



Cryogenic
Valves

ORION VALVES - Cryogenic Valves

ESTABLISHED IN 1951



Company Profile

ORION S.p.A. is a valve manufacturer located in Trieste - Italy. It covers a site of about 30.000 sq.m, of which 20.000 sq.m are sheltered. With more than 63 years of experience in Oil & Gas application for most critical services, **Orion** factory presents its product line of Steel Valves incorporating new and revised designs, specially engineered to meet specific demands and requirements of the petroleum and chemical industries.

Cryogenic Valves

In an increasing demand scenario for cryogenic service equipment, **Orion** is responding with its **wide range of cryogenic service** - dedicated valves.

The **advanced selection of materials** is combined with **simple** and **reliable design** which is proven by many of years of products manufactured, **qualified and supplied throughout the world**.

Orion expertise can offer a valve production line capable of low temperature operation down to -196°C for many types of equipment: **swing and dual plate check valves, gate valves, globe valves, and others**.

Various features and specific customer request can be satisfied, with plenty of accessories, from adjustable collar drip plates to interlocking of valves, from handwheel or gear box operation up to electric motor - operated valves.

Orion valves are designed and verified through **3D CAD** designing, supported by the **latest version of FEA**, integrated with the design software.

Extended drainage or **venting accesses** are easily provided with piping and weld neck flanges in order to exit the isolation thicknesses.



Materials

The cooperation with primary quality european suppliers of gaskets and seals allow to keep FE levels to the highest standards, with a wide range of certification for all gasketing material (SHELL MESC 85-103, 85-200, 85-203 85-204, API 622, LI TP PVA 001, ISO 15848). For cryogenic service the material selection is ranging basically between austenitic stainless steel up to CRAs. Refer to Orion catalogue for a wide material listing and related allowable working pressures. The fire safe design of the valve is achieved with the use of graphite rings insertions on the sensible leak paths.

For improved seating, tightness valves can be equipped with soft seating feature with a material selection suitable for cryogenic service.

Material	Operating Temperature
Polymeric seal	
PTFE	-100 to 150 °C
PCTFE	-250 to 150 °C
PEEK	-100 to 250 °C
DEVLON	-100 to 150 °C

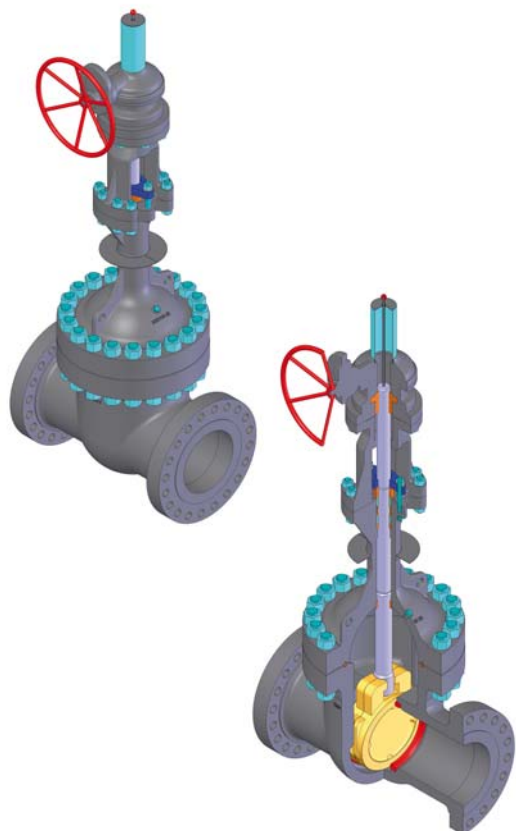
Materials Specifications

Material Type	ASTM	Symbol
18 Cr - 10 Ni - Nb		347H
18 Cr - 10 Ni - Ti		321
18 Cr - 8 Ni	A 351 GR CF8	304
18 Cr - 8 Ni	A 351 GR CF10	304H
19 Cr - 10 Ni - 3 Mo	A 351 GR CG3M	
19 Cr - 10 Ni - Nb		347
19 Cr - 10 Ni - Ti		321H
19 Cr - 9 Ni - Low C	A 351 GR CF3	304L
19 Cr - 9 Ni - Nb	A 351 GR CF8C	
20 Cr - 10 Ni - 3 Mo	A 351 GR CG8M	
20 Cr - 18 Ni - 6 Mo	A 351 GR CK3MCuN	F44
22 Cr - 13 Ni - 5 Mo		XM19
25 Cr - 20 Ni	A 351 GR CK20	
26 Cr - 20 Ni		310H

