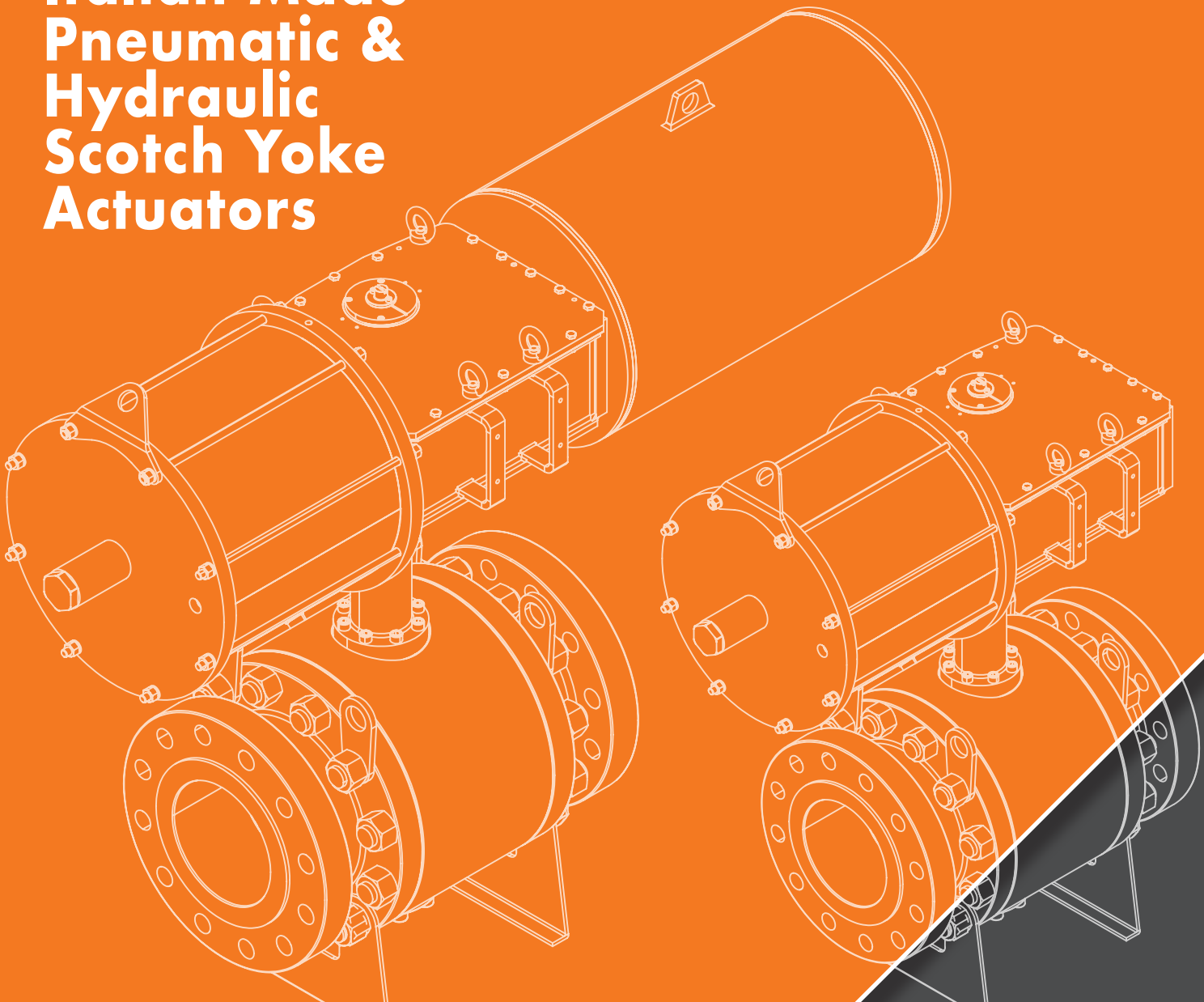


Max-Air

TECHNOLOGY

The Best Way To Automate Your Process

Italian Made Pneumatic & Hydraulic Scotch Yoke Actuators



AG Series Technical Brochure

Max-Air Technology | Rotary Actuators & Valve Automation Solutions



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Features & Benefits

Italian made scotch yoke actuators designed for peak performance & reliability.

