



PETROLVALVES GROUP
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TRIPLE OFFSET VALVE **AJ** Series



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PetrolValves is a globally renowned valve manufacturer since 1956, leader in the production of wedge gate, swing check, ball, and slab gate valves. It boasts an **extremely advanced Engineering Team**, able to provide highly technological products, customized for extreme applications in the Oil and Gas industry – with a particular focus and expertise in subsea applications.

Today PetrolValves wants to take advantage of its **know-how and design capability** to develop an innovative valve, the Triple Offset AJ Series that strengthens the company's vision, providing for advanced solutions and creating value for its Customers.



AJ Series TRIPLE OFFSET VALVE

PetrolValves' experience and engineering capabilities have been the gateway for the development of the AJ Series, a triple offset, quarter turn, metal sealing, zero leakage bidirectional valve.

This innovative product is characterized by a unique geometry, able to respond to the stringent needs of Customers: **a highly technological valve, guaranteeing excellence in performance**, and a high degree of reliability over time.

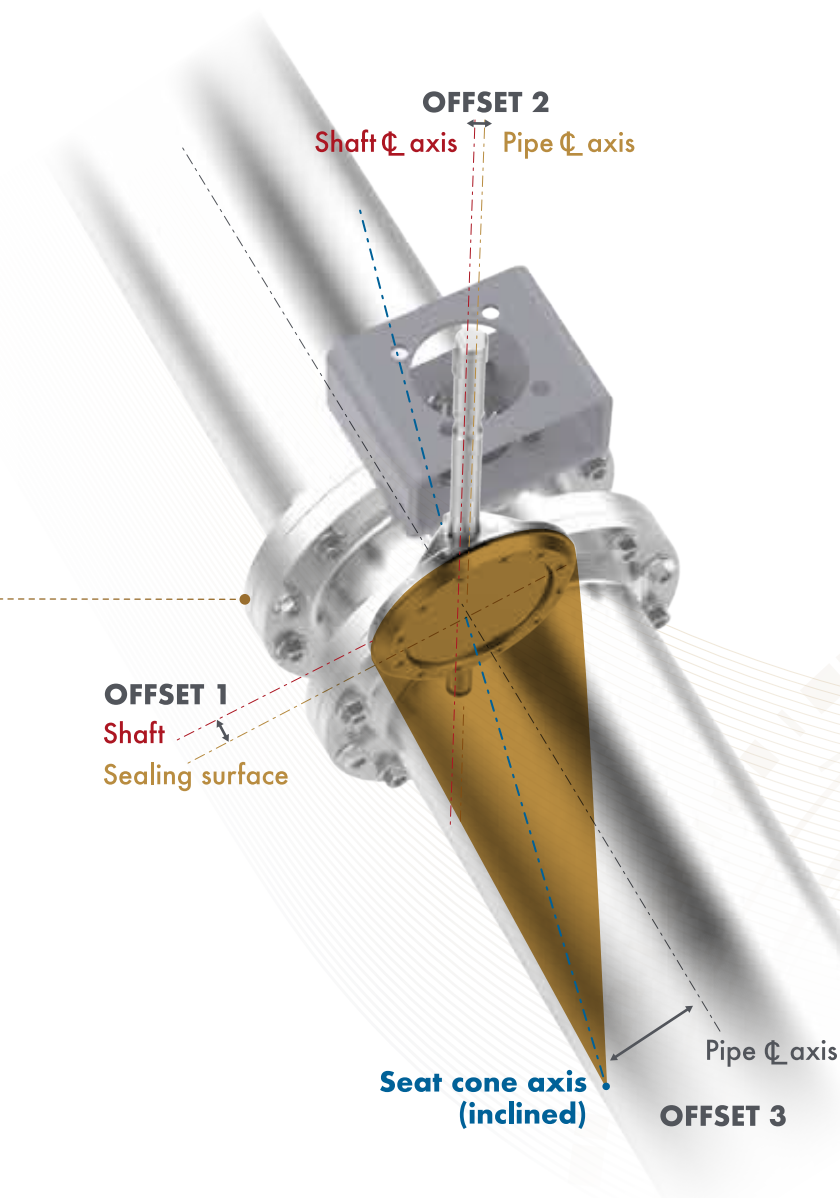
A wide variety of industrial applications - like Oil & Gas processing, petrochemical, LNG storage and transportation, offshore platforms, chemical / petrochemical processes, power generation – and functions such as isolation, on-off, control, high cycling, quick acting, HIPPS – will largely benefit from the installation of AJ Triple Offset valve, which can be employed in temperatures ranging from low to cryo to high, and suitable for **pressure rating up to class 900**.

