



High Performance Actuators





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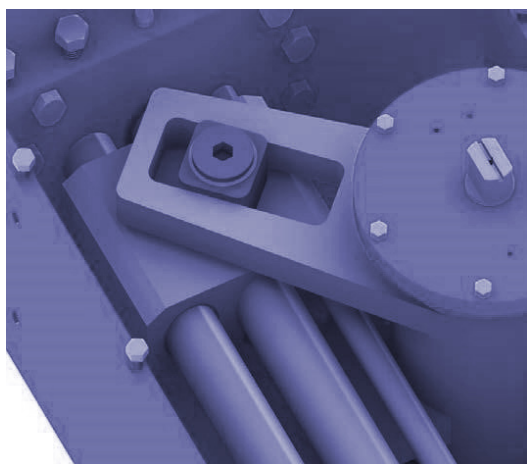
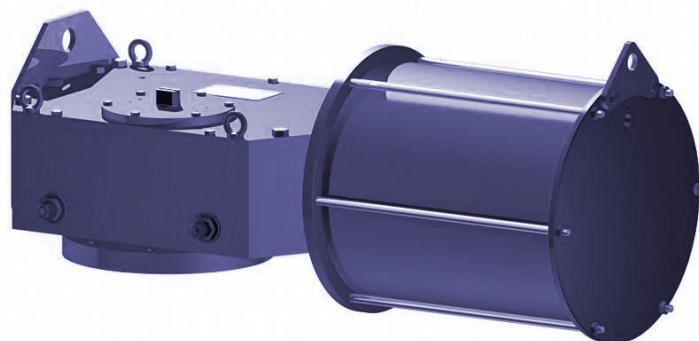


Scotch Yoke Series

Product Description

The Meridian Scotch Yoke Series are the correct choice for use in heavy duty applications in several fields (oil and gas, on and off-shore, petrochemical plants, etc.) and suitable to automate any quarter turn valve (butterfly, ball, and plug).

The production facility is located in Northern Italy, this provides us with fast and efficient access to some of the best technology, knowledge, and raw materials. The factory operates in accordance with ISO 9000:2008, which is certified by Tuv Sud, Italy.



The reliability of the design is ensured by analysis by the Mechanical Engineering Department Of the University of Brescia (Italy).

The Scotch Yoke mechanism allows the HD actuators to be suitable for high torque valve applications, due to the actuators highest output torque at the cylinder start and spring ending position, closely following a ball valves torque profile.

Leakage testing is completed for 100% of actuators after assembly.

Constant monitoring of all components through 3D measuring systems.

An experienced and dedicated engineering team is continually looking for improvement of the products, considering new technologies, techniques and manufacturing processes.

