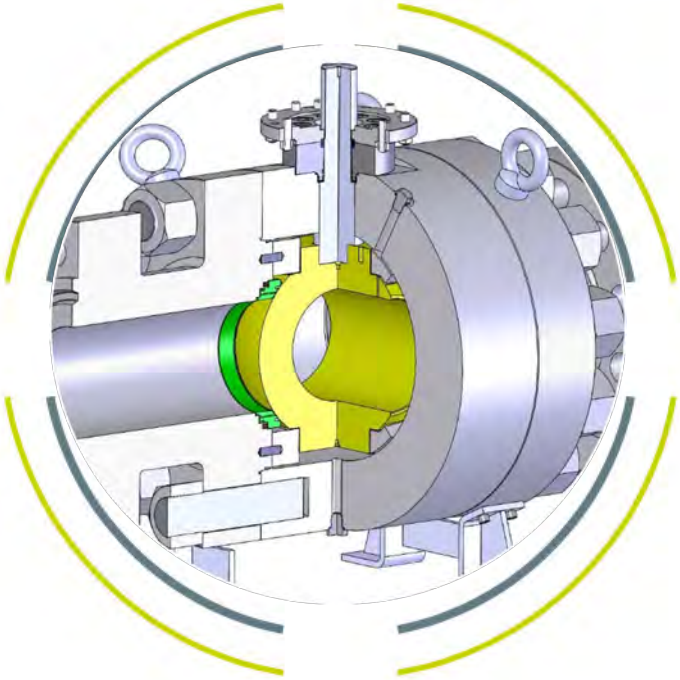
GLOBAL SupplyLine

Global Supply Line are Guide Valve stockists, distributing to Australia, NZ & PNG, and can automate, service & test in our Adelaide Lloyd's 9001 facility, approved by Guide Valve.
Contact us: sales@globalsupplyline.com.au
Stock lists at our website: www.globalsupplyline.com.au

GUIDE VALVE LIMITED

GVS®- Trunnion Mounted Metal Seated Ball Valves

manufactured and tested for High temperature and Slurry service

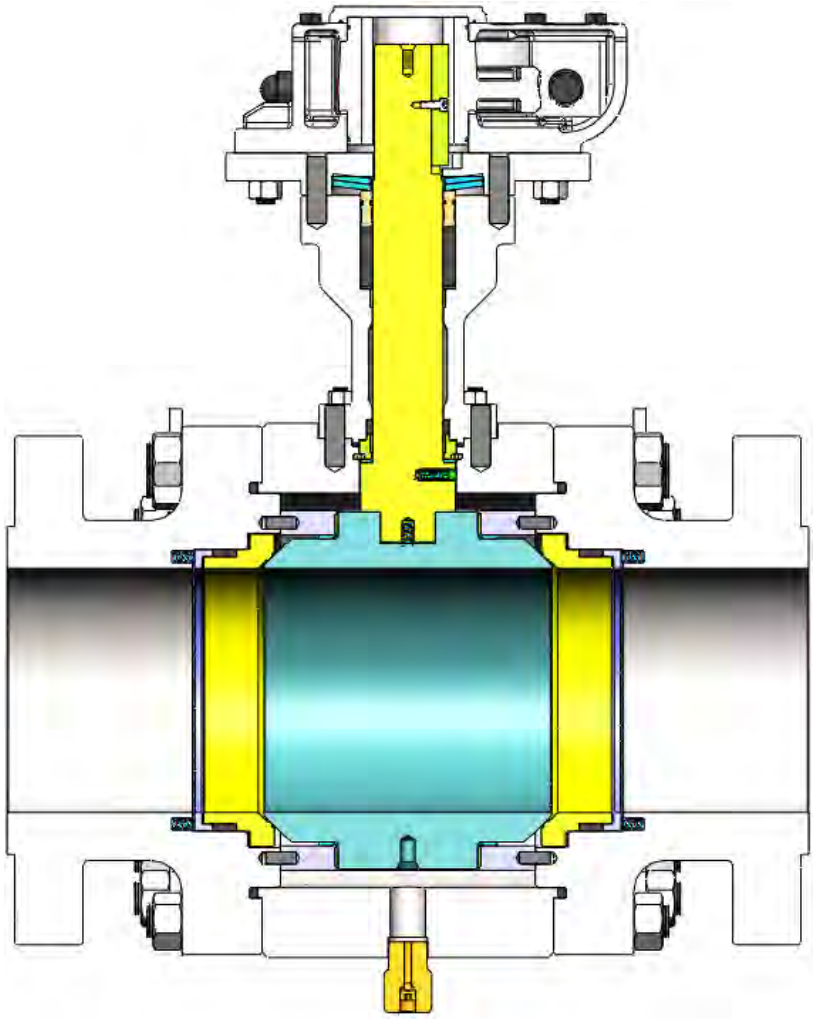


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GVS®- Standard Valve Design Features

All GVS Trunnion Mounted Ball designs are:

100% Forged Steel
API 6D-25° compliant and monogrammed
CSA Z245.15-2022 compliant
Fugitive Emission ***certified*** to ISO 15848-1 and/or API 641
Material Impact tested at -46°C or lower temperature
Fire Safe ***Certified***
Suitable for ***SIL3*** application
Double Block and Bleed, DBB according to API 6D Type B
Available in DIB-1, DIB-2 or SPExSPE seats function
Full port or reduced port
NACE MR0175 Compliant
Anti-Static and Anti-Blow out stem design
CRN Registered

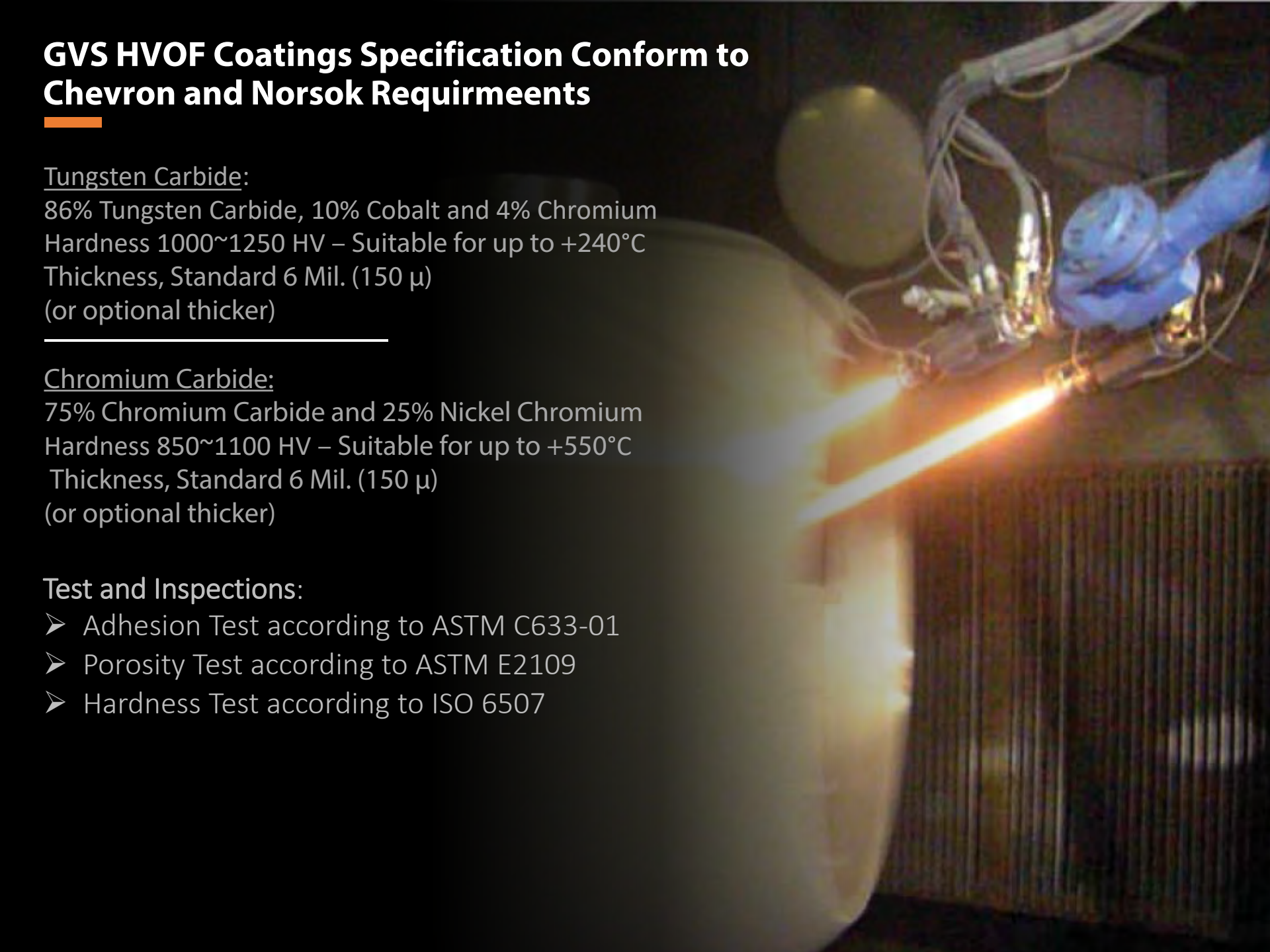


GVS Superior Surface Protection Coatings
For Sever Service Valves – *Ball and Seat coatings*



HVOF – Tungsten Carbide and Chromium Carbide Coatings
Bottom line **in metal seated valves**

GVS HVOF Coatings Specification Conform to Chevron and Norsok Requirmeents



Tungsten Carbide:
86% Tungsten Carbide, 10% Cobalt and 4% Chromium
Hardness 1000~1250 HV – Suitable for up to +240°C
Thickness, Standard 6 Mil. (150 µ)
(or optional thicker)

Chromium Carbide:
75% Chromium Carbide and 25% Nickel Chromium
Hardness 850~1100 HV – Suitable for up to +550°C
Thickness, Standard 6 Mil. (150 µ)
(or optional thicker)

Test and Inspections:

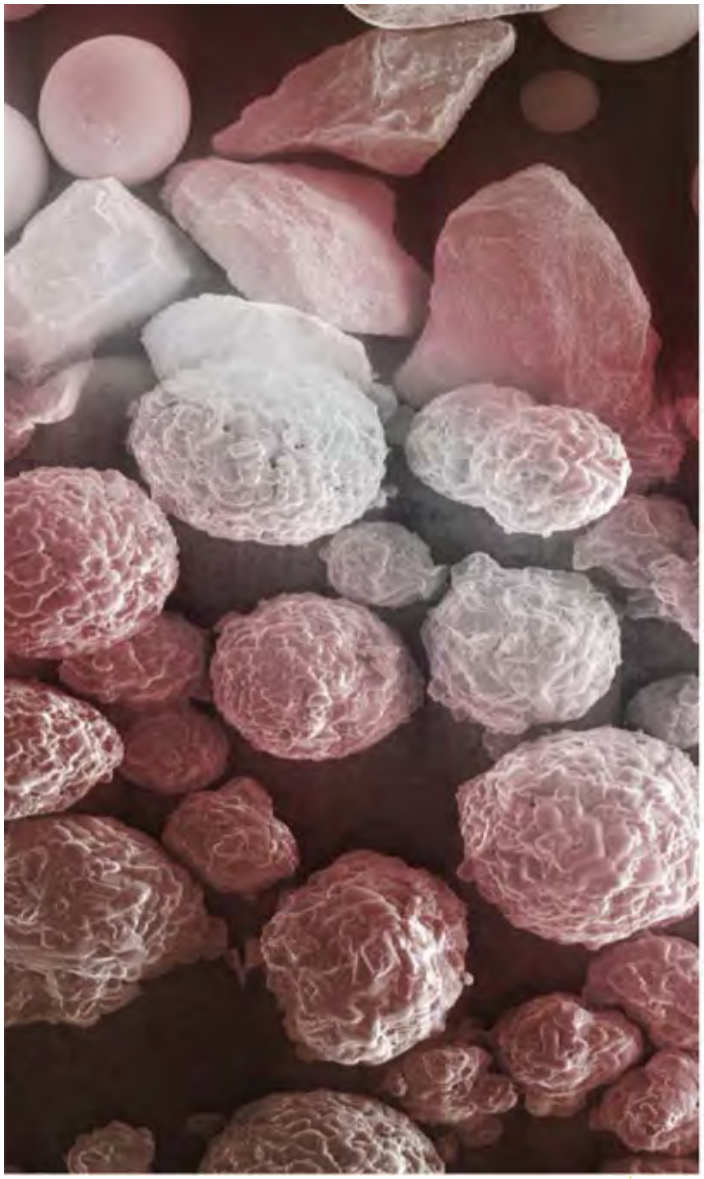
- Adhesion Test according to ASTM C633-01
- Porosity Test according to ASTM E2109
- Hardness Test according to ISO 6507

DNA of Surface Protection

Powder Technology

Guide Valve Utilizes High Density HVOF powders

- Densified structures with fine carbide dispersion promotes finer microstructure, better adhesion to base surface and denser smoother coating
- Improved oxidization and corrosion protection
- Excellent low and high temperature wear properties
- Excellent combination of abrasion resistance and toughness

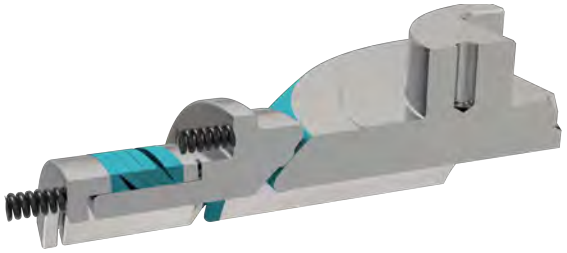


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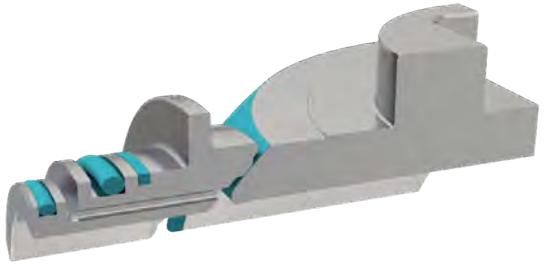
GVS®- Metal seated Valve Design Summary – multiple service types – *Seats Design*

All below seat designs are offered in both Tungsten Carbide or Chromium Carbide coatings depending on the service conditions

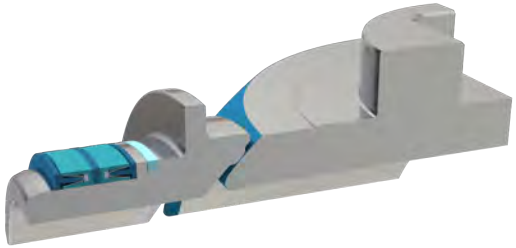
Seat Design 1
Best option for dirty services. Optimum slury resistant.
capability when combined with Recessed ball.
Spring energized high density graphite seals.
Suitable for up to +450 °C (842 °F)



Seat Design 2
Best option for services at +220°C (428 °F)
and lower.
Low torque advantage.
O-ring and fire safe graphite seals.



Seat Design 3
Best option for high corrosive services at +250°C (482 °F)
and lower.
Low torques advantage.
Spring Energized Lip seals in behind of the seat.