AJ TRIPLE OFFSET VALVE: THE ESSENTIALS

DESIGN PRINCIPLES

The AJ Series Quarter Turn, triple offset valve, conceived to totally overcome friction during 90° rotation, features three offsets as part of an asymmetric design with a metal-to-metal sealing

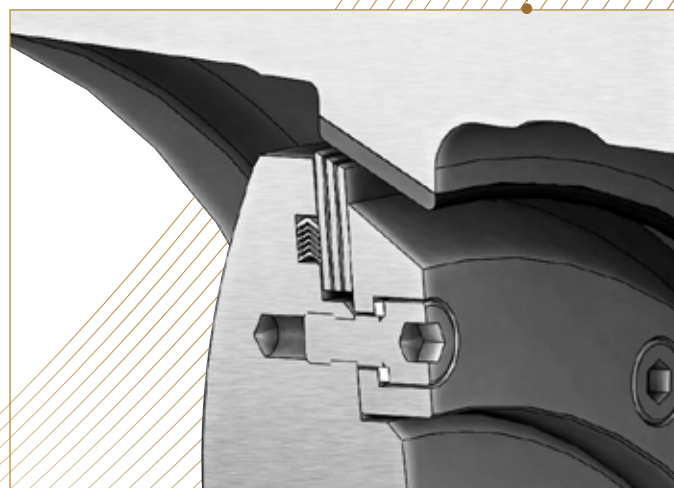
- **Offset 1**
Obtained by offsetting the shaft from the seating plane.
The intent is to achieve continuous surface between sealing and seat.
- **Offset 2**
Obtained by offsetting the shaft to one side of the pipe centerline.
The intent is to shift the seal from the seat during 90° rotation.
- **Offset 3**
Obtained by a seat manufactured in a conical shape with the vertex of the cone angled away from the symmetrical axis of the pipe. The intent is to get rid of any rubbing between the sealing elements.



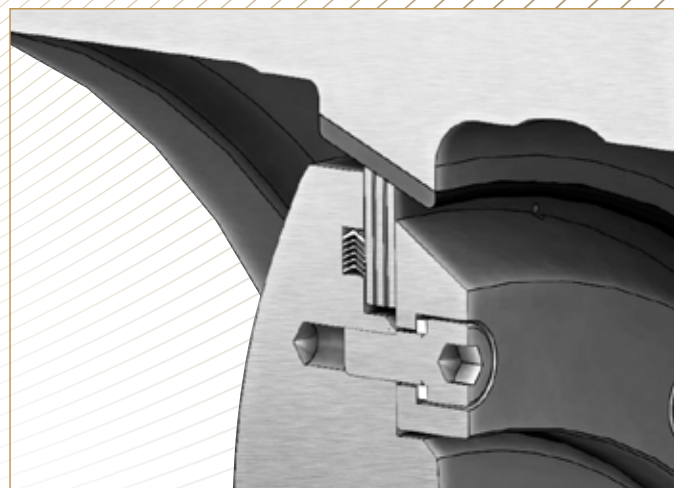


THE SEALING CONCEPT

BEFORE SEALING CONTACT



AFTER SEALING CONTACT



THE BENEFITS

The seal ring, located in the disc, flexes and radially compresses against the seat, allowing for uniform torque distribution. This factor, together with the conical shape of both sealing components – designed and carefully machined with a state-of-the-art process – make the AJ Series **a torque-seated valve**, with **low torque requirements**, and with an **excellent tight shutoff performance**.