Pneumatic Actuators for Peak Heavy Duty Performance

Emme Technology Srl is proud to introduce the new AG Series scotch yoke actuator. Designed and manufactured 100% in Italy, this actuator is built to last with a 25-year design life. Years of manufacturing and design experience have culminated into our unique Guided-Motion concept, which provides superior performance, longevity, and flexibility. Additional details such as high-grade materials, precision machined components, and rigorous quality control all contribute to a robust construction that outperforms the competition.

Features:

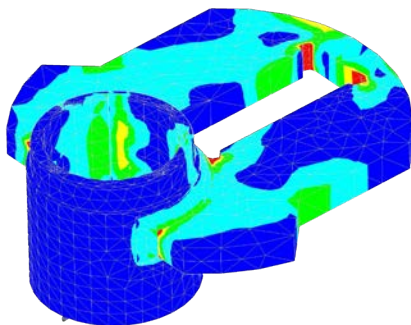
- Dual linear travel stops are uniquely designed for repeatable, high speed operation. Standard travel stops provide +/- 5 degrees adjustment; more is available with extended travel stops.
- Pneumatic cylinder has a max rated pressure of up to 12 barg (175 psig)
- Electroless nickel plated cylinders, chrome plated guide rods.
- High and low temperature seal options available.
- High visibility progressive position indicator on center module cover.
- Namur switch interface on top plate.
- Accessory mounting panels on both sides.
- ISO 5211 standard valve interface dimensions.

Options:

- Hand Pump Override
- Pre-Engineered Panel Selections

Designed & Built to Last:

Strong design including increased safety factors for critical components, high quality materials and coatings, precise machining and enhanced quality control allow the AG series to withstand the most challenging applications. Max-Air conducts extensive analysis of the actuator's components to assure service life.



Specifications:

Rotation	90° +/- 5°
Housing	Carbon Steel
Yoke	High Carbon Steel - Phosphate Coating
Guide Rods	Chrome Plated Carbon Steel
Power Cylinder	Carbon Steel, Internal Electroless Nickel Plated
Spring	51CrV4 Steel - Epoxy Painting
Ambient Temp. Range	-20°C÷+80°C Standard (-49°C Low, 150°C High)
Max Operating Pressure	12 barg (175 psig)
Torque Range	Double acting: 1419 ÷ 31841 Nm Spring Return: 1067 ÷ 15151 Nm
Valve Mounting	ISO 5211
Top Accessory Mounting	NAMUR VDI/VDE 3845

Sizes to Cover
Torques from
1067 Nm to
31841 Nm



Seal Options

SEALS	CODE	TEMP RANGE
Standard (BUNA-N)	S	-20°C (-4°F) to 80°C (176°F)
High Temp. (VITON)	H	-20°C (-10°F) to 120°C (250°F) continuous and 150°C (300°F) cyclic
Low Temp. (Silicone)	L	-49°C (-40°F) to 80°C (176°F)

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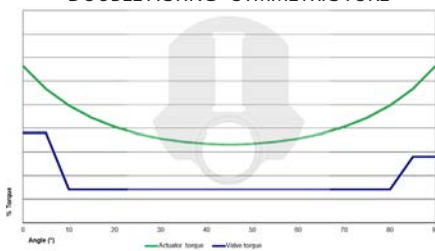
Yoke Mechanism

AG Series is available with symmetric, canted or hybrid yoke mechanism allowing to select the best torque curve characteristic for each specific valve and therefore minimizing actuator size, weight and cost.

SYMMETRIC TORQUE CURVE

In this configuration AG unit produces maximum torques at both ends of the stroke (0° and 90°) and minimal in the middle, therefore this series is the optimal solution for metal seated ball valves, plug valves and for modulating service.

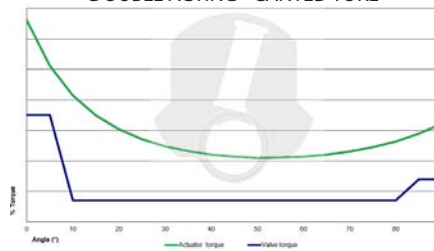
DOUBLE ACTING - SYMMETRIC YOKE



CANTED TORQUE CURVE

In this configuration AG unit produces a higher maximum torque at the beginning of the stroke (i.e. valve unseating/reseating at 0°) and less torque at the end of the stroke (90°), therefore this series is optimal solution for high performance butterfly valves.