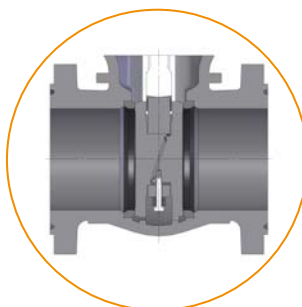
ORION VALVES - Cryogenic Valves

Gate Valves

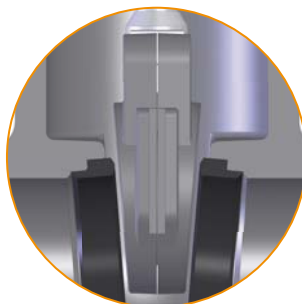
Gate valves are basically supplied with integrally cast extended bonnets with internal stem guide ring for stem buckling control and convective losses reduction. **Soft seating** is available for enhance tightness.



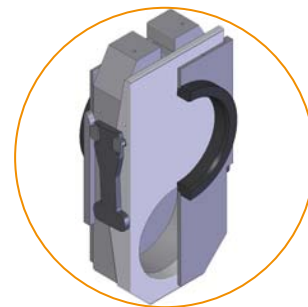
DOUBLE DISC GATE VALVES



WEDGE GATE VALVES



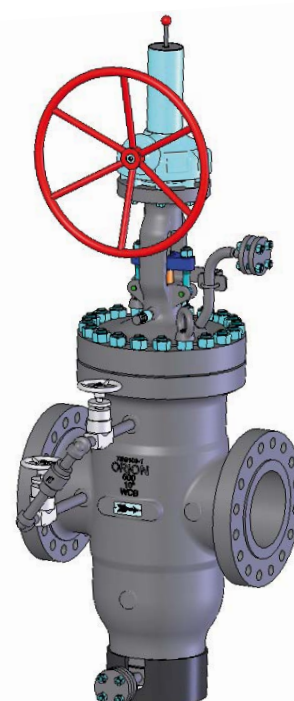
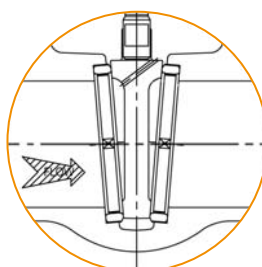
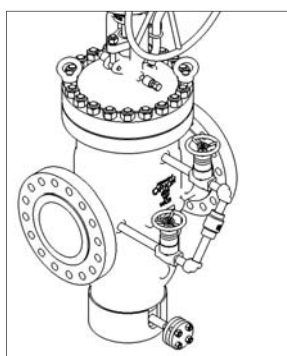
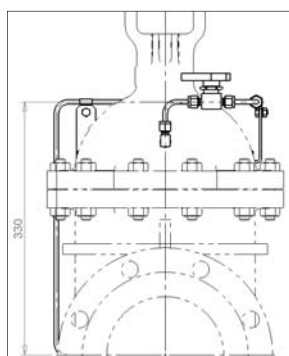
EXPANDING GATE VALVES



Pressure Rating	Nominal Size	
	Min	Max
150	2	40
300	2	40
600	2	40
900	2	36
1500	2	36
2500	2	26