The Zero Leakage tightness (*) under the most severe conditions is attained regardless of shut-off pressure direction. Furthermore, the two sealing elements are of total metallic construction, permitting the use of the AJ Triple Offset on **a wide spectrum of pressures and temperatures**.

The elimination of rubbing considerably **extends the overall life of sealing components**, ensuring therefore **low maintenance activity on site**, and **ease of operation**.

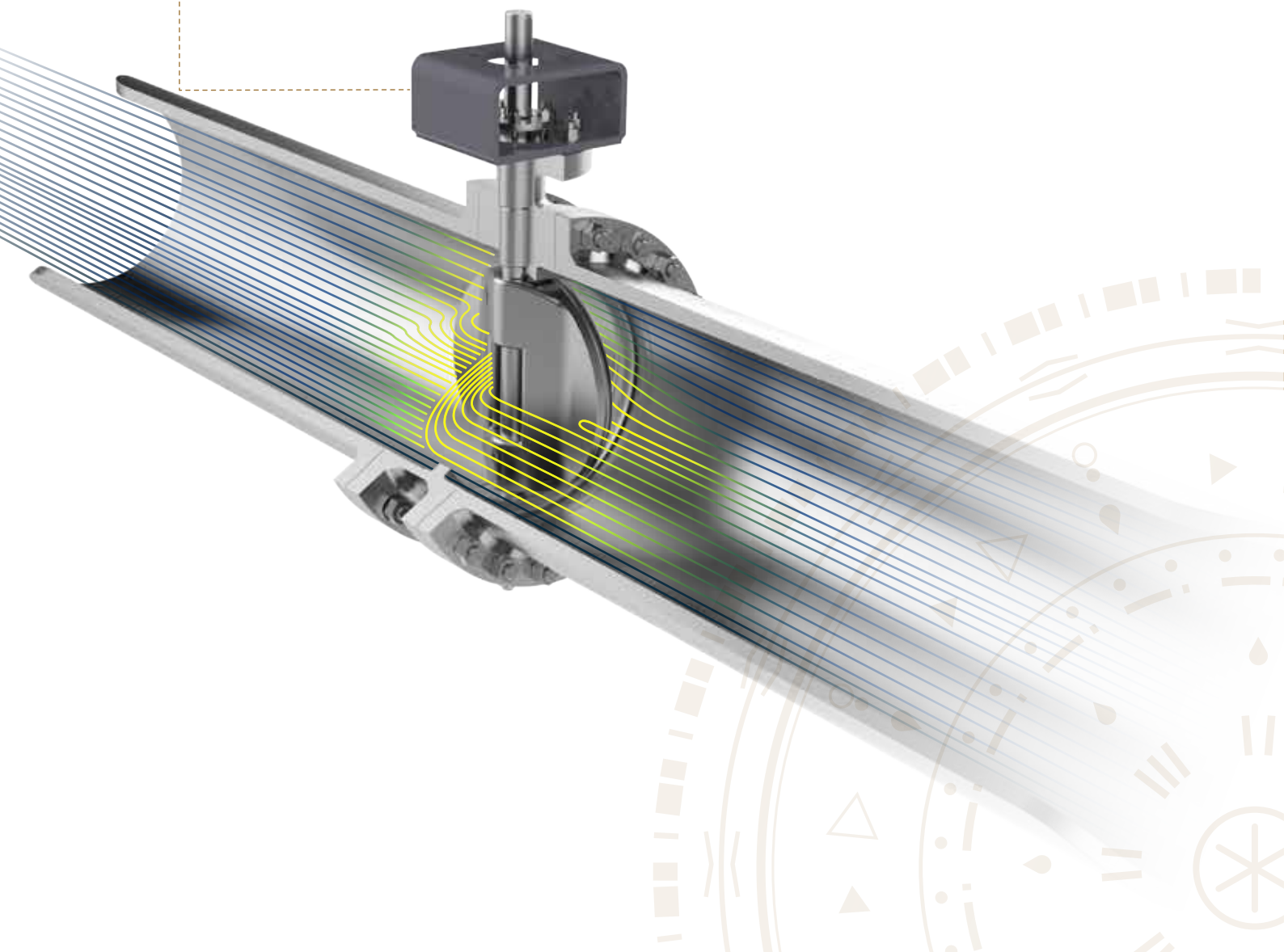
(*) Zero leakage tested in accordance with API 598, ISO 5208, EN 12266-1, API 6D



