

# PN & HY-SERIES

Scotch-Yoke Valve Actuators



Paladon Systems Ltd is an actuator manufacturer and valve automation centre. Our business is to design, manufacture and test all types and sizes of valve actuators and control systems. Paladon's philosophy has always been to provide comprehensive, fit for purpose and cost effective valve automation solutions to our clients and the industry sectors they serve. By building close working relationships with our customers, we are able to fully understand their operational requirements and develop all our actuator series to ensure that they meet or exceed those requirements. We have continuously improved our design, engineering, organizational, quality and management capabilities since the Company was founded in 1981.

Paladon's experience in all extremes of operating conditions has enabled us to develop actuation solutions with unsurpassed reliability. Quality is a primary part of our management philosophy, and we have held ISO 9001 certification for over 20 years. We also hold accreditation and approvals from many global institutes, engineering companies and end users.

Being close to our customers has always been a high priority. To support our increasing customer base, Paladon is located in Northampton England, Aberdeen Scotland, Pinarolo Po Italy, Moscow Russia and Kuala Lumpur Malaysia. Our Northampton England headquarters oversees all engineering, quality control and product development to ensure consistency, and to maximize organizational efficiency. To further enhance our customer support, Paladon is backed by agents operating in globally strategic locations.



# INTRODUCTION

Paladon's PN and HY-Series high performance valve actuators are designed specifically to control quarter-turn (90°) valves such as ball, plug and butterfly. The all-steel construction guarantees rugged performance over an extended service life.

The design criteria were established to guarantee a long life-cycle under severe service conditions. Optimum design dictates a minimum of moving parts based on the Scotch-Yoke design that has been proven over many years to be the most efficient mechanism for operating quarter-turn valves by converting linear piston movement to rotary motion. This mechanism has been refined by Paladon to minimise friction and deliver high torque even at low operating pressures.



## APPLICATIONS

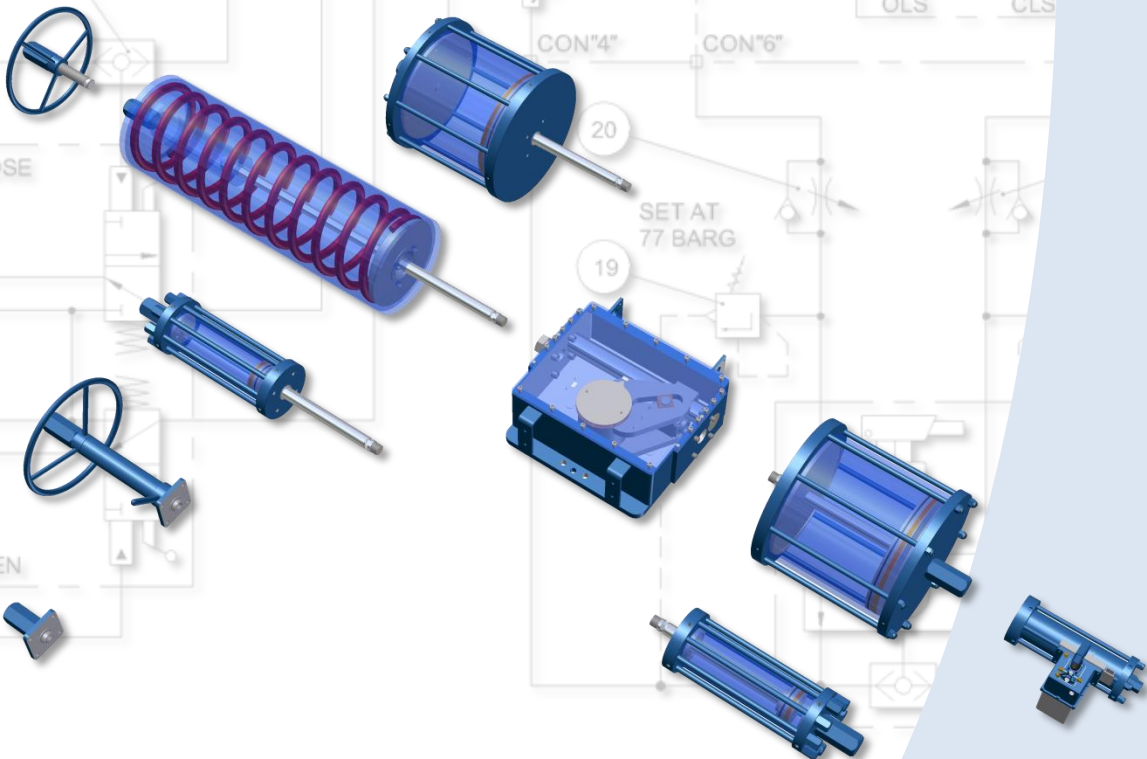
PN & HY-Series valve actuators are designed to operate:

- Ball valves
- Butterfly valves
- Plug valves
- Any quarter-turn mechanism



# KEY FEATURES

- Available in double-acting or spring-return (fail-safe) configurations
- All steel construction with no external threads
- Modular design via fully interchangeable power cylinders and spring modules
- Symmetrical, canted or demi-canted yokes available to optimise weight, size and cost
- Totally enclosed weatherproof housings, certified to IP66
- Scragged springs (set removal) ensure optimum performance and reliability
- Fully welded spring modules to ensure simple and safe removal
- Electroless nickel plated cylinders as standard; chrome, Xylan or electrofilm coatings are also available
- Mechanical or hydraulic manual overrides are available on all actuators
- Standard mounting pads for position switches and control panels/cabinets
- Mechanical position indicator



## Supply Pressures

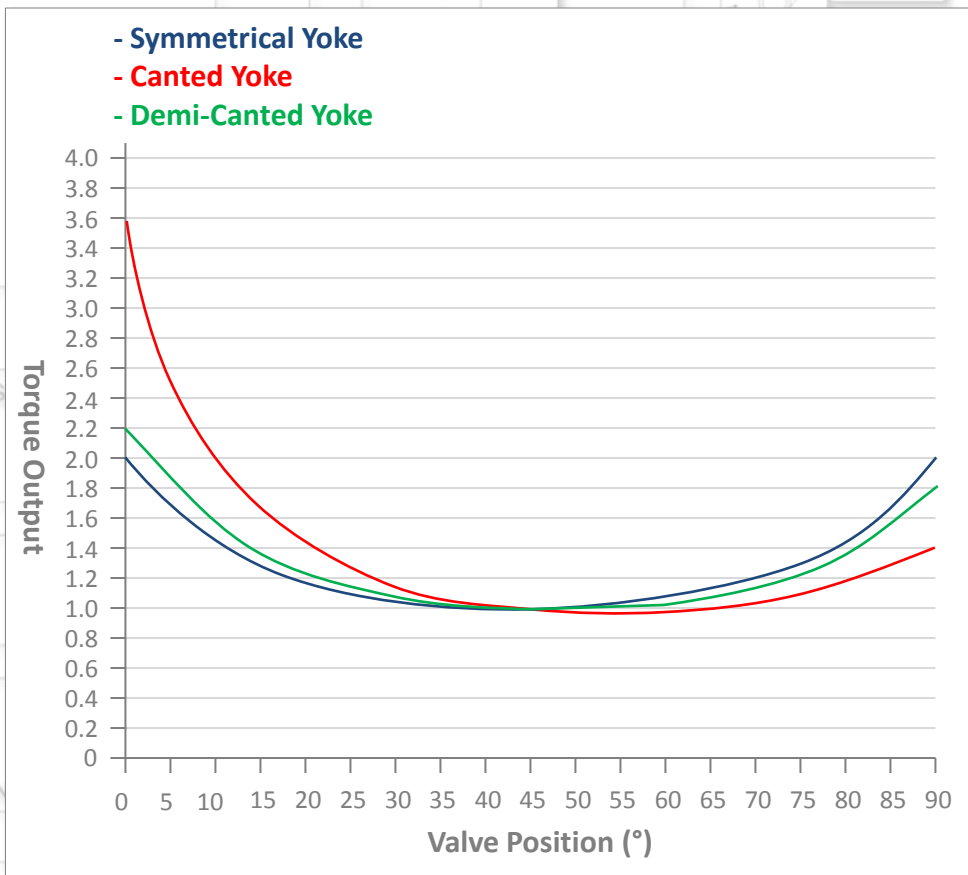
- ▶ PN-Series 2.7 to 12 Barg (40 to 175 psig)
- ▶ HY-Series 13 to 250 Barg (90 to 3,625 psig)

