

# ***Perar***



## Tailor Made

*Create your unique subsea valve*

*Our engineers have developed a comprehensive range of subsea valves, operators and hydraulic actuators to deliver complete tailor made packages meeting the highest subsea specifications. With a dedicated Subsea Division, internal machining, cladding, structural welding or hyperbaric testing capabilities, we are uniquely prepared to execute projects efficiently and safely, bringing you decades of subsea experience and the expertise you need to develop the most challenging fields.*

# *Uniquely prepared to execute subsea projects*



## *Committed*

Perar's Quality Management System has been accredited by Det Norske Veritas according to **ISO 9001:2008**, applying to the "Design, manufacture, supply of valves for industrial applications in chemical petrochemical (off shore and sub-sea plants), power generation, gas transport and distribution sectors"

Because effectiveness of processes is critical, Perar has developed over the time continual improvement strategy to satisfy customers and meet more difficult challenges.

The American Petroleum Institute has granted Perar S.p.A the **API 6D, API 6DSS, API 6A and API 17D** Monogram License certifications for the design, manufacturing, testing and documentation of valve package solutions for subsea applications.

These certifications are other examples of Perar's dedication to constantly improving its products and services.

Fully dedicated manufacturing and testing facilities, as well as exclusively assigned engineers and personnel or API certifications, are illustrations of Perar's commitment to the subsea valve industry.

Founded in 1962, Perar S.p.A is a privately owned company and a leading Italian manufacturer of high quality valves for a wide variety of oil & gas applications.

As oil and gas exploration and production continues to move into even deeper waters, Perar S.p.A is uniquely prepared to execute projects efficiently and safely, bringing decades of subsea experience and the expertise needed to develop the most challenging fields.

With an established subsea division in Delebio - North of Milan, totally dedicated to the engineering and manufacturing of subsea valves and actuators, Perar S.p.A offers a **facility, expert personnel and equipment 100% allocated to the subsea industry.**





# TAILOR MADE PACKAGES

Perar engineers have developed a comprehensive range of subsea valves, operators and hydraulic actuators to deliver complete **tailor made packages** meeting the highest subsea specifications. Our subsea valve portfolio includes **trunnion mounted ball valves**, **gate valves** (through conduit slab, double expanding types) and **non-return valves** (swing check and nozzle check). The in-house tailor made **gearbox** and **hydraulic actuators**, in **quarter turn** or **linear operation**, complete the package and provide the most optimized solution for such specific subsea conditions.

The valves do not rely on lubricant or grease to assist bore sealing between the obturator and seat. Perar valves are designed with enhanced sealing and seating systems to maximize the mean time between failures thus increasing the reliability and preventing from any potential risk during operation.



## SUBSEA BALL VALVES

Subsea ball valves come in **side entry**, **top entry**, **fully welded** or **twin double block and bleed construction** and are tailored to API 6DSS, API 6A, API 17D with the addition of customer and project requirements.

### Seating:

*Metal-to-Metal (Tungsten Carbide Coatings)*

*Seat-to-Body sealing:*

*Non-elastomeric seals*

*Bolted construction sealing:*

*Metal-to-Metal (Inconel® Alloy 625)*

*Stem-to-Body sealing:*

*Non-elastomeric seals, Metal-to-Metal upon request.*

### Size:

*From 1/2" to 60"*

### Pressure Class:

*ANSI 150-300-600-900-1500-2500*

*API 2000-3000-5000-7500-10000-15000*

*Special ratings*

### Materials:

*Carbon Steel with Partial or Full CRA cladding Duplex, Super Duplex stainless steel, Inconel® Alloys.*



## SUBSEA SWING CHECK VALVES

Subsea **swing check valves** are tailored according to API 6DSS, API 6A, API 17D with the addition of customer and project requirements. The subsea **swing check valves** can be provided with ROV lock open system to keep the valve fully open for reverse pigging (Bi-directional piggable valve).

### Seating:

*Metal-to-Metal hardfacing (Stellite® or Inconel® Alloy 625)*

*Seat-to-Body sealing:*

*Welded*

*Bolted construction sealing:*

*Metal-to-Metal (Inconel® Alloy 625)*

*Stem-to-Body sealing:*

*Non-elastomeric seals, Metal-to-Metal upon request in case of ROV operation.*



# PERAR QUARTER -TURN GEAR & HYDRAULIC ACTUATORS

The Subsea ball valves are actuated by Perar quarter-turn hydraulic actuator or gearbox as requested.

Subsea **quarter-turn hydraulic** actuators are designed to API 17D for deep water application with hydraulic supply pressure up to 5000 psi as per customer or project requirements. The core mechanism of the actuator can be **Rack & Pinion** or **Helical Spline**. They can be equipped with mechanical override intervention mechanism and can be diver or ROV retrievable.