***Note: All seat designs are available in DIB-1 and DIB-2 designs**

GVS®- Metal seated Valve Design Summary – multiple service types – *Alternative Seat Design*

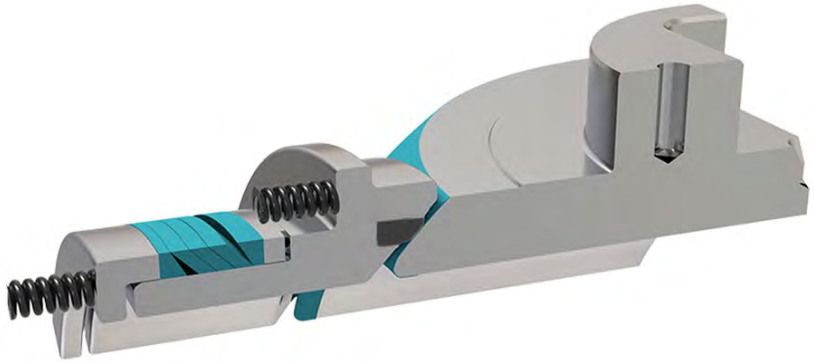
GVS® has developed a special soft seat design for hot abrasive services for emulsion production well.

A trial valve was manufactured and installed in service at Suncore Energy – Firebag.
Service: Production well emulsion at +220°C (428 °F) *and 1200 psi*

The trial valve was removed after six month of operation for isnpection and testing at a third party shop.

The inspection reuslts proved flawless performance of the valve and zero damage to it's internal parts. The reports are available. The valve was supplied with below seat design, tungsten carbide coated recessed ball and fugitive emission stem seal design.

Alternative Seat Design
Graphite filled PEEK seat. Clean and Dirty Service.
Low torque advantage
Spring energized high density graphite seals.



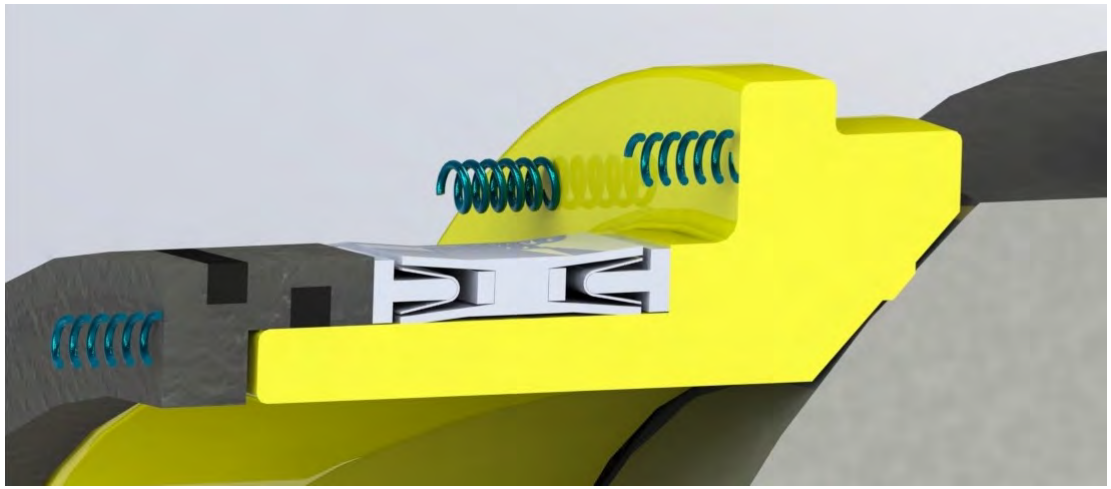
***Note: All seat designs are available in DIB-1 and DIB-2 designs**

Service Type 4

Dirty Service –up to ANSI 2500 pressure class. ***Metal seated – Recessed Ball***

Seat Design:

Metal to Metal seat series, hard-faced with Superior ***Dense*** Tungsten Carbide Powder
With spring-energized lip seals in back of the seats



Body Seals Specification:

Primary Lip Seal, PTFE+Elgiloy
Secondary Spiral Wound Graphite-filled gasket
16" and Larger have an additional Primary O-ring FKM GLT-AED
(to be confirmed based on Service Temperature)

GVS®- Valve Design Summary –

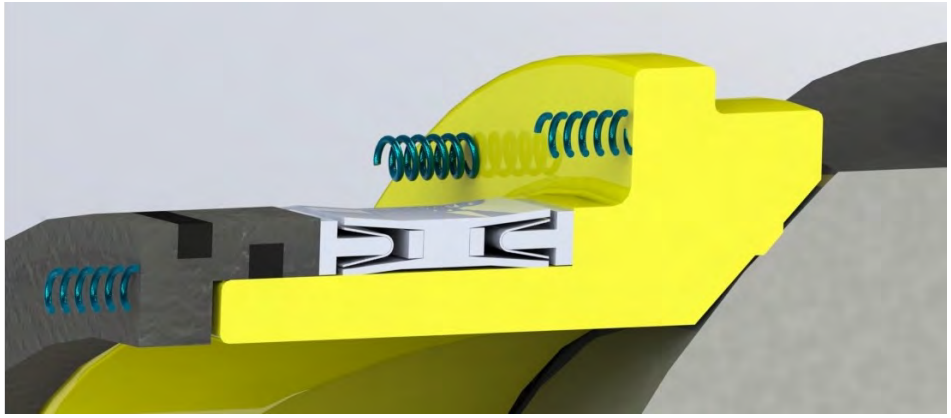
Design Type 4 – Enhanced for dirty service

Dirty, Dry or Wet.