## Torque Output Range

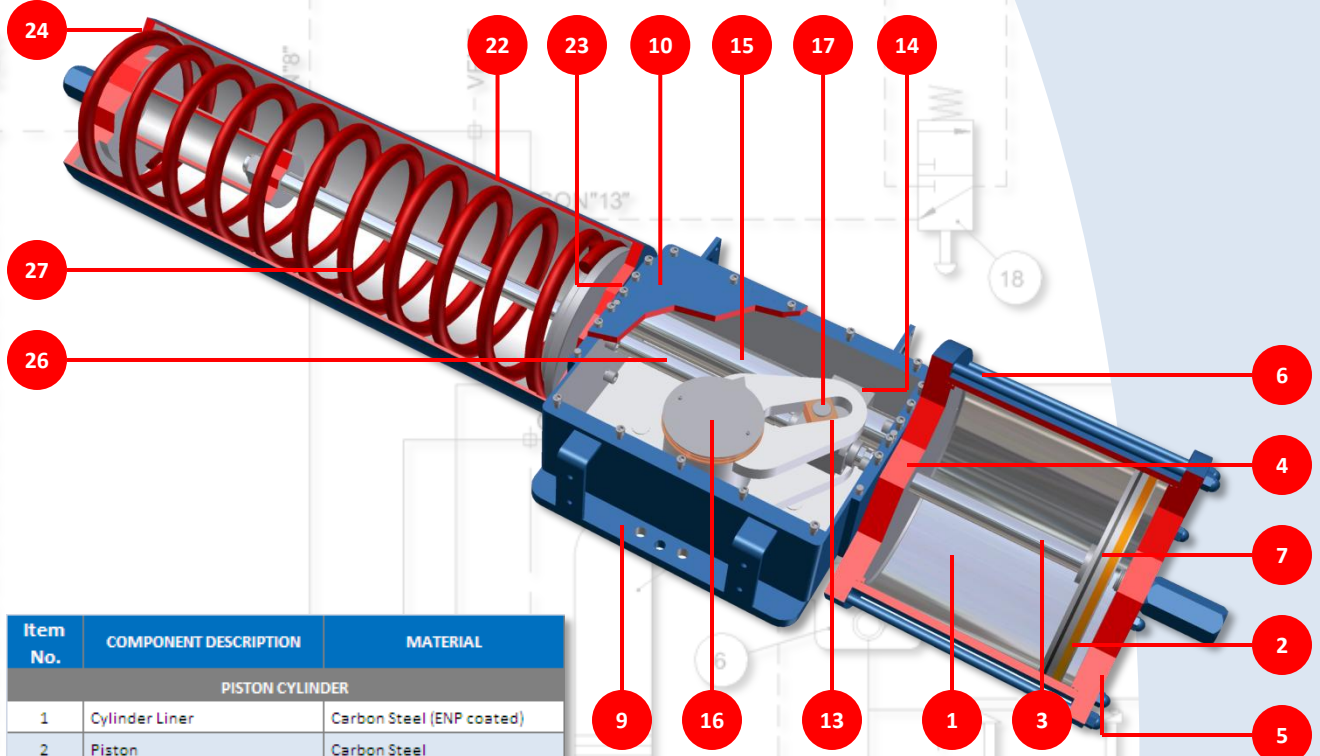
- ▶ PN & HY-Series Up to 600,000 Nm (5,310,000 lbs in)