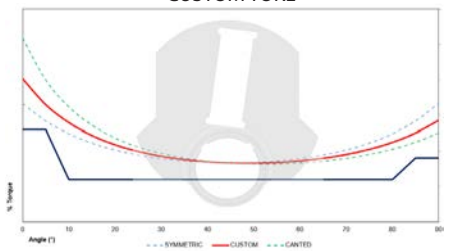
DOUBLE ACTING - CANTED YOKE



HYBRID TORQUE CURVE

In this configuration AG unit is equipped with a customized yoke which produces an hybrid torque curve between canted and symmetric ones.

CUSTOM YOKE



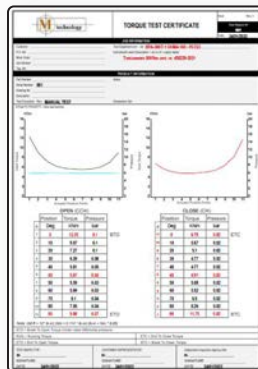
Quality

Produced in an ISO 9001 facility, quality standards are strictly verified to assure compliance with design specifications.



Scotch yoke actuator test bench (dynamic brake and dynamic endurance test)

100% AG Series scotch yoke actuators is fully tested on test bench.





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AG Series Technical Brochure

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Guided-Motion Design K2 - K3 - K4

Our unique Guided-Motion design uses strategically placed bearings and alignment features to ensure a calibrated arrangement of rotational and linear movements. Better alignment virtually eliminates side-loading strain, minimizes efficiency loss, and reduces wear on sliding surfaces. Additionally, these guiding elements are sealed and protected against ingress of water or particulates.

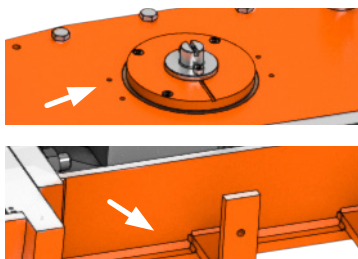
Dual Linear Bushings

Dual linear bushings in the power module.



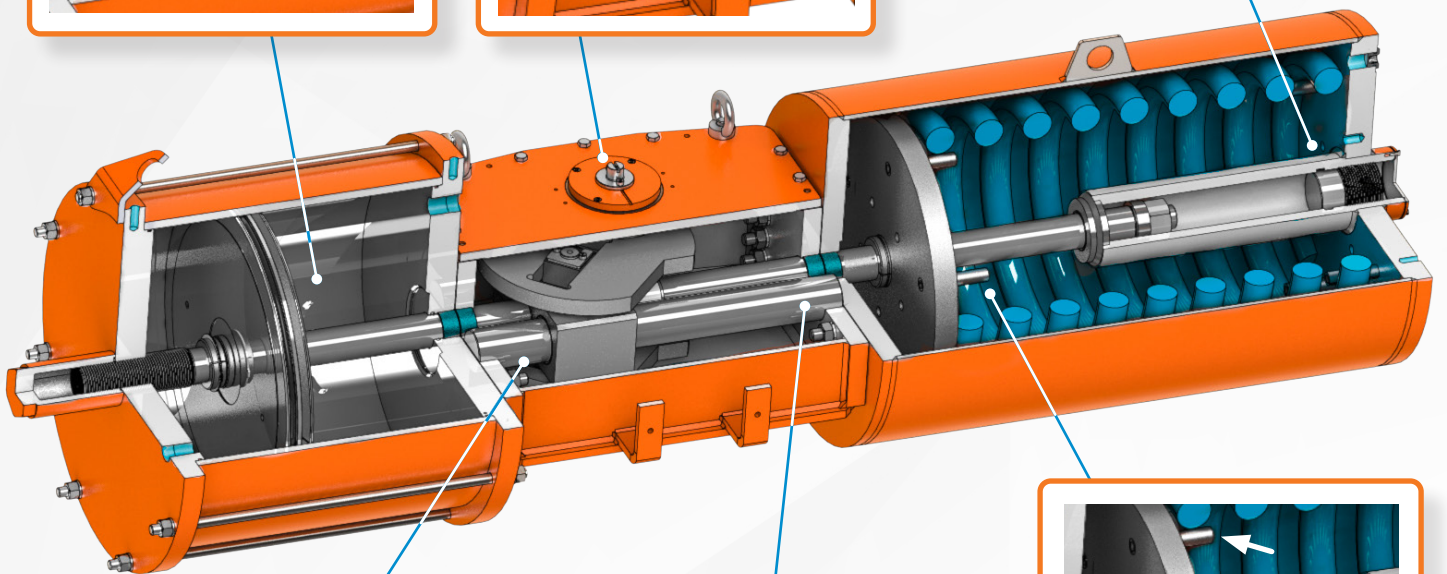
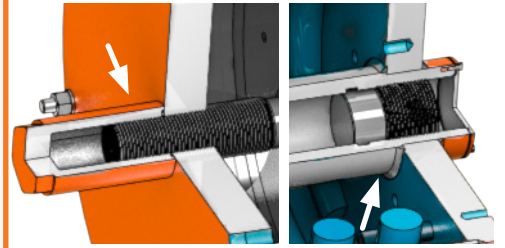
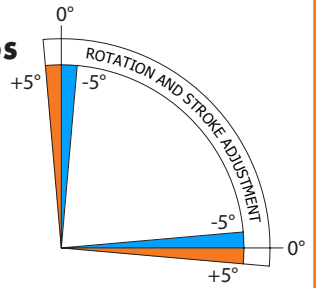
Dual Rotary Bearings