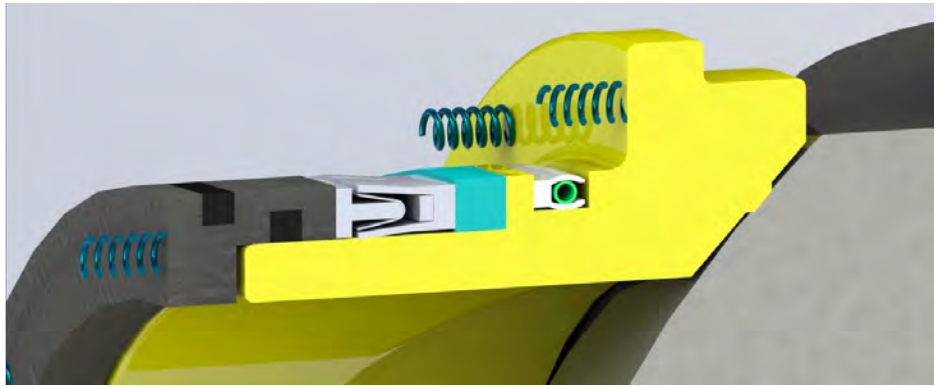
Pressure class ANSI 150 to 2500, Bolted Body

Standard Temperature -45°C to +240°C

Metal Seats with recessed ball design



SPE Seat Design



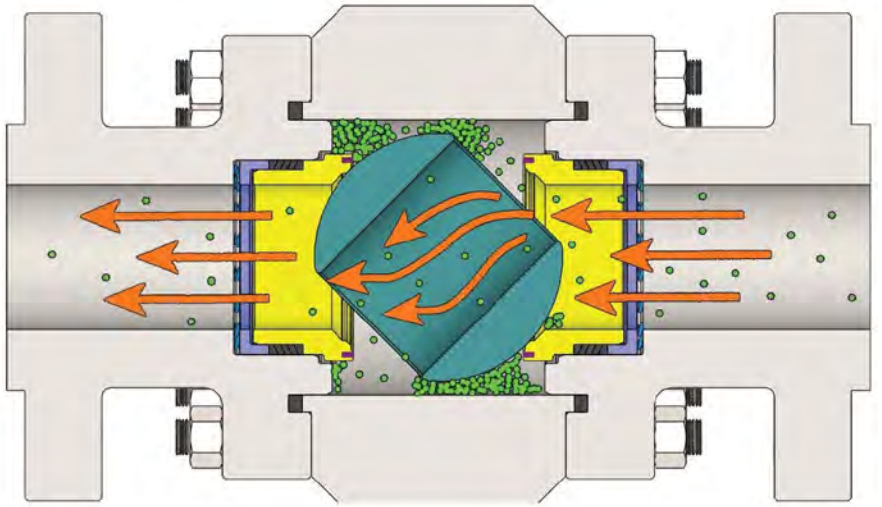
DPE Seat Design

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Service Type 3

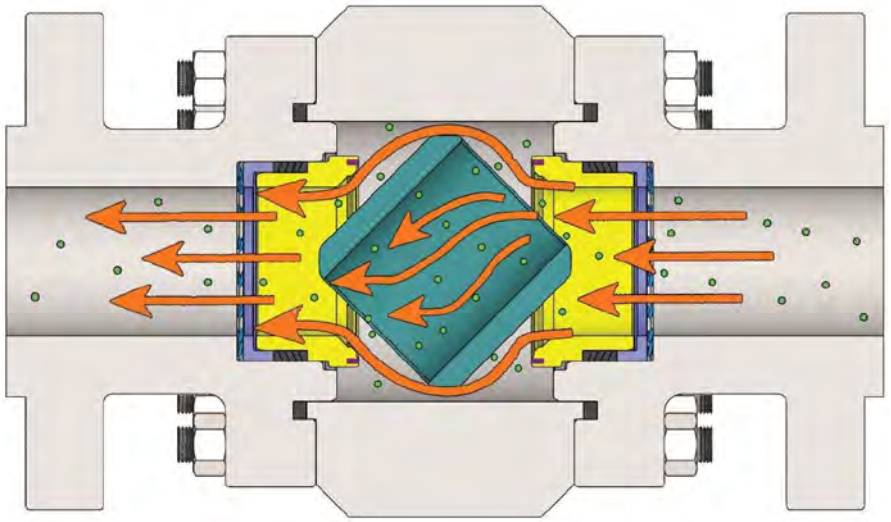
Recessed Ball Advantage

Typical Spherical Ball valve



Recessed Ball valve

Enhanced Flushing



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GVS® Recommended metal seated valves BOM (Stock Valves)

Recommended Material Specification

- LF2 Cl.1 forged body and end flanges,
- F6A Ball and seats + 150 Micron Tungsten Carbide or Chromium Carbide coating
- 17-4PH Stem
- Stainless Steel SS316 ***cladded seat pockets***
- Primary elastomeric body seals (temperature allowing) and sendoary Spiral Wound graphite filled gaskets

Other materials are available.



