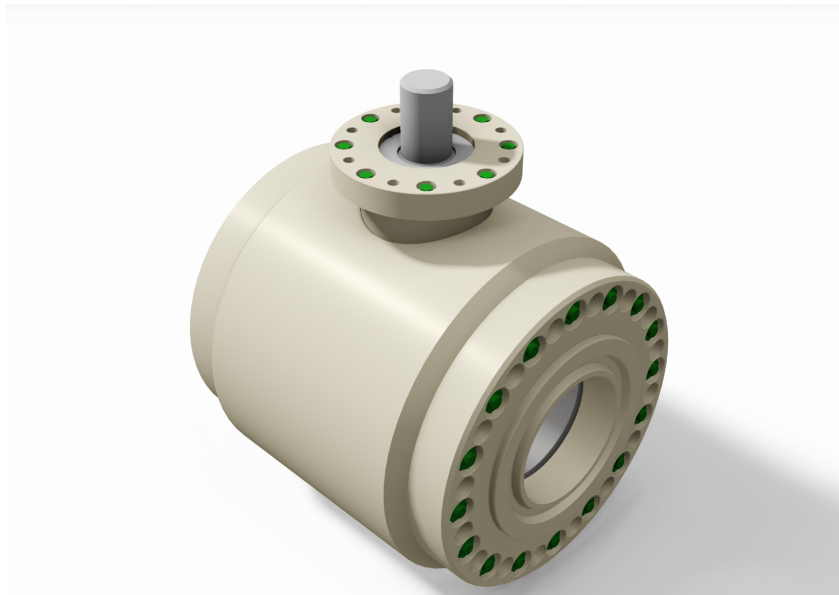




COMPACT BALL VALVES
for
SEVERE SERVICES, CRITICAL & SPECIAL
APPLICATIONS



AJ Side Entry Compact Ball Valve is an ON/OFF service valve, with split-body design featured, it's designed to be easily disassembled and reassembled in order to simplify service operations without the need of special tools for removing from the line. The compact valves offer space saving of 40% from standard flange type design and weight reduction approximately in range of 35% (kg). It's a great design optimization for special application and operation particularly within the small footprint process plant. With robust and ASME compliant forge materials, the compact valve deliver outstanding sealing ON/OFF performance throughout a wide range of conditions, bore sizes and working pressure, including corrosive and abrasive fluid environments.

- **Compact valves main features:**

Trunnion mounted-supported the stem ball is constrained by bearings and is allowed only to rotate. The key feature is that the ball does not shift and the line pressure forces the upstream seat onto the ball to cause it to seal. The side load generated by fluid pressure on the ball is absorbed by bearings. The amount of force exerted on the ball is much less than floating ball configuration as the area on which the pressure acts is smaller, leading to lower friction values and smaller actuators or gear boxes.

- **Double Block & Bleed design**

permit the body cavity to be bled through the drain plug/valve with the ball in the fully closed or fully open position. This permits the checking of the seating integrity without the need to turn the ball to its fully closed position Split body construction three pieces are bolted together and the use of forged materials is allowed in various grades of carbon steel, stainless steel and high alloys thus complying with the most severe service conditions.

The Compact valves are available in bolted end connections (ASME B16.5; MSS SP 44; Norsok L-005), welded-end (ASME B 16.25), hub (clamped).

The Compact Valves are supplied with Handwheel, Gear for manual operation. AJ can also provide hydraulic or pneumatic actuators per customer specifications and requirements

Quality management system certifications

- **API 6D / ISO 14313**

Compact Valve Design conform to API 6A, ISO 5211 & ASME VIII Div. 1,2,3, ASME B 16.34 – BS 5500

Special Notes:-

On request, AJ able to offers various technical solutions not listed in this catalogue. Years of experience in products for distribution of oil & gas allow AJ to supply products on special client specifications

Standard design features:

- **Bi-directional design:** increases service life and provides flow direction versatility.
- **Single piston effect:** the pressure acting on the external side of the seat ring results in a force pushing the seat against the ball while the pressure acting on the internal side of the seat rings results in a force pushing the same away from the ball.
- **Fire safe design:** according to API RP 6FA, API 607 and BS 6755 part.2