THE CHOICE AHEAD

The **range of advantages** that AJ Triple Offset is able to offer, makes it a **right choice** for a wide range of applications, in the Oil & Gas, Process, and Power industries:

- The triple offset geometry of the AJ Series translates into an **extremely compact** design that, in turn, grants remarkable space and **weight savings** – two binding constraints common in any industrial plant, particularly Oil & Gas.
- By means of torque seating, non-rubbing rotation, and an asymmetric design that entails a preferred sealing direction, the AJ Series ensures **long operating reliability**. The valve is capable of providing a consistent tight shutoff and intrinsically **minimises the chance of systematic failures**.
- Acting in response to an “on-site” need for controlled and predictable torque demand, the AJ Series ensures a **low and constant torque requirement** through the years. This leads to a low-size actuator selection, and **an ease-of-operation** for manual valves.
- **No rubbing means no friction**. As a consequence, the AJ Series does not suffer from wear of the sealing elements during its service life: the valve is essentially maintenance-free, benefitting from a minimal requirement for spare parts, and allowing for easy servicing.



PETROLVALVES TRIPLE OFFSET AJ SERIES:
THE RIGHT CHOICE FOR A WIDE RANGE OF APPLICATIONS





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AJ Series
TRIPLE OFFSET VALVE



DESIGN CONFIGURATIONS

- Primary configuration: From -29 to +425°C (WCB); From -60 to +450°C (CF8M)
- Cryogenic configuration: Down to -196°C
- High temperature configuration: Up to +800°C

DESIGN STANDARDS

- Size Range ————— From 3" to 112"
- Pressure Ratings ————— From ASME Class 150 to 900; EN 1092-1 from PN 10 to PN 160
- Body Styles ————— Double Flanged, Lug, Wafer, Buttweld
- Materials of construction ————— WCB, CF8M, CF3M, LCB/LCC, WC6, WC9, C5, C12, Duplex and SuperDuplex, Nickel and other Special Alloys
- Design ————— ASME B16.34, API 609, EN 593, EN 12516
- Face to face ————— ISO 5752, API 609, EN 558, ASME B16.10
- Flange drilling ————— ASME B16.5, ASME B16.47, EN 1092-1, ISO 7005
- Testing ————— API 598, ISO 5208, EN 12266-1, API 6D, IEC 60534-4
- Firetested to ————— API 607, API 6FA
- Compliance with ————— Pressure Equipment Directive 2014/68/UE
- Quality Management System ————— ISO 9001
- Environmental Management System ————— ISO 14001
- Occupational Health and Safety Assessment System ————— OHSAS 18001
- Fugitive Emissions ————— ISO 15848



DESIGN FEATURES

- Seat hardfacing with Stellite® gr.21, protecting the seat from damage of use and abrasion
- Low emission graphite packing, fully adjustable. Fugitive emission are greatly reduced
- Shaft is blow-out proof in compliance with API 609
- All metal construction, inherently fire safe by design
- Absence of cavities in the valve body. No deposits of any fluid particulates: smooth operation is ensured
- Accurate spotfacing on flanges, to facilitate valve installation and boltings tightening



PETROLVALVES TRIPLE OFFSET: EXCELLENCE IN VALVE MANUFACTURING

- The **AJ Series** Triple Offset valves are manufactured in the **PetrolValves Focus Factory** located in Piacenza, a beacon for Innovation through **Operational Excellence**, and strongly committed to Research & Development. Operational Excellence is based on **3 major pillars**: lean manufacturing, total quality, and supply chain management.