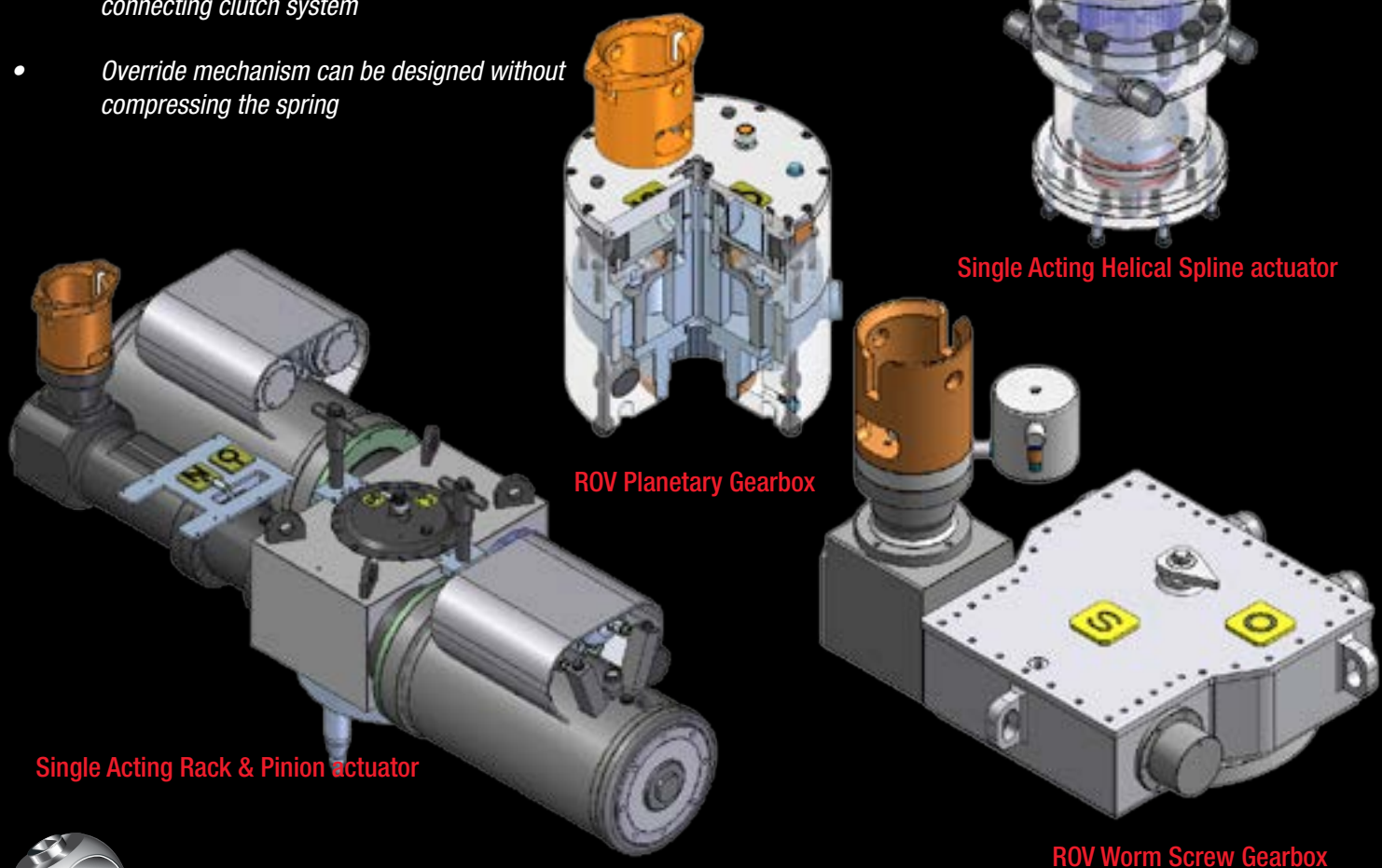
Actuators are available in double acting (FAI) and single acting spring return (FSC or FSO):

- *Pressure balanced with open or close compensation systems*
- *Adjustable end stops*
- *Range of mechanical or hydraulic override and indicator mechanisms*
- *Visual and remote (continuous or limit switches) position indicator*
- *Diver or ROV retrievable with provision of a connecting clutch system*
- *Override mechanism can be designed without compressing the spring*

Subsea **quarter-turn gearboxes** operating Ball or Swing Check valves are designed to API 17D for deep water application with ROV interface as per customer or project requirements.

The core mechanism comes in various kinematics to accommodate valve torques:

- *Worm Screw Gear*
- *Planetary Gear*
- *Pair Gear*
- *Bevel Gear*



# PERAR SUBSEA GATE VALVES & LINEAR ACTUATORS

Subsea gate valves come in **through conduit slab** or **double expanding** type and are tailored according to API 6DSS, API 6A, API 17D with the addition of customer and project requirements.