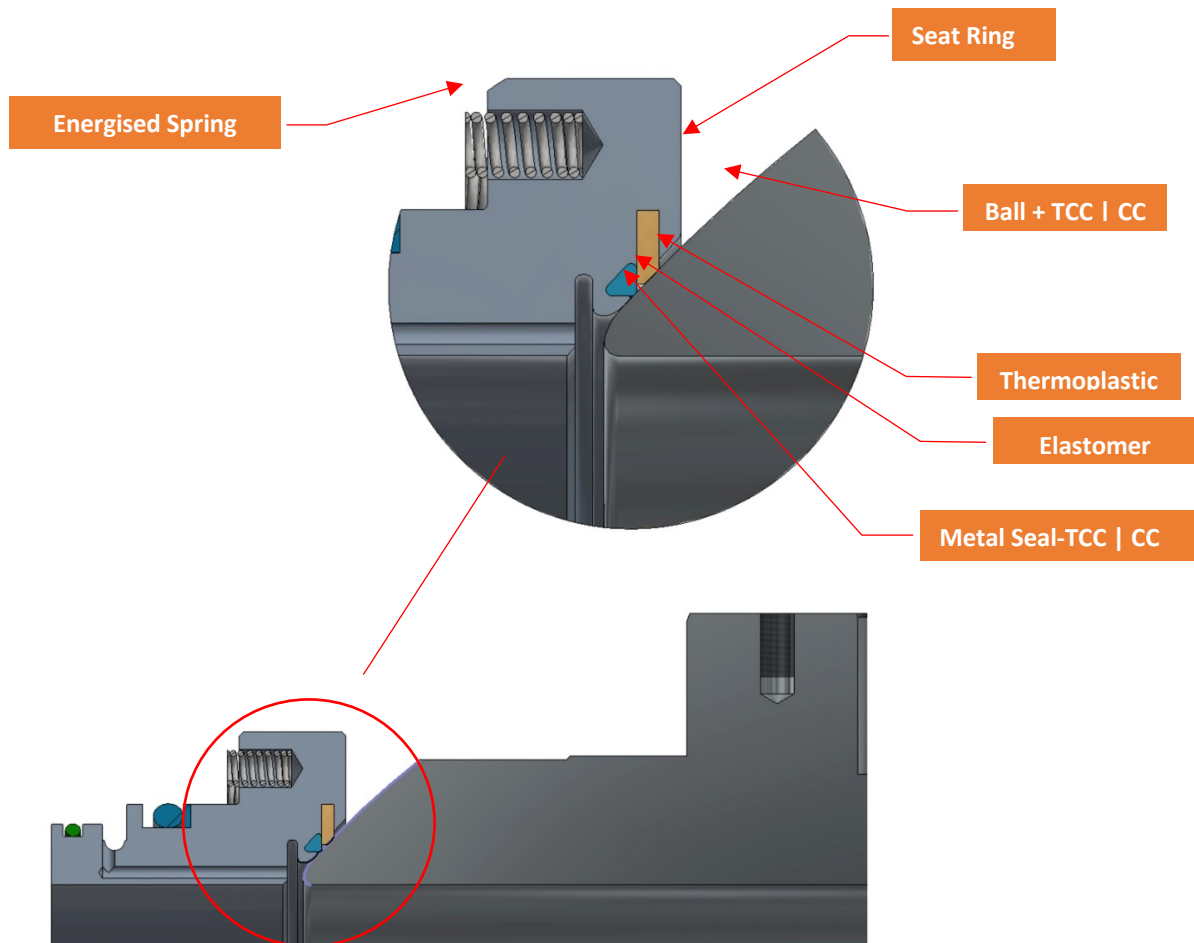
AJ can also provide valves design for special technical requirements: Performance verification tests up to PR2, Valves qualification up to PSL 4 and Fugitive Emission ISO 15848, Sandy service API 14D - ISO 10433 class 2.