## Torque Output Characteristics

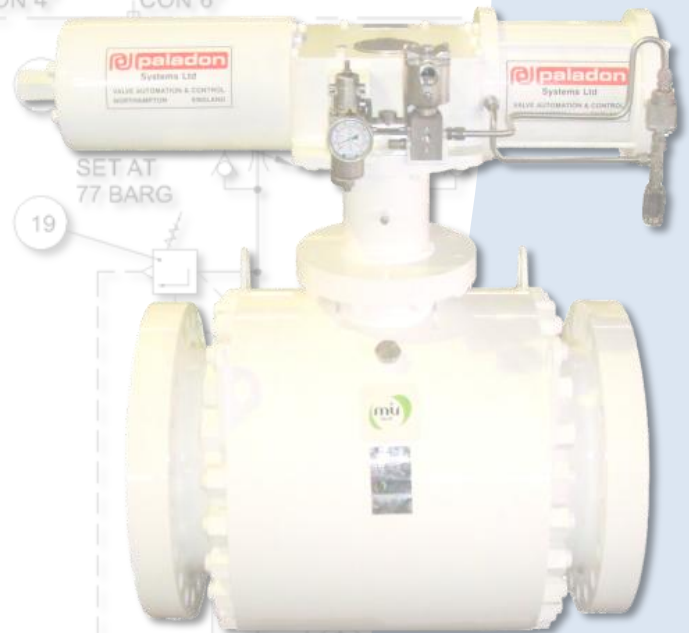
PN & HY-Series actuators can be supplied with either symmetrical, canted or demi-canted yokes to optimize actuator sizing for all quarter-turn valves; ultimately resulting in smaller and lower cost actuators.



# MATERIALS OF CONSTRUCTION



Item No.	COMPONENT DESCRIPTION	MATERIAL
<b>PISTON CYLINDER</b>		
1	Cylinder Liner	Carbon Steel (ENP coated)
2	Piston	Carbon Steel
3	Piston Rod	Alloy Steel (Chromium plated)
4	Rod Head flange	Carbon Steel
5	Blank Head Flange	Carbon Steel
6	Tie Rod	Carbon Steel
7	'O'-Rings	NBR
8	Bearing	Fe-Bz-Teflon
<b>YOKE HOUSING</b>		
9	Housing	Carbon Steel
10	Cover	Carbon Steel
11	Scotch Yoke	Alloy Steel
12	Bushing	Bronze
13	Sliding Block	Bronze
14	Guide Block	Carbon Steel
15	Guide Bar	Alloy Steel (Chromium plated)
16	Position Indicator	Carbon Steel
17	Roller Pin	Alloy Steel
18	Connection	Carbon Steel
19	Plug	Alloy Steel
20	Spring	Spring Steel
21	Plate	Stainless Steel
<b>SPRING CYLINDER</b>		
22	Spring Liner	Carbon Steel
23	Spring Head Flange	Carbon Steel
24	Spring End Flange	Carbon Steel
25	Flange	Carbon Steel
26	Push Bar	Alloy Steel (ENP)
27	Spring	Spring Steel
28	Du Bearing	Fe-Bz-Teflon



- **PN & HY-Series Scotch-Yoke Actuators**

PN & HY-Series actuators are high performance pneumatic and hydraulic scotch-yoke actuators designed to operate any quarter-turn mechanism in both double-acting and spring-return configurations.

- **Electro-Hydraulic Control Systems**

These systems use electric pumps to pressurize hydraulic accumulators to provide hydraulic power. Stand-alone units using solar panels are also available when local utilities are unavailable or unreliable.

- **Electro Hydraulic Positional Control Systems**

Suitable for both Choke and Control Valve applications, operating from either existing ring main or self-contained power sources. Available for both Offshore Hazardous locations and Industrial Power Generation.

- **GH-Series Gas-over-Oil and DG-Series Direct Gas Actuators**

GH-Series and DG-Series actuators are typically used in gas pipeline applications. For GH-Series, the hydraulic supply pressure is provided by the pipeline gas pressure acting on oil within the tanks in the control system. For DG-Series, the pipeline gas is used directly to power the actuator.

- **Subsea Actuators**

The robust and flexible design does not require pressure compensation for depths down to 200m. For deeper applications, a pressure compensated design is available for depths down to 2,000m.

- **Autonomous Shutdown Valve (ASV)**

The ASV is designed to be applied to pipeline loading systems, Calm Buoy, SLS and similar systems. The ASV provides full automatic fail-safe operation of subsea valves to isolate pipelines from flexible risers.

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