The valves do not rely on lubricant or grease to assist sealing between the gate and seats. Perar valves are designed with enhanced sealing and seating systems to maximize the mean time between failures thus increasing the reliability and preventing from any potential risk during operation.

## **Seating:**

**Metal-to-Metal (Tungsten Carbide Coatings)**

**Seat-to-Body sealing:**

**Metal-to-Metal**

**Body-to-Bonnet sealing:**

**Metal-to-Metal (Inconel® Alloy 625)**

**Stem-to-Body sealing:**

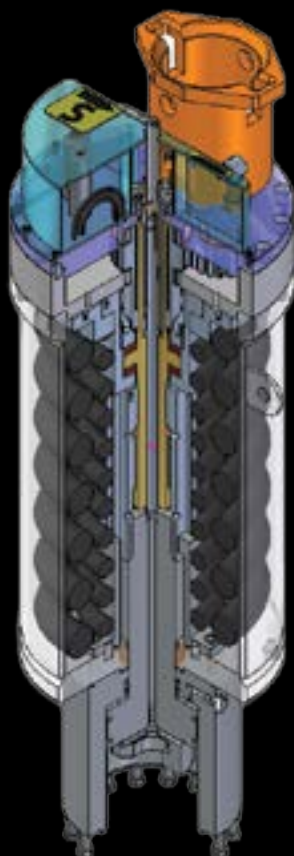
**Non-elastomeric seals**

**Metal-to-Metal at fail position via backseat**

Subsea **linear hydraulic actuators** are designed to API 17D for deep water application with hydraulic supply pressure up to 5000 psi as per customer or project requirements. All models can be either double acting (DA) or single acting spring return (FSC or FSO) and include:

- *Pressure balanced with open or close compensation systems*
- *Mechanical override intervention mechanism*
- *Visual and remote (continuous or limit switches) position indicator*
- *Override mechanism can be designed without compressing the spring and by-passing the hydraulic piston*

The Subsea gate valves are actuated by Perar linear hydraulic actuator or gearbox as requested.



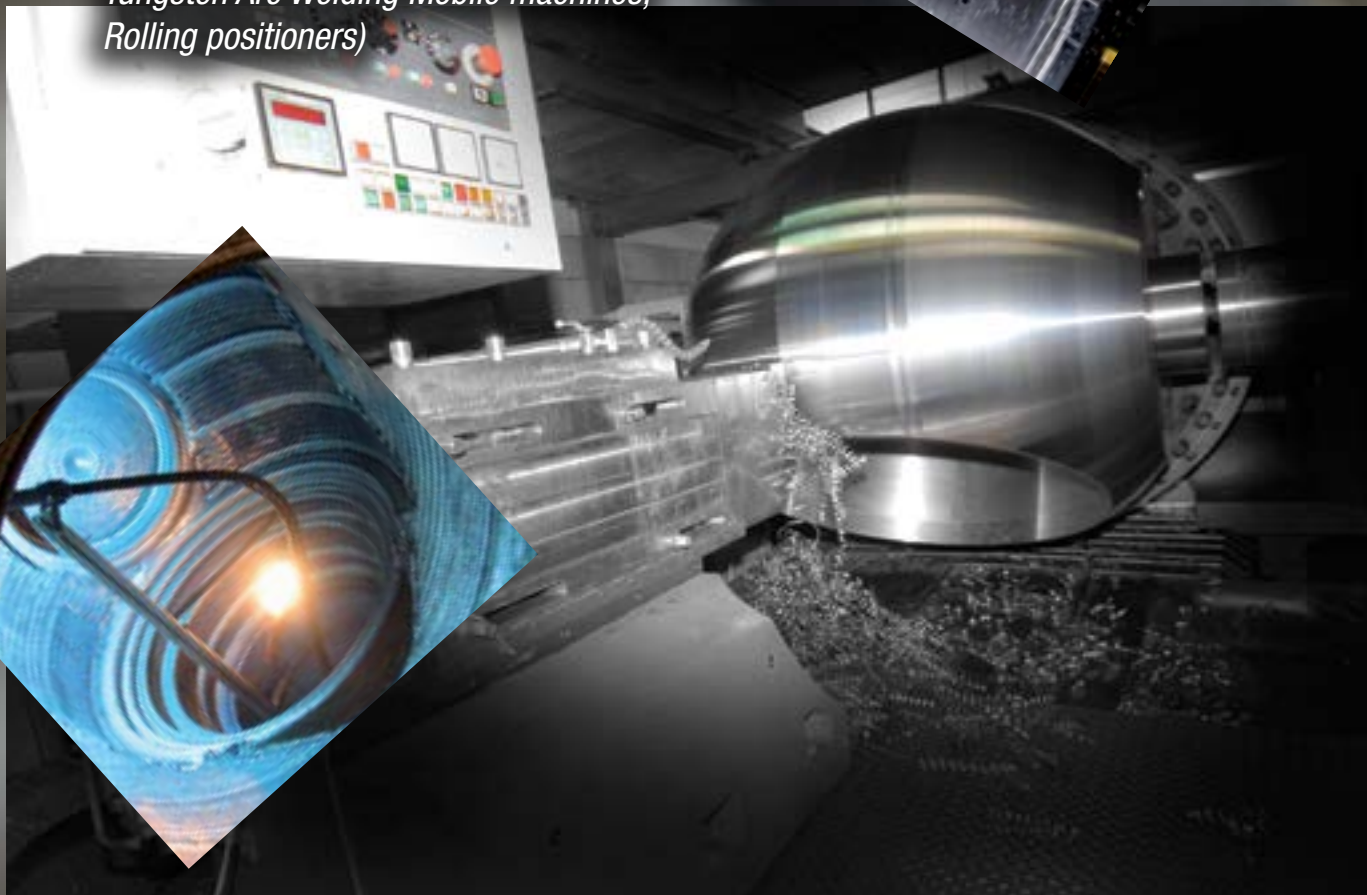
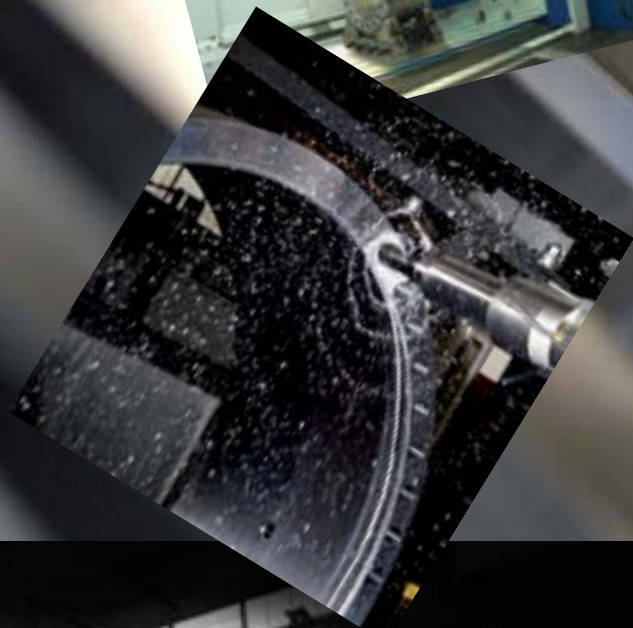