SPECIAL FEATURES

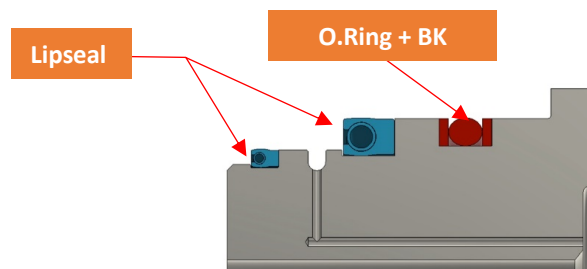
TRIPLE REDUNDANCY SEAL – Delta Scrapers (AJP Proven Design)

The triple redundancy seal contact, also known as Delta Scrapers, consists of three seal elements;

- **Metal-to-Metal Seal:** Coated with Tungsten Carbide or Chromium Carbide
- **Elastomeric:** O-Ring with higher shore hardness => 95 SH A
- **Thermoplastic:** Usually in PEEK Materials (*Options* Nylon, Devlon, PTFE) & DuPont Vespel | Kalrez for High Pressure | High Temp application
- **Energised Spring:** Custom Design + Special Materials



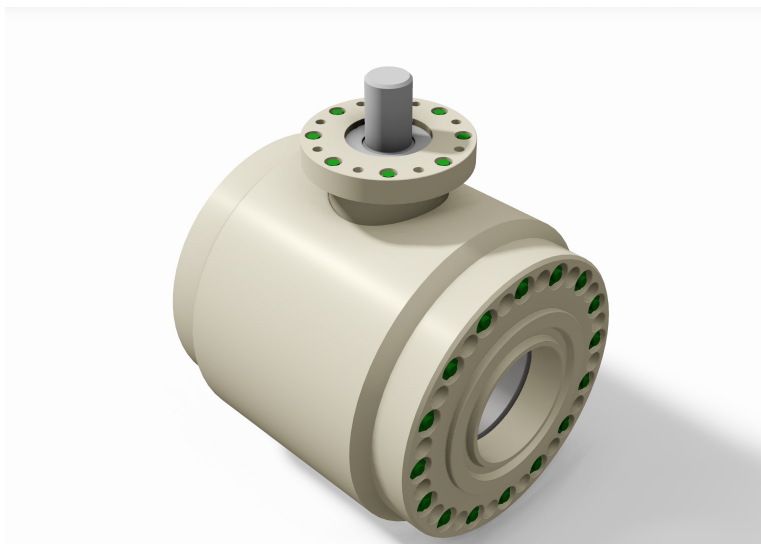
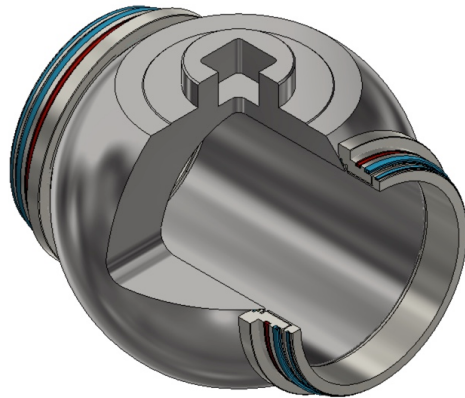
SEAT RING SEAL SYSTEM – OPTION



BALL & DELTA SCRAPERS SEAT ASSEMBLY

Optional design tailored to meet customer specifications

- Surface treatment (HVOF or NI-Sic) - Tungsten Carbide, Chromium Carbide or Stellite or other. Hard coatings (70 –72 Rc)
- Preservation process after surface blasting (pre-coating) for metal to metal ensure the bonding of the coating.
- Matching process (fine grinding and lapping - 72 μ to 3 μ) for both surfaces, insert and ball surface (standard or metal-to-metal seat)
- Gravity Test (Low Pressure) or Alcol Test is performed to ensure the integrity of the delta scrapers system in order to meet stipulated requirements
- API 6D bore ID or pipeline ID for piggable application
- Conform to JIP 33 Valve Specifications