Example:

GVS 8” ANSI 1500 Metal Seated Ball Valve 350°C+ service – c/w Trutorq Actuator

Sold to Suncor FireBag.

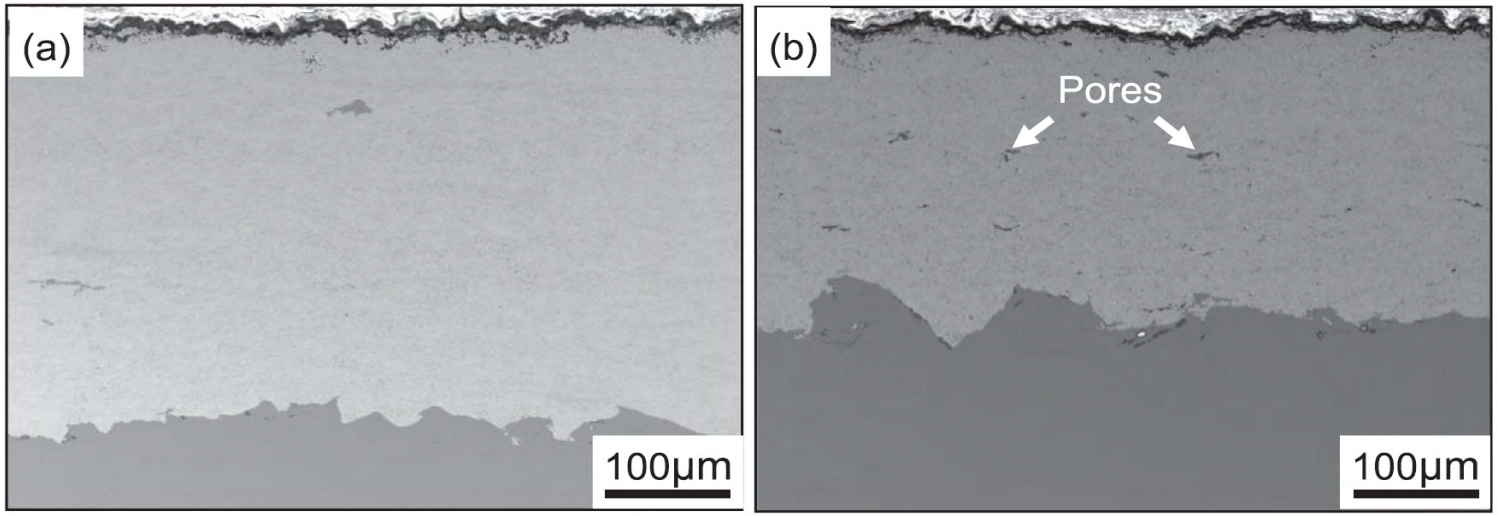
Retested and Chart Recorded

(Feb 2021)

HVOF Coating for Severe Service, Zero Leakage

GVS Enhanced Coating with Less than 1% Porosity

Typical commercial coating with More than 5% Porosity



Inferior Coating after 2 Years in Service



Stem Seal Designs for GVS® severe service valves

Stem Seals structure:

All Valves are Fugitive Emission Certified Design, Virtually Zero Emsission.
Consisted of PTFE+Elgiloy lip seals and FKM GLT AED O-ring (as standard-Stock), and Compression Graphite. Designs consisted of Orings and lip seals are suitable for -45°C to +260°C. And the design in right, consisted of multi-layer compression graphite is certified at +350°C. **(Other material options available)**

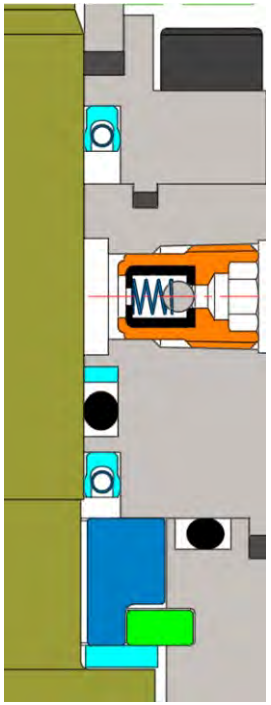
2~4 inch
ANSI 900~2500
6 " ~36 " ANSI 1500&2500



2 to 4 inch
ANSI 150



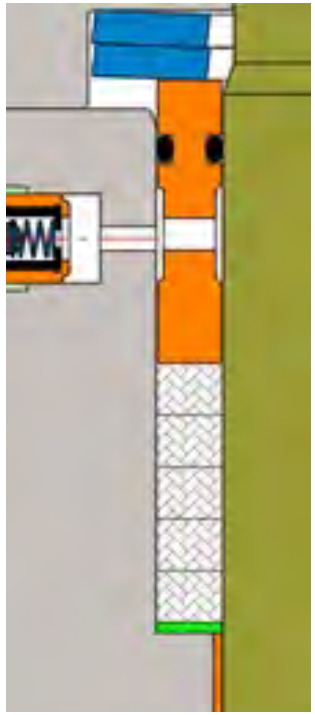
6 to 36 inch
ANSI 150 to 900



2 to 4 inch
ANSI 300&600



All Sizes and ANSI
Temperature ≥ 240°C



GVS®- Elastomeric Seals – *Tested for CO2 and H2S*

Elastomers Specification:

FKM GLT AED, Shore A 90 for O-rings.
Tested for 100% CO2 at 5500 psi and +150°C according to NACE TM 0297
Tested for H2S immersion at +100°C for 160 hours according to NACE TM0187 and API 6A

CO2 Explosive Decompression

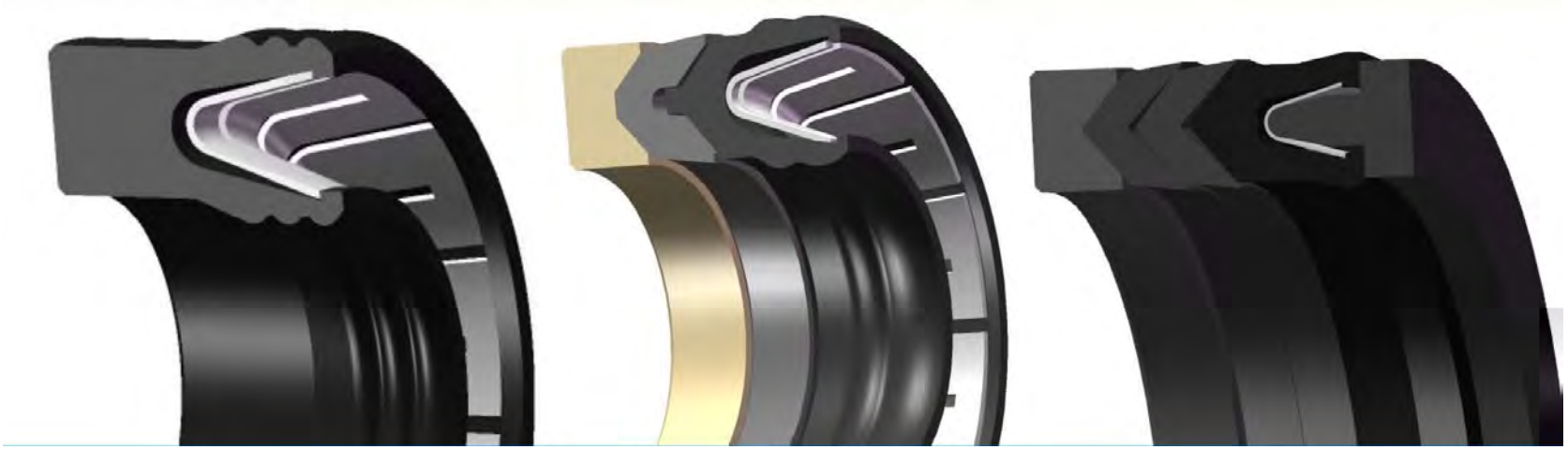


H2S Corrosion and blistering



Enhanced seals – Spring Energized Lip Seals

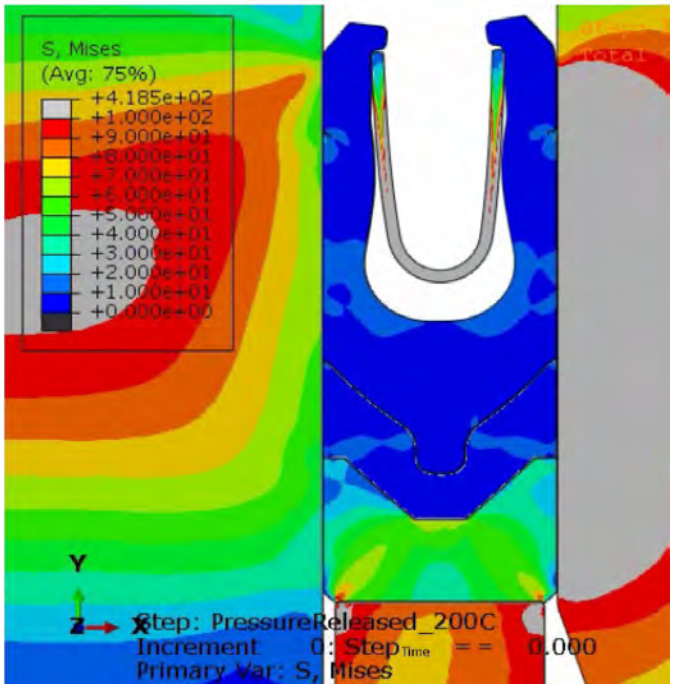
Tested for toughest services, Slurry, *Cryogenic, Hydrogen, Acid Gas, Amine, Dense CO2 injection*