Cavity reliefs

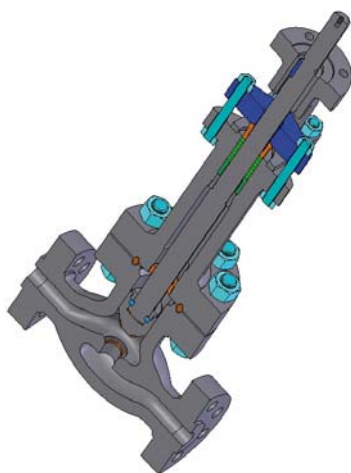
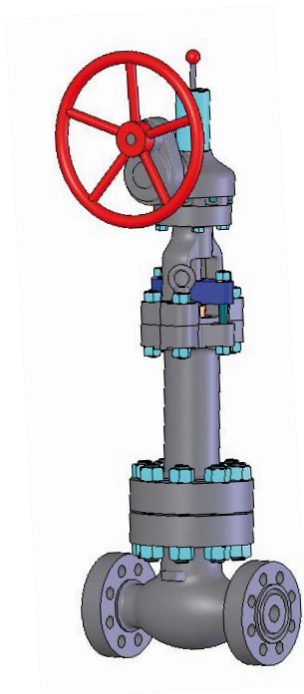
For all the valves where the body cavity can be left isolated and sealed in closed position, as for instance happens in gate valves, Orion recommends to employ a cavity pressure relief system. This can be achieved through an external routing pipe supplied with a check valve and eventually with block valves. The piping can be a AISI316 compression fitting assembly or an ASME socket weld piping, as per customer specification. The easiest solution is a drilled relief hole connecting the body cavity with the upstream line, directly drilled on the disc. The relief hole as a consequence will inhibit the bi-directionality of the valve, so far other arrangements can be provided.



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Globe Valves

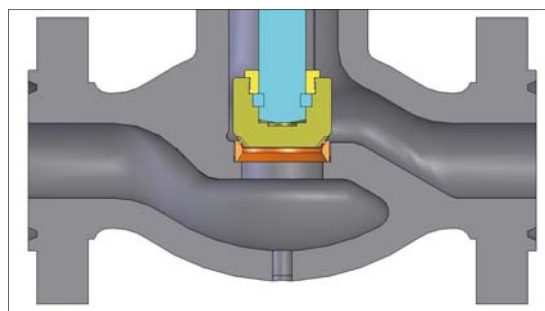
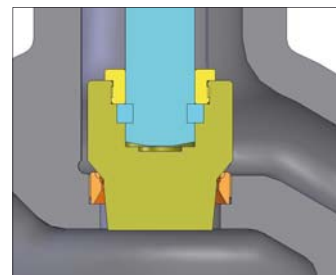
Globe valves are basically supplied with integrally cast extended bonnets with internal stem guide ring for stem buckling control and convective losses reduction. **Soft seating** is available for enhance tightness.



Pressure Rating	Nominal Size	
	Class	Min Max
150	2	30
300	2	30
600	2	28
900	2	24
1500	2	24
2500	2	16

ON-OFF DISC

REGULATING DISC



ORION LAB

- DEDICATED LAB FOR HIGH PRESSURE GAS TESTING
- 4 INDEPENDENT BUNKER AREAS
- LOW TEMPERATURE AND CRYOGENIC TESTING
- INSTRUMENTATION FOR HIGH PRESSURE 10 KSI
- HIGH TEMPERATURE, FUGITIVE EMISSION
- INSPECTION AND INSTRUMENTATION ROOM 'EXPLOSION SAFE'



SAFETY FIRST

Orion has obtained ISO 14001 and OHSAS 18001 certifications to guarantee a safe workplace, ensure the safe management of all the activities and the protection of the environment in compliance with national and international regulations.



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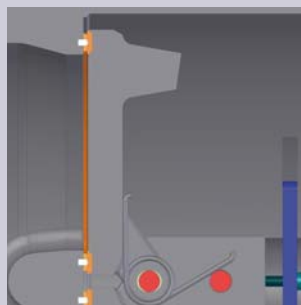
Check Valves

Check valves are available with various designs, from the basic swing check to the compact dual plate type, but for each case the body shell leak paths, like plugs, pin retainers are minimized in order to keep any possible leak to zero. **Soft seating is available for enhance tightness.**

Zero leakage seal

- THIS FEATURE IS APPLICABLE ON ALL BODY MATERIAL.
- RENEWABLE SEAT IS AN OPTION ON ALL DESIGNS TO ENHANCE THE MATERIAL SELECTION ON TRIM COMPONENTS.