API 2000

Nominal Size	DN	Flanges Design	Compact Design	F	B	S	BF	Weight
(inch)		RTJ	RTJ					(Kg.)
2.1/16x1.13/16	46	295	180	165	TBA	ISO 5211	ISO 5211	30
2.1/16	52.5	295	180	165	TBA	ISO 5211	ISO 5211	40
2.9/16	65	333	200	191	TBA	ISO 5211	ISO 5211	45
3.1/8	79	359	215	210	TBA	ISO 5211	ISO 5211	60
4.1/16	103	435	260	273	TBA	ISO 5211	ISO 5211	90
5.1/8	130	562	340	330	TBA	ISO 5211	ISO 5211	115

API 3000

Nominal Size	DN	Flanges Design	Compact Design	F	B	S	BF	Weight
(inch)		RTJ	RTJ					(Kg.)
2.1/16x1.13/16	46	371	222	216	TBA	ISO 5211	ISO 5211	32
2.1/16	52.5	371	222	216	TBA	ISO 5211	ISO 5211	42
2.9/16	65	422	253	244	TBA	ISO 5211	ISO 5211	53
3.1/8	79	384	240	241	TBA	ISO 5211	ISO 5211	68
4.1/16	103	460	280	292	TBA	ISO 5211	ISO 5211	150
5.1/8	130	613	370	349	TBA	ISO 5211	ISO 5211	160

API 5000

Nominal Size	DN	Flanges Design	Compact Design	F	B	S	BF	Weight
(inch)		RTJ	RTJ					(Kg.)
1.1/2	38	371	222	-	TBA	ISO 5211	ISO 5211	35
2.1/16x1.13/16	46	371	222	216	TBA	ISO 5211	ISO 5211	38
2.1/16	52.5	371	222	216	TBA	ISO 5211	ISO 5211	45
2.9/16	65	473	285	244	TBA	ISO 5211	ISO 5211	55
3.1/8	79	473	285	267	TBA	ISO 5211	ISO 5211	95
4.1/16	103	549	330	311	TBA	ISO 5211	ISO 5211	125
5.1/8	130	711	430	375	TBA	ISO 5211	ISO 5211	175
7.1/16	130	737	450	305	TBA	ISO 5211	ISO 5211	TBA
9	130	737	450	305	TBA	ISO 5211	ISO 5211	TBA
11	130	737	450	305	TBA	ISO 5211	ISO 5211	TBA

API 10000

Nominal Size	DN	Flanges Design	Compact Design	F	B	S	BF	Weight
(inch)		RTJ	RTJ					(Kg.)
1.13/16	46	463.5	280	149	TBA	ISO 5211	ISO 5211	50
2.1/16	52.3	520.7	320	158	TBA	ISO 5211	ISO 5211	58
3.1/8	77.7	619	380	168	TBA	ISO 5211	ISO 5211	100
4.1/16	103	670	400	213	TBA	ISO 5211	ISO 5211	135
5.1/8	130	737	450	305	TBA	ISO 5211	ISO 5211	185
7.1/16	179	UP	UP	479	TBA	ISO 5211	ISO 5211	TBA
9	229	UP	UP	305	TBA	ISO 5211	ISO 5211	TBA
11	279	UP	UP	305	TBA	ISO 5211	ISO 5211	TBA
13.5/8	346	UP	UP	768	TBA	ISO 5211	ISO 5211	TBA
16.3/4	425	UP	UP	872	TBA	ISO 5211	ISO 5211	TBA

API 15000

Nominal Size	DN	Flanges Design	Compact Design	F	B	S	BF	Weight
(inch)		RTJ	RTJ					(Kg.)
1.13/16	46	463.5	280	-	TBA	ISO 5211	ISO 5211	55
2.1/16	52.3	520.7	320	158	TBA	ISO 5211	ISO 5211	70
3.1/8	77.7	619	380	168	TBA	ISO 5211	ISO 5211	115
4.1/16	103	670	400	213	TBA	ISO 5211	ISO 5211	145
7.1/16	179	UP	UP	505	TBA	ISO 5211	ISO 5211	TBA