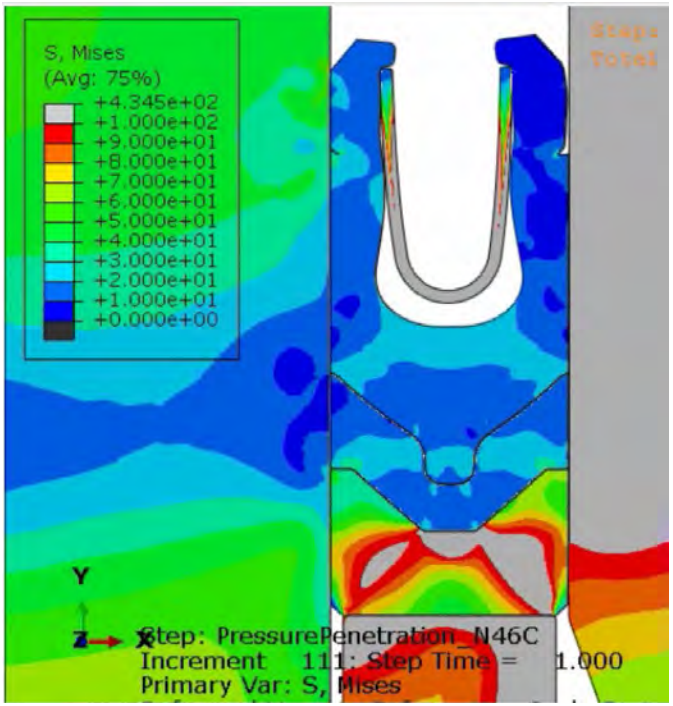
- **Variety of material available to suit service conditions and chemical compatability.**
- **Cantilever and Helical Spring designs to suit mechanical loads due to pressure, temperature and speed of operation**



DNA of Lip Seals seal – FEA Analysis



Simulation of service conditions at 10,000 psi and +200°C



Simulation of service conditions at 10,000 psi and -46°C

References

GVS 8” ANSI 600

Metal Seated Ball Valve

+350°C Service design temperature

CNRL – Emulsion Production

Oil Sands – Wolf Lake

(Apr 2018)





References

GVS 24” ANSI 600, Metal Seated Ball Valve, +350°C Service temperature

CNRL – Emulsion Production

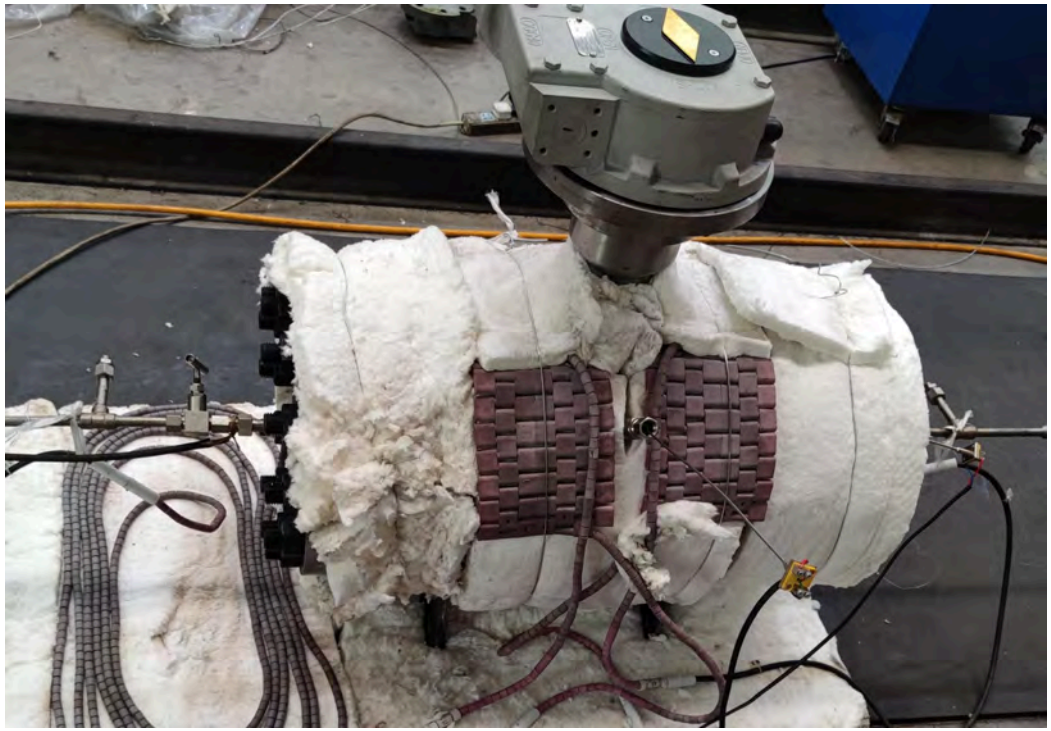
Oil Sands – Wolf Lake – October 2022



High Temperature Torque Testing

Measuring the Operational Torque values

- This is critically important to measure the valve operational torques at service design conditions.
- Valves' Operational Torque values are provided for each project considering the specific service design pressure and temperature.
- GVS has validated the torque calculation formulas by real-time testing at actual service design conditions.



High Temperature Torque Testing at +350°C and Full ANSI pressure

Factory Acceptance Test for External leakages

Measuring external leakage from static and dynamic seals

GVS offers in-house testing of valves with high pressure Helium according to ISO 15848-2 to test external leakage from all valve joints, while cycling the valve's stem by full stroks, measuring the leakage in ppm by Vaccuum helium sniffer machine.