# ***IN - HOUSE MANUFACTURING***

To maintain the highest standards of quality all critical manufacturing steps are kept in-house to allow Perar 'hands on" Project Management and Project Quality Control.

Our main plant located in Rescaldina North of Milan, integrates:

- *CNC Machining  
(horizontal lathes, vertical lathes, parallel lathes, machining centers, drilling, ball turning/grinding, lathes/cutter)*
- *Welding facilities for cladding, structural welding  
(Submerged Arc Welding stations, Gas Metal Arc Welding stations, Gas Metal Arc Welding mobile machines, Tungsten Arc Welding Mobile machines, Rolling positioners)*



# IN - HOUSE TESTING

Because subsea valve and actuator assembly is maintenance free package, Perar heavily invested in advanced cleaning and testing equipment to meet increasing design life and meet highest level of quality and reliability.

## HYDRAULIC ACTUATOR ASSEMBLY & TESTING

*Ultrasonic washing machine for optimal cleaning of the hydraulic cylinder components*

*Assembly of the hydraulic piston/cylinder in White room (ISO 14644.1 Class 8)*

*Hydraulic flushing units (SAE AS4059 6B-F)*

*Hydraulic test benches for Linear actuators*

*Hydraulic test benches for Quarter-turn actuators*

*ROV torque tool ISO 13628-8 Class 4 for override mechanism testing*



*White room for assembly of hydraulic actuators critical parts*



*ROV torque tool*

## SUBSEA VALVE/ACTUATOR ASSEMBLY QUALIFICATION TESTING AND FAT

*Automatic test panel for API 6A PR2 and endurance cycling (1,200 cycles) qualification testing*

*Low and High temperature testing equipment for API 6A PR2 testing on valve and actuator*

*Sand slurry testing to API 14D*

*Bending moment test bench to simulate pipe loadings to 3,500 KNm*

*Fugitive emission testing*

*Test pits allocated to FAT and Qualification tests*

*Hyperbaric chamber: Shallow water pressure vessel (simulating 50 bar external pressure)*

*Hyperbaric chamber: Ultra-deepwater pressure vessel (simulating 450 bar external pressure)*



*Automatic test panel for API 6A PR2 and endurance cycling tests*

Qualification testing is an on-going activity at Perar works, please question about packages already qualified to 3,000m / 10,000ft water depth.





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