API 6A - Trims Designation & Application

Service conditions and applications are listed below for the choice of the most suitable trim

API 6A Trim Designation		Service conditions and applications	Partial Pressure of H2S	Partial Pressure of CO2
AA	General Services	Non-corrosive applications, such as manifolds and Christmas trees	< 0.05 psi	< 7 psi
BB		Slightly corrosive applications		7psi<PPCO2 <30psi
CC		Applications where resistance to weight loss corrosion is required due to C02 conditions.		> 30 psi
DD-NL	Sour Services	Applications where resistance to sulphide stress cracking is required due to H2S conditions.	> 0.05 psia	< 7 psi
EE-3.4		Slightly corrosive applications	0.05 psi < PP H2S < 0.5 psi	7psi<PPCO2 <30psi
EE-10			0.05 psi < PP H2S < 1.5 psi	
EE-NL			> 0.05 psia	
FF-3.4		Applications where resistance to both sulphide stress cracking and weight loss corrosion is required due to H2S and C02 conditions.	0.05 psi < PP H2S < 0.5 psi	> 30 psia
FF-10		0.05 psi < PP H2S < 1.5 psi	0.05 psi < PP H2S < 1.5 psi	
FF-NL		> 0.05 psia	> 0.05 psia	
HH-NL		Most extreme service applications with high concentrations of H2S, C02 and chlorides.	> 0.05 psia	> 30 psia
As defined by latest edition of NACE Standard MR 0175 / ISO 15156				

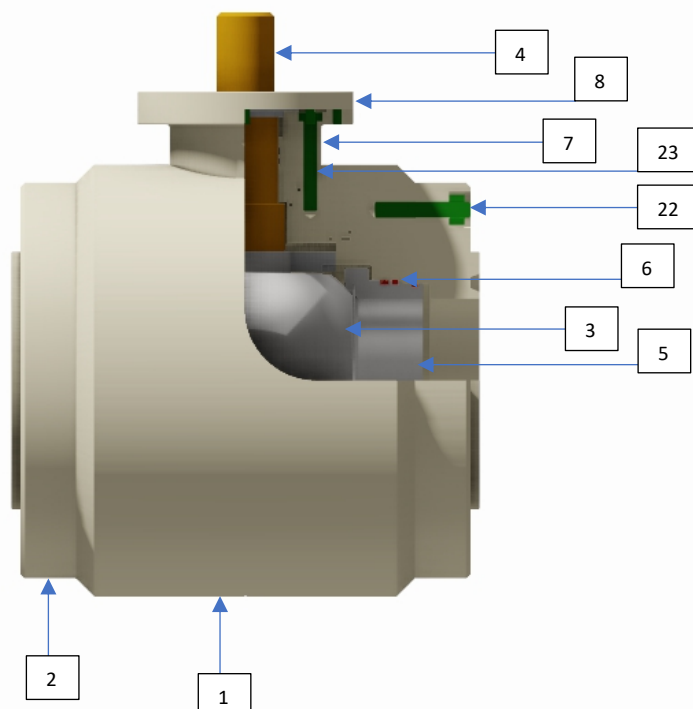
Temperature Classification	Operating Range			
	[°F] from min. up to Max.		[°C] from min. up to Max.	
	min.	Max.	min.	Max.
K	-75	180	-60	82
L	-50	180	-46	82
P	-20	180	-29	82
R	Room temperature		Room temperature	
S	0	150	-18	66
T	0	180	-18	82
U	0	250	-18	121
V	35	250	2	121

AJ provides also valves design and trim for extreme temperature service conditions: from -92°C cryogenic service to 180°C high temperature application (API X class)

Standard AJ Ball Valve trims (API Temp. Class: P ÷ U) for main components are listed below.