Dual rotary bearings on the top and bottom of the yoke.



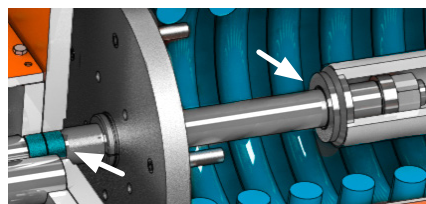
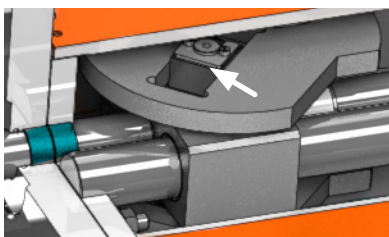
Adjustable Travel Stops

AG Series actuators are all provided with bi-directional travel stops to allow for open and closed position location adjustments of +/- 5° standard.



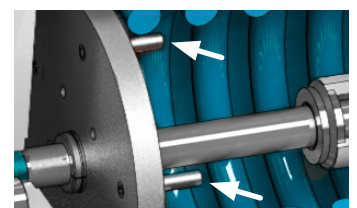
Dual Sliding Bearings

Dual sliding bearings within the yoke mechanism for smooth controlled movement during the conversion of linear movement to rotation, and dual linear guide bushings.



Dual Linear Bushings w/ Guide Rod

Dual linear bushings with guide rod in the spring module.

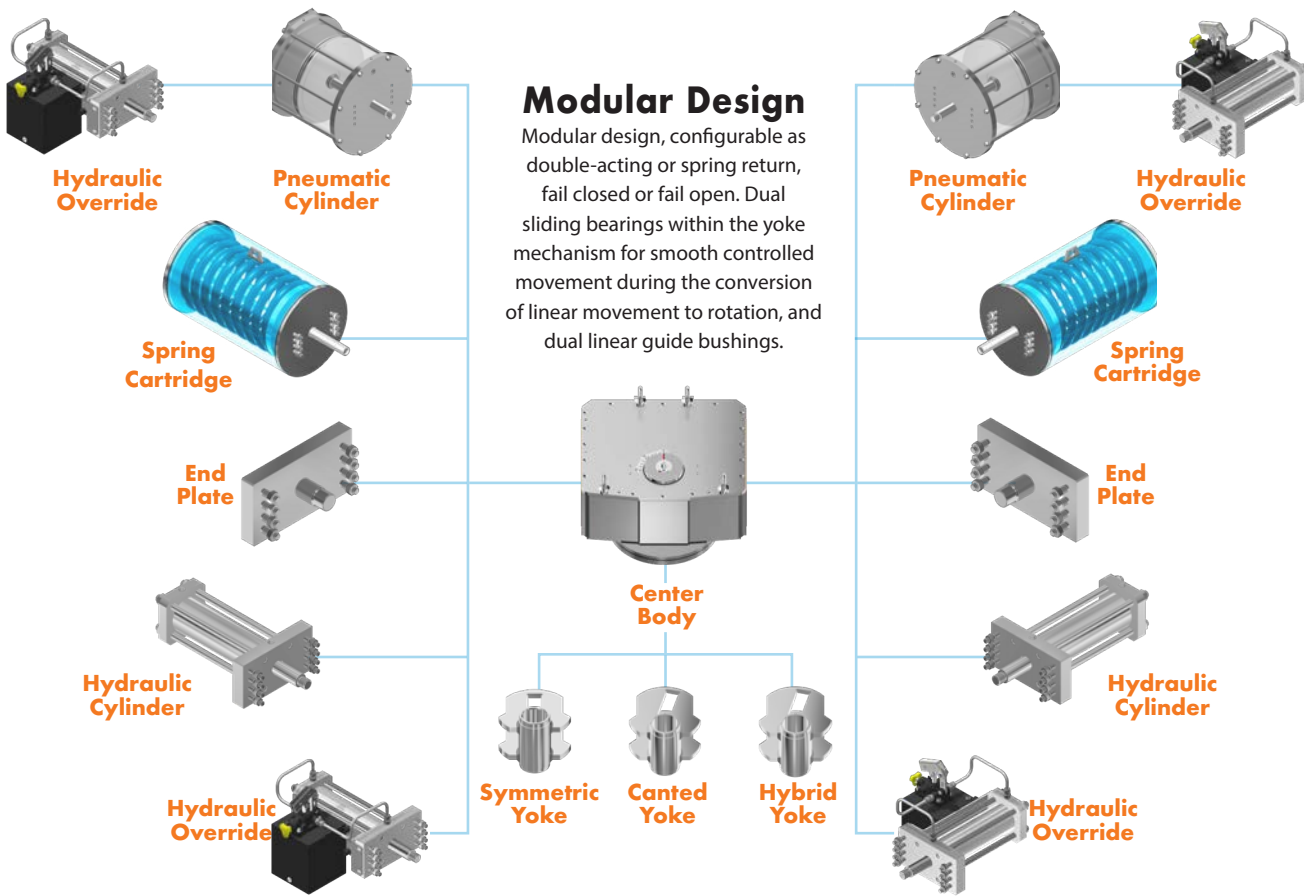


Alignment Pins

Alignment pins within the spring chamber to assure centering of the spring's coils.

Flexibility & Superior Safety