STANDARD INTEGRAL

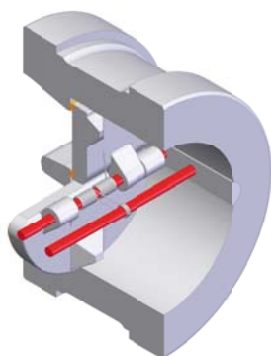


OPTIONAL RENEWABLE

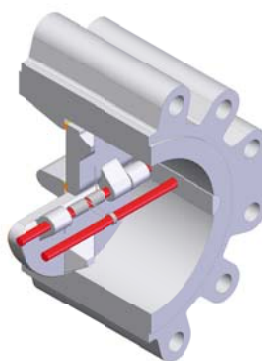


DUAL PLATE CHECK VALVES

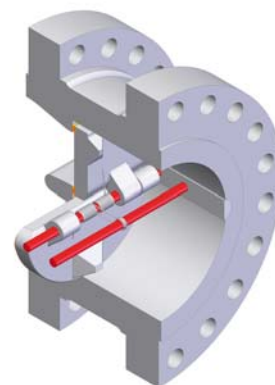
DUAL PLATE WAFER



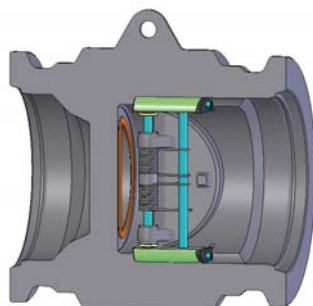
DUAL PLATE LUG



DUAL PLATE FLANGE

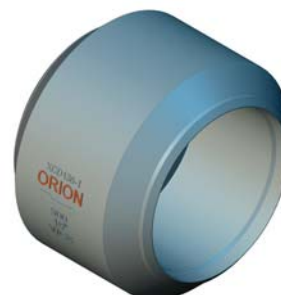


HUB END CONNECTION



Pressure Rating	Nominal Size	
	Min	Max
150	2	40
300	2	40
600	2	40
900	2	36
1500	2	36
2500	2	26

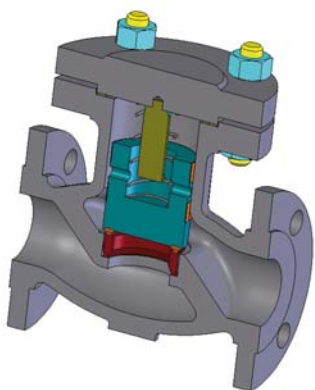
BUTT WELD CONNECTION



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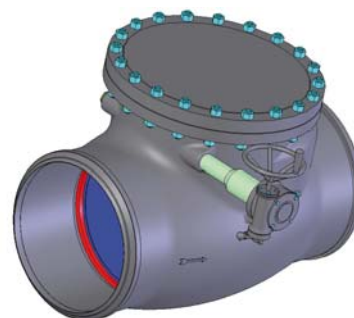
OTHER CHECK VALVES

PISTON CHECK



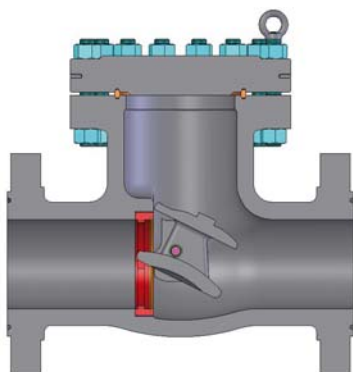
BOLTED BONNET AND PRESSURE SEAL, SPRING LOADED DISC, INTEGRAL OR RENEWABLE SEATING.

SWING CHECK

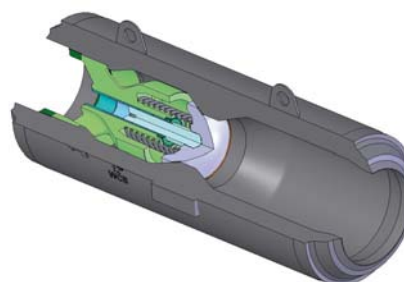


WITH EXTERNAL ACCESSORIES I.E. DUMPERS, LOCK OPEN DEVICES FOR REVERSAL FLOW AND PIGGING.

TILTING CHECK



NOZZLE CHECK



STANDARD & SPECIFICATIONS

Besides the standard adopted for the design of extended bonnets, usually Shell MESC 77-200, BS6364, ISO 21011, any specific plant requirements can be examined and followed.

ASME B16.34 - BS 1868 - BS 1873 - API 600 - API 594 - API 6D



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