- **LEAN MANUFACTURING AND TOTAL QUALITY MANAGEMENT**

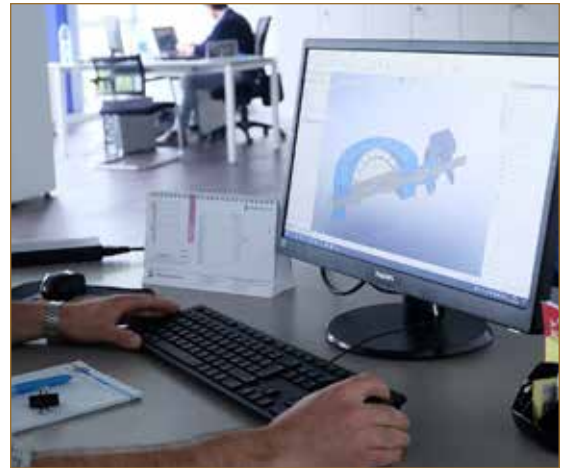
The processes have been organized using advanced Lean Manufacturing technique resulting in well-balanced operations for the **lowest turnaround time** - thanks to optimized cycle time, operational flexibility granted by multi-skilled workers, and Kanban pulled material sequencing.

The extensive use of Total Quality Management system further optimizes the processes with a deep verification of the work phases that enhances quality performance.

In addition, Six Sigma methodology is used to sustain **continuous improvement of performances**, identifying root causes, carrying out required analyses, and upgrading relevant programs.

- **SUPPLY CHAIN MANAGEMENT**

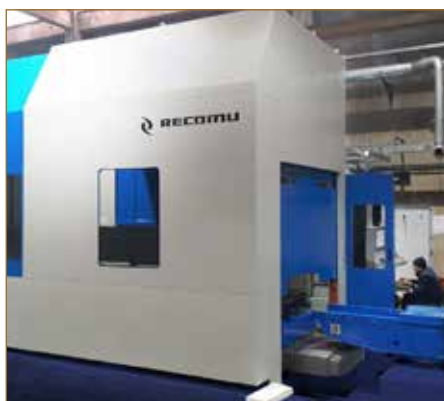
PetrolValves has developed a well-integrated network of qualified suppliers that allows the company to maintain operational flexibility and excellence. The selection of suppliers is based on rigorous and robust processes for approval and qualification, and performance is monitored by means of **KPI's measurement** and quality audits.





PETROLVALVES FOCUS FACTORY

The Piacenza manufacturing plant covers **a total area of 23,000 sqm**, boasting a production surface of 8,000 sqm that allows for in-house manufacturing of the entire valve range, and is equipped with the most advanced technologies: CNC horizontal and vertical lathes (up to 3000 mm rotating table), horizontal/vertical CNC machining centers with multi-pallet system, welding robot systems, 3D co-ordinate measuring machine, CNC testing facilities (fully automated up to 48"), and lifting cranes up to 25 tons.





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PETROLVALVES A TEAM OF SPECIALISTS

A distinctive trait for which the PetrolValves name is renowned is **its long-term experience** in valve manufacturing, gained throughout more than 50 years of successful presence on the market.

Its high level of expertise in the widest range of applications, coupled with its leading Engineering capability, shape **a true team of specialists** able to deliver solutions for any Customer requirement.

The widespread network of PetrolValves sales offices and **service centers** shortens the downtime response to the Customer while always ensuring for the most efficient and accurate support.



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TRIPLE OFFSET VALVE

AJ SERIES: THE APPLICATIONS

LNG

- LNG liquefaction plants
- LNG terminals
- LNG regasification plants
- FLNG (Floating LNG)
- GTL plants

OIL & GAS

- Refineries
- Gas processing
- Oil storage and tank farms
- Offshore platforms
- FPSO (Floating, Production, Storage, and Offloading)
- Petrochemical plants

PROCESS

- Chemical plants
- Urea/Ammonia plants
- Fertilizer plants
- Waterworks
- Desalination plants

POWER

- Solar Power
- Power (turbine protection and blow off)

OTHERS

- Sugar plants
- Paper mills
- District Heating





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