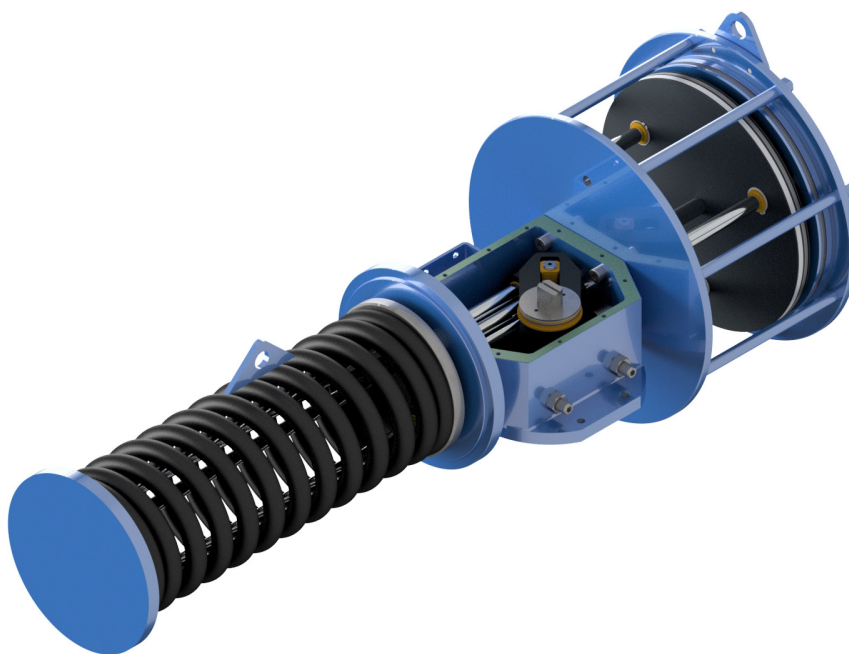


Scotch Yoke Series

Product Features

Scotch Yoke Actuators are designed to and in compliance with the following standards:

- ISO 5211- Actuator to Valve Interface Standard
- DIN 3337- 45° Orientation of the Square Drive Shaft (on request)
- VDI/VDE 3845- Standard for Namur mounting of accessories (switchboxes, solenoid valves, positioners)
- ATEX- Explosive Atmosphere Directive (94/9/CE)
- PED- Pressure Equipment Directive (97/23/CE)



Distinctive Features are:

- Central Box completely sealed provided with Vent Valve in order to prevent overpressure
- All the parts transmitting the movement to the valve are treated for corrosion protection
- Double End Stop Adjustment screws in the central frame eliminating the possibility of leakage in the pneumatic or hydraulic cylinder
- Pneumatic Cylinder is designed with Double O-Ring on the Piston to avoid leakage between the two chambers and ensure longer operation life

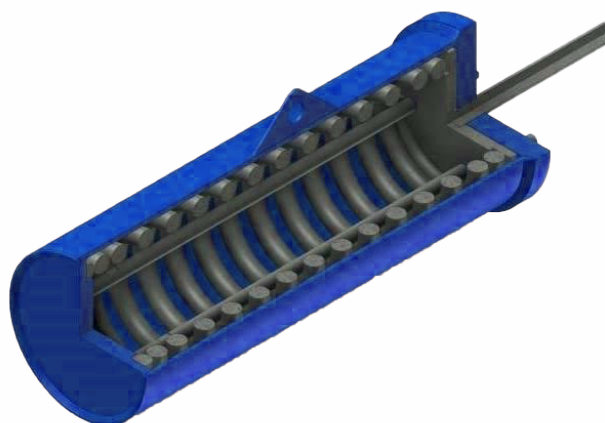
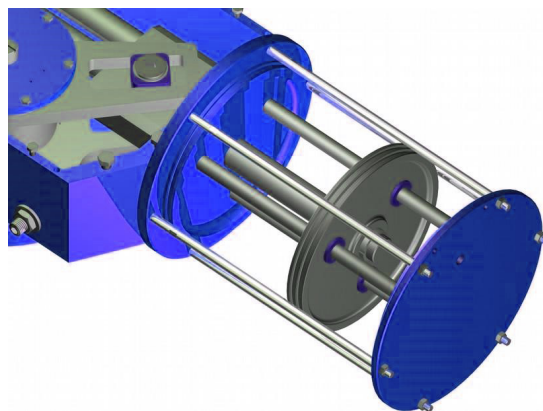
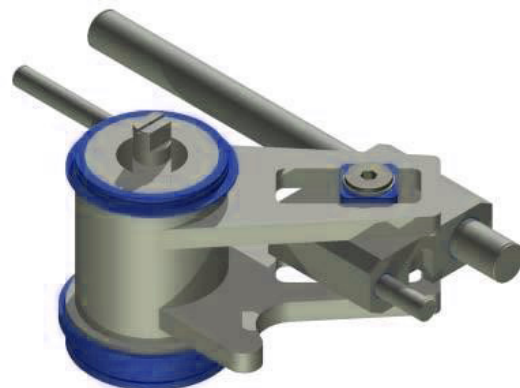


Scotch Yoke Series

Product Features

The movement of the Scotch Yoke mechanism is guided throughout its stroke to ensure alignment, eliminating side load on the valve stem, using the following components:

- Trolley Guide Bars that drive the Yoke movement
- Two Bushings (one on the top and one on the bottom of the Yoke) to avoid metal to metal contact during the rotation
- Two Bushings (over and under the trolley) to avoid metal to metal contact between Pin, Yoke and Trolley
- Three Guide Bars through the piston in the pneumatic cylinder to ensure the correct alignment
- Chromed Steel Guide Bars and Bronze Bushings to ensure smooth movement
- Bronze Bushing in the central frame to guides the Piston Rod during the movement and also avoids metal to metal contact



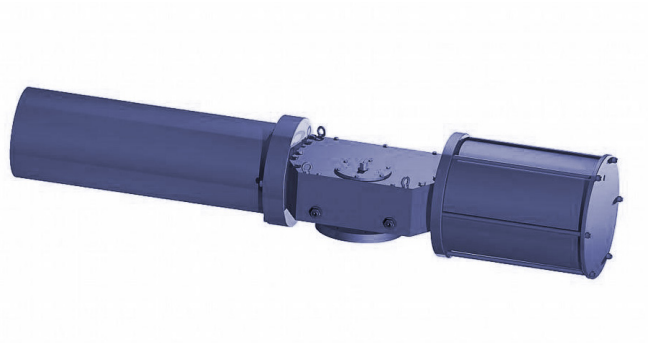
Safety Design Spring

- Spring Cartridge easily removable for maintenance or replacing
- Spring guided by three guide bars to ensure linear compression



Scotch Yoke Series

Product Range



PNEUMATIC – SY / CY

Heavy Duty construction

Scotch Yoke design:

SY - Symmetrical

CY - Canted

Fabricated entirely in low-temperature carbon steel

Designed and assembled according to ISO5211
European Directive

Pneumatic parts treated for corrosion resistance

HYDRAULIC – HY / HC

Heavy Duty construction

Scotch Yoke design:

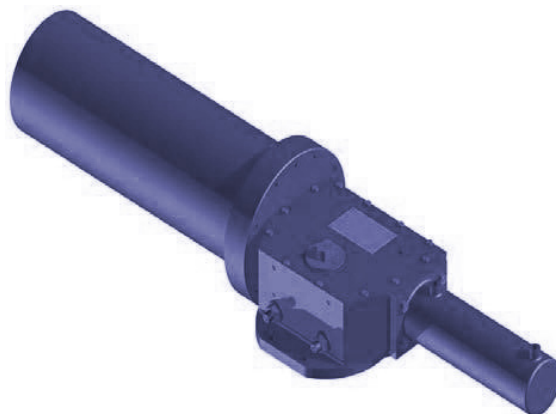
HY – Symmetrical

HC - Canted

Fabricated entirely in low-temperature carbon steel

Designed and assembled according to ISO5211
European Directive

Hydraulic cylinder maximum operating pressure of
3045 psi





Scotch Yoke Series

Product Range

ELECTRO HYDRAULIC - EY

Heavy Duty construction

Scotch Yoke design:

EY – Symmetrical

EC - Canted

Fabricated entirely in low temperature carbon steel

Designed and assembled according to ISO5211 European Directive

Hydraulic cylinder maximum operating pressure of 3045 psi

Custom cabinet according to the required operations

ATEX Certification available



GAS OVER OIL GY-SERIES

Fabricated entirely in low temperature Carbon Steel (no casted parts)

Available in several executions (Local, Remote control, Line Break system, Torque limit device, etc.)

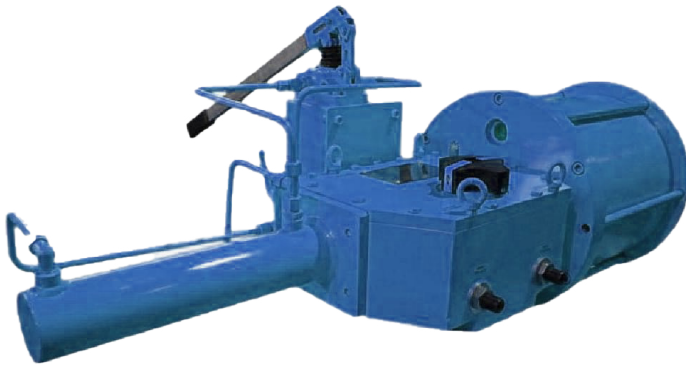
Double end-stop adjustment

Completely waterproof



Scotch Yoke Series

Product Range



DIRECT-GAS PY-SERIES

Fabricated entirely in low temperature Carbon Steel (no casted parts)

Pneumatic system divided from hydraulic system

Double end-stop adjustment

Completely waterproof

Flexible connections types to the valves (ISO5211 flanges and connections to the stem).

LINEAR PNEUMATIC & HYDRAULIC LY OR LH-SERIES

Fabricated entirely in Low temperature Carbon Steel (no casted parts)

Available in Double and Single Acting;

Completely waterproof

Spring system designed for safe maintenance and anti-jerky solution

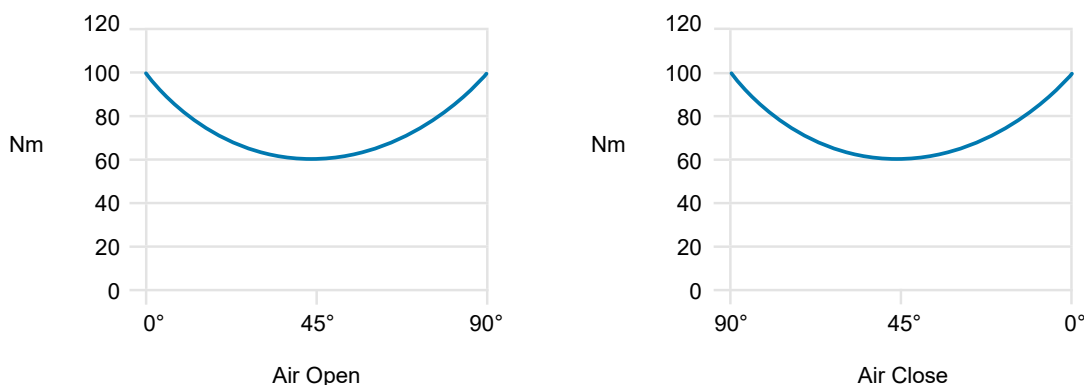
Various option available (Jackscrew, hydraulic damper, hydraulic hand pump, etc.)





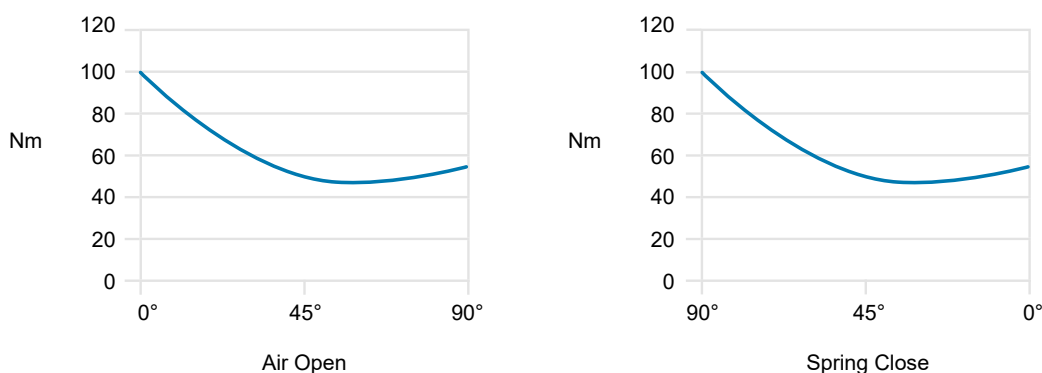
Scotch Yoke Series

Double Acting Torque Diagram



With Reference to the above diagram, it can be noted that the torque profile of a Symmetrical Scotch Yoke Double Acting (DA) Actuator decreases through the middle of the run (45°) and increases to 100% of the start force at the end of the run. This is the same for Air Open and Air Close.

Spring Return Torque Diagram



With Reference to the above diagram, the torque profile of a Symmetrical Scotch Yoke Spring Return (SR) Actuator decreases through the middle of the run (50°) and increases to about 55% of the start force at the end of the run. Meridian™ actuators have been designed to have balanced torques in Air Open and Spring Return.

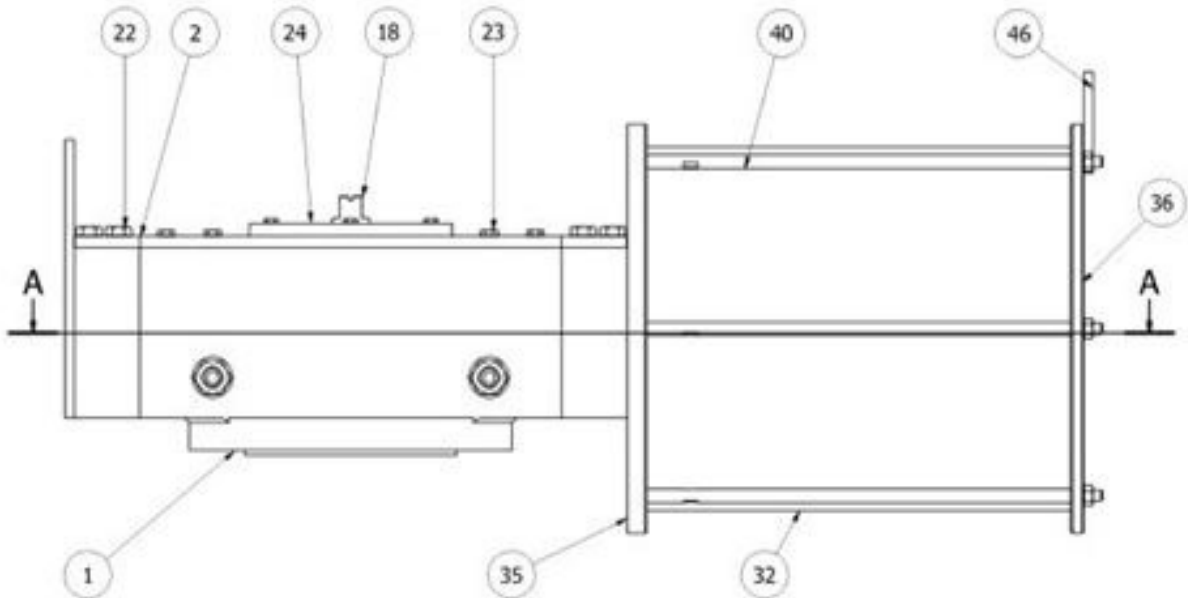
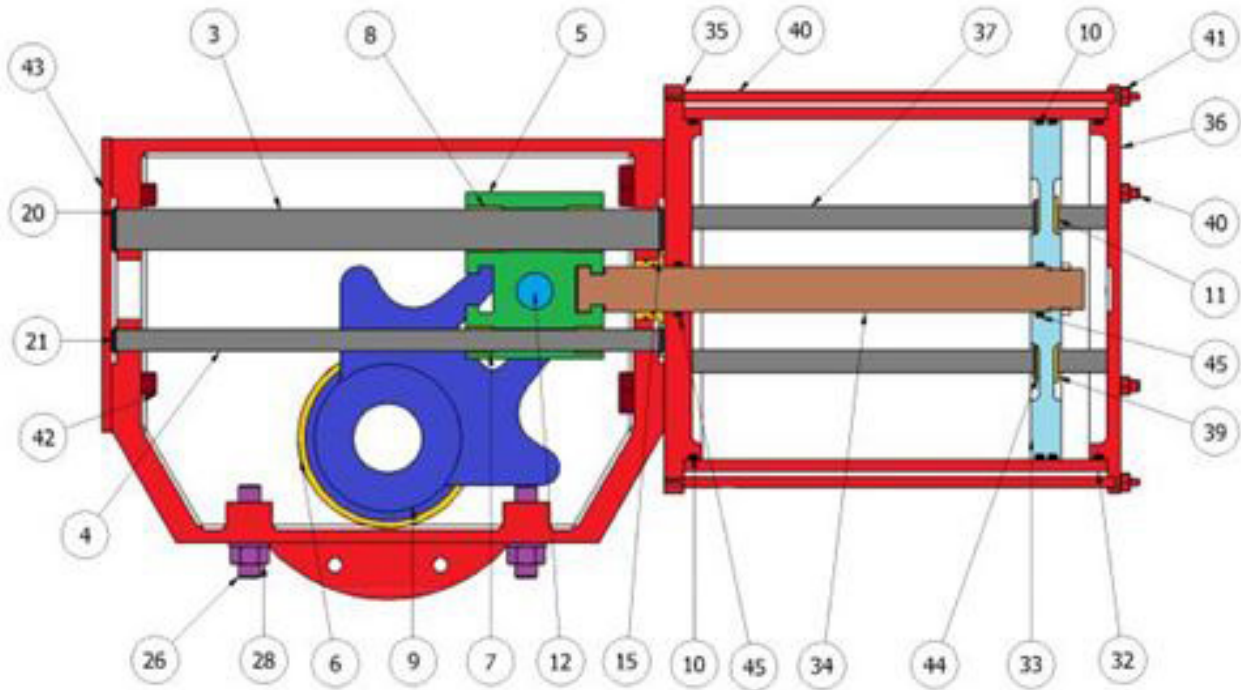
Customized actuators based on valve torques can have different torque profiles to suit the requirements. Available upon request.



Scotch Yoke Series

Double Acting Actuator Part Diagram

A-A





Scotch Yoke Series

Double Acting Actuator Part List

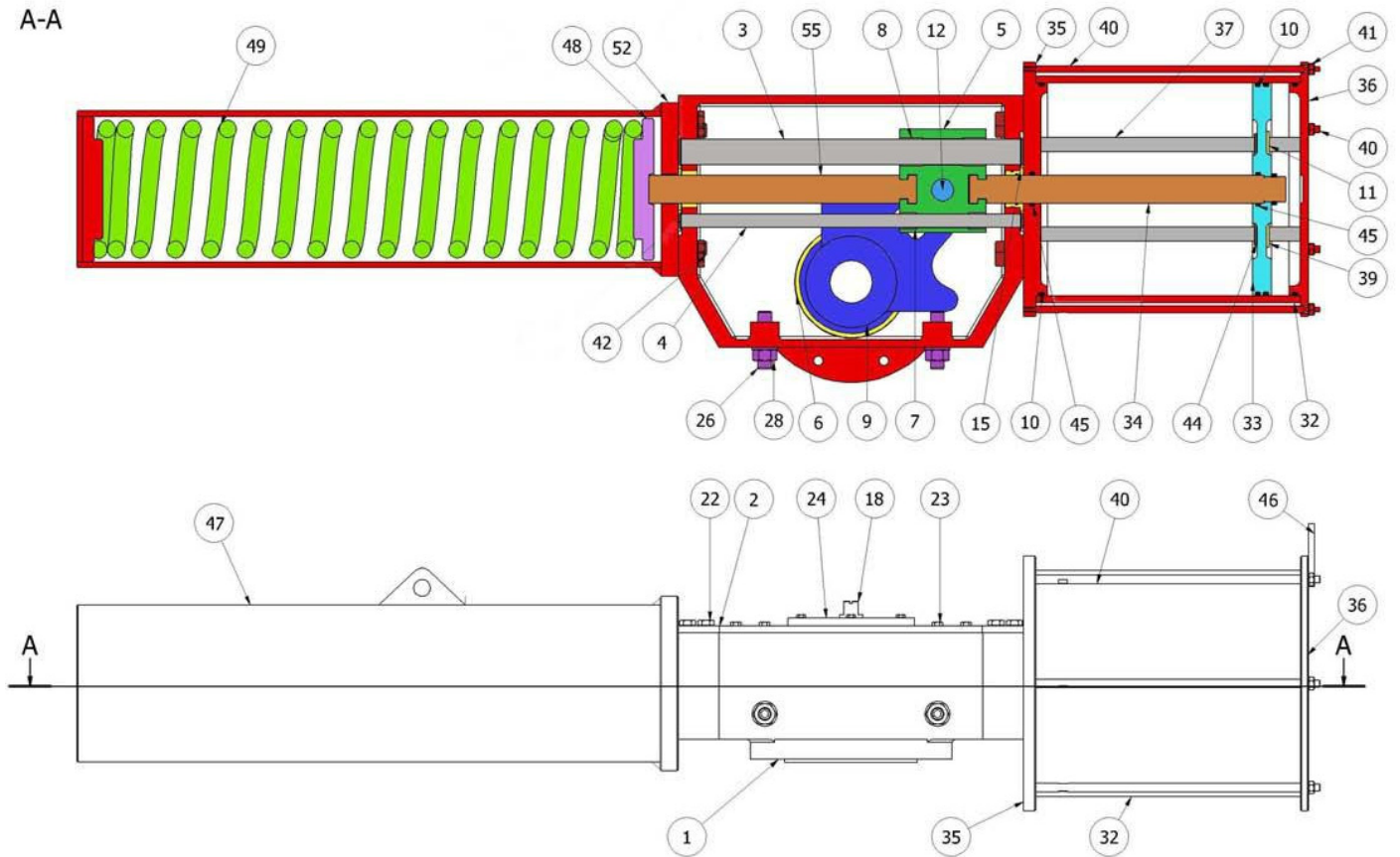
Ref. No	Description	Quantity	Material
1	Box	1	Carbon Steel, Epoxy Painted
2	Lid	1	Carbon Steel, Epoxy Painted
3	Trolley Guide Bar 1	1	Chromed Steel
4	Trolley Guide Bar 2	1	Chromed Steel
5	Trolley	1	Carbon Steel, Phosphated
6	Yoke Bush	2	Bronze
7	Trolley Bush 1	2	Bronze
8	Trolley Bush 2	2	Bronze
9	Yoke	1	Carbon Steel, Phosphated
10	Piston and Cover O-Ring	4	NBR
11	Piston Bush O-Ring	9	NBR
12	Pin	1	Steel
15	Piston Rod Bush	1	Bronze
18	Namur Adaptor	1	Steel, Epoxy Painted
20	Seeger for Trolley Guide Bar 1	2	Steel
21	Seeger for Trolley Guide Bar 2	2	Steel
22	Lid Screws 1	10	Steel
23	Lid Screws 2	5	Steel
24	Upper Closing Flange	1	Carbon Steel, Epoxy Painted
26	Adjusting Screw	2	Steel
28	Adjusting Nut	2	Steel
32	Cylinder Housing	1	Steel, Nickelplated
33	Piston	1	Carbon Steel, Phosphated
34	Piston Rod	1	Chromed Steel
35	Cylinder Flange	1	Carbon Steel, Epoxy Painted
36	Cylinder Closing Flange	1	Carbon Steel, Epoxy Painted
37	Piston Guide Bar	3	Chromed Steel
39	Piston Guide Bar Bush	3	Bronze
40	Tie Bar	6	Carbon Steel, Epoxy Painted
41	Tie Bar Fixing Nut	6	Steel, Epoxy Painted
42	Flanges Fixing Screws	4	Steel
43	