Modular Design, Operating Media, Easy Assembly, Serviceable, Tie Rod Power Module, & Welded Spring Cartridge



Safe & Serviceable

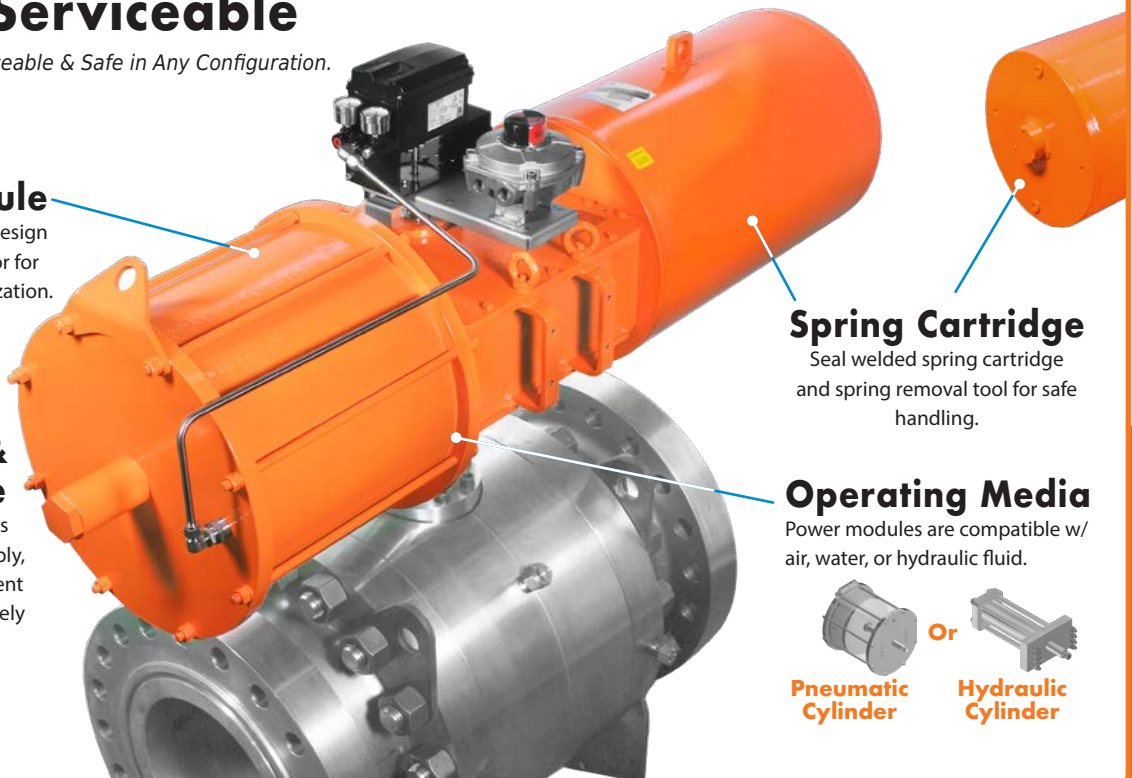
Designed to be Serviceable & Safe in Any Configuration.

Tie Rod Power Module

Tie rod power module design with a high safety factor for accidental over-pressurization.

Easy Assembly & Serviceable

Actuator construction is designed for easy assembly, making field refurbishment and modifications relatively simple.

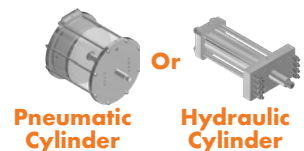


Spring Cartridge

Seal welded spring cartridge and spring removal tool for safe handling.

Operating Media

Power modules are compatible w/ air, water, or hydraulic fluid.



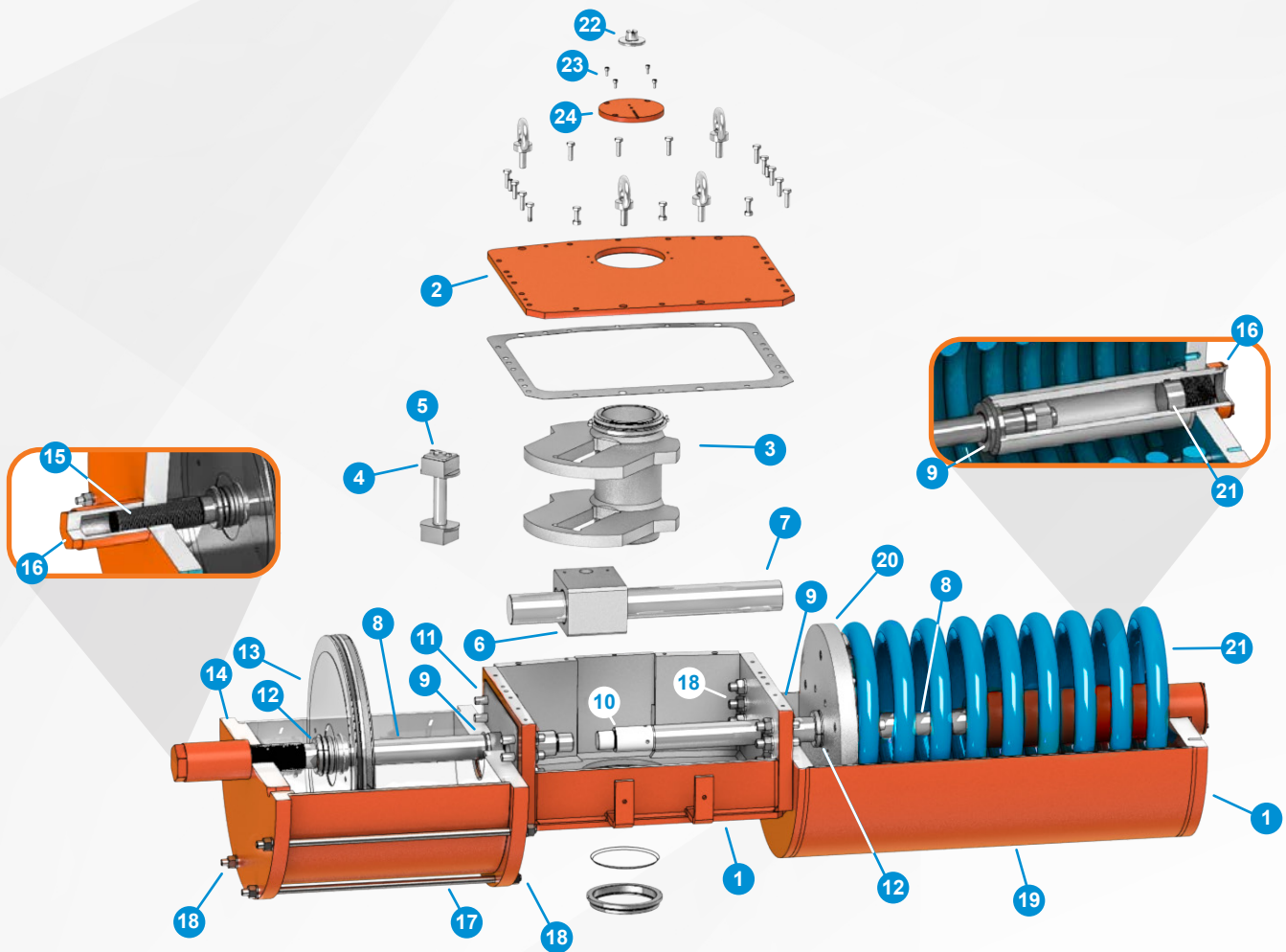


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Technical Data

Exploded View & Materials of Construction

Pneumatic Scotch Yoke Actuators K2 - K3 - K4



No.	DESCRIPTION	MATERIAL
1	Housing	Carbon Steel
2	Cover	Carbon Steel
3	Yoke	High Carbon Steel - Phosphate Coating
4	Slider Block	Hard Bronze Alloy
5	Yoke Pin	41CRMO3 - Chrome Bar
6	Guide Block	39NiCrMo3 Steel
7	Housing Guide Rod	42CrMo4 Steel
8	Spring Guide Rod	42CrMo4 Steel
9	Centering Bushing	Steel - Composite Polymer
10	Yoke Bushing	Hard Bronze Alloy
11	Cover Gasket	Fiber
12	Retainer Ring	39NiCrMo3 Steel

No.	DESCRIPTION	MATERIAL
13	Piston	Carbon Steel - Electroless Nickel Plating
14	End Cap	Carbon Steel
15	Mechanical Stop	39NiCrMo3 Steel
16	Mechanical Stop Plug	Carbon Steel
17	Tie Rod	ASTM A193 B7
18	Nut	ASTM 194 2H
19	Spring Cartridge	Carbon Steel
20	Spring Plate	Carbon Steel
21	Spring	51CrV4 Steel - Epoxy Painting
22	NAMUR Accessory Drive	Stainless Steel
23	NAMUR Indicator Screws	Stainless Steel
24	NAMUR Indicator	Stainless Steel

Technical Data

Exploded View & Materials of Construction



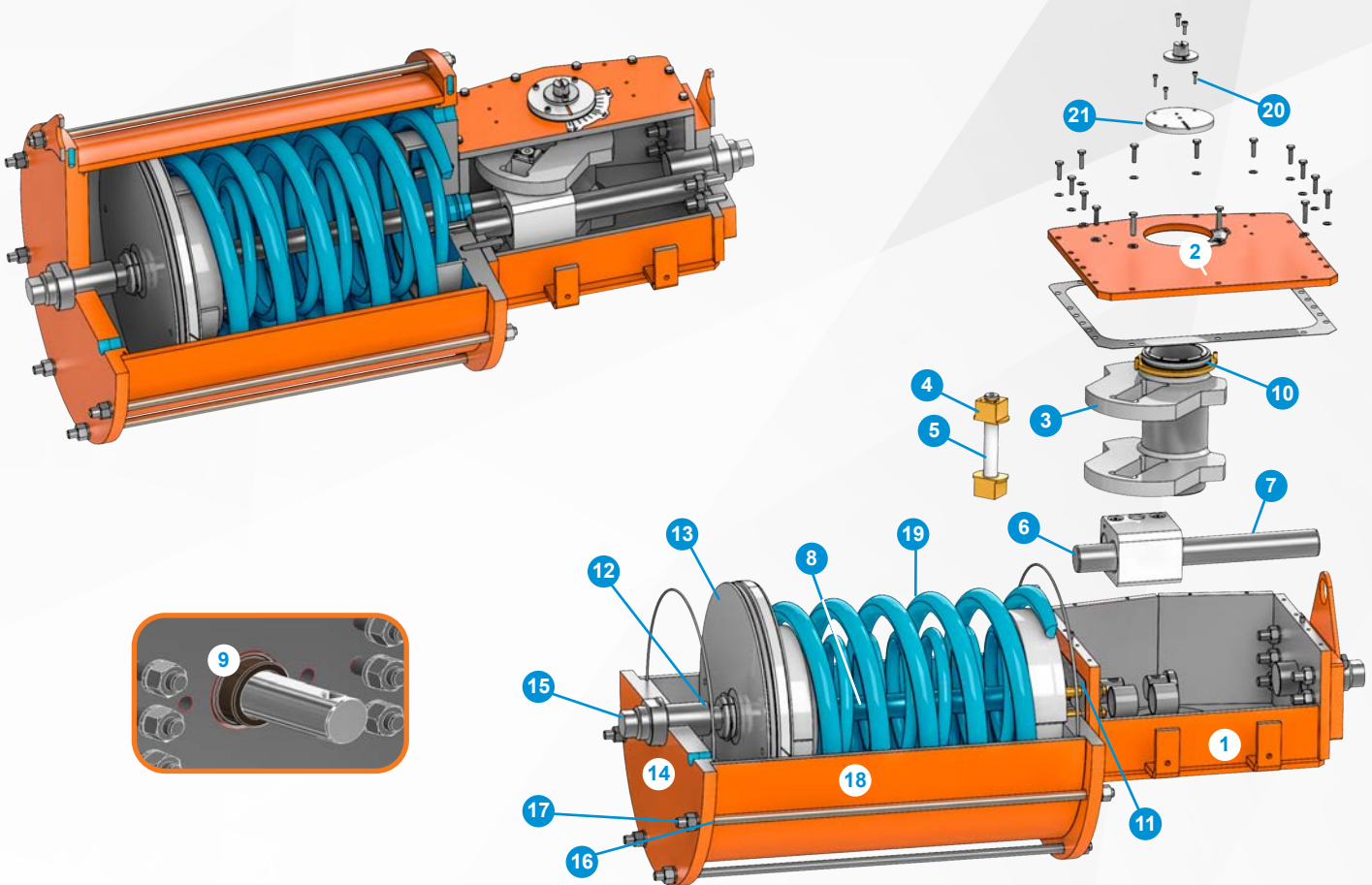
K1 - Compact Scotch Yoke Actuator

Heavy duty high performance scotch yoke actuator featuring for the single acting models that the cylinder assembly also contains the spring, minimizing the overall dimensions of the unit.

Maximum Operating Torque:

- 5400 Nm (3909 ft-lb) for Double Acting
- 1900 Nm (1401 ft-lb) for Spring Return

Maximum Allowable Working Pressure 12 barg (174 PSIG)



No.	DESCRIPTION	MATERIAL	No.	DESCRIPTION	MATERIAL
1	Housing	Carbon Steel	12	Retainer Ring	39NiCrMo3 Steel
2	Cover	Carbon Steel	13	Piston	Carbon Steel - Electroless Nickel Plating
3	Yoke	High Carbon Steel - Phosphate Coating	14	End Cap	Carbon Steel
4	Slider Block	Hard Bronze Alloy	15	Mechanical Stop	SS 420
5	Yoke Pin	41CRMO3 - Chrome Bar	16	Tie Rod	ASTM A193 B7
6	Guide Block	39NiCrMo3 Steel	17	Nut	ASTM 194 2H
7	Housing Guide Rod	42CrMo4 Steel	18	Cylinder	Carbon Steel - Electroless Nickel Plating
8	Piston Guide Rod	42CrMo4 Steel	19	Spring	51CrV4 Steel - Epoxy Painting
9	Piston Guide Rod Bushing	G-CuAl11 FE4 UNI 5274	20	NAMUR Indicator Screws	Stainless Steel
10	Bushing	Hard Bronze Alloy	21	NAMUR Indicator	Stainless Steel
11	Cover Gasket	Fiber			

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