API 6A Trim Designation	Body and Bonnet Materials	Stem Materials	Ball Materials	Seat Materials
AA	Low alloy Steel API 60K / API 75K (*) AISI 41xx	Low alloy Steel API 75K – AISI 41xx / ASTM A564 GR 630 (17-4 PH) (*)	Low alloy Steel API 75K – AISI 41xx / Hard Facing (4)	Low alloy Steel API 75K – AISI 41xx / Hard Facing (4)
BB	Low alloy Steel API 60K / API 75K (*) AISI 41xx	Stainless Steel ASTM A564 GR 630 (17-4 PH)	Stainless Steel API 75K – AISI 410 / Hard Facing (4)	Stainless Steel API 75K – AISI 410 / Hard Facing (4)
CC	Stainless Steel API 75K – AISI 410	Stainless Steel ASTM A564 GR 630 (17-4 PH)	Stainless Steel API 75K – AISI 410 / Hard Facing (4)	Stainless Steel API 75K – AISI 410 / Hard Facing (4)
DD-NL	Low alloy Steel API 60K / API 75K (*) – AISI 41xx (1)	Low alloy Steel API 75K – AISI 41xx (1)	Low alloy Steel API 75K – AISI 41xx (1) / Hard Facing (4)	Low alloy Steel API 75K – AISI 41xx (1) / Hard Facing (4)
EE-3.4	Low alloy Steel API 60K / API 75K (*) – AISI 41xx (1)	Stainless Steel ASTM A564 GR 630 (17-4 PH) (3)	Stainless Steel API 75K – AISI 410 (1) / Hard Facing (4)	Stainless Steel API 75K – AISI 410 (1) / Hard Facing (4)
EE-10		Stainless Steel API 75K – AISI 410 (1)		
EE-NL		CRA Nickel Alloy		
FF-3.4	Stainless Steel API 75K – AISI 410 (1)	Stainless Steel ASTM A564 GR 630 (17-4 PH) (3)	Stainless Steel API 75K – AISI 410 (1) / Hard Facing (4)	Stainless Steel API 75K – AISI 410 (1) / Hard Facing (4)
FF-10		Stainless Steel ASTM A182 F6NM (2)		
FF-NL		CRA Nickel Alloy		
HH-NL	Low alloy Steel API 60K / API 75K (*) AISI 41xx (1) – Clad (5)	CRA Nickel Alloy	CRA Nickel Alloy / Hard Facing (4)	CRA Nickel Alloy / Hard Facing (4)
(*) used for API 15000 (psi) (1) Hardness = 22 HRC max (2) Hardness = 23 HRC max (3) Hardness = 33 HRC max (4) Tungsten Carbide Coating (for Wire Cutting application a specific Hard Facing is applied) (5) Clad with CRA Nickel Alloy				

Specifications are subject to change without notice. Special trims are available upon request.



AJ API 6A Ball Valve - Standards Part List & Spare Parts

Part N°	Description	Recommended Spare Parts	Part N°	Description	Spare Parts
1	Body	n.a.	16	Body Fire Safe Gasket	Yes
2	Closure	n.a.	17	Stem O-Ring	Yes
3	Ball	n.a.	18	Bonnet Seal O-Ring	Yes
4	Stem	n.a.	19	Body O-Ring	Yes
5	Seat Ring	n.a.	20	Seat O-Ring	Yes
6	Seat Seal	Yes	21	Body Studs	n.a.
7	Bonnet	n.a.	22	Body Stud Nuts	n.a.
8	Bonnet Cover	n.a.	23	Bonnet Capscrew	n.a.
9	Bearing	n.a.	24	Stem Grease Fitting	n.a.
10	Upper thrust washer	n.a.	25	Stem Key	n.a.
11	Lower thrust washer	n.a.	26	Vent (Bleeder Fitting)	n.a.
12	Seat Spring	n.a.	27	Drain Plug	n.a.
13	Stem Packing Fire Safe	Yes	28	Grease Sealing	Yes
14	Stem Packing Ring	n.a.	29	Bearing Retainer	n.a.
15	Gland Plate Fire Safe Gasket	Yes	30	Pins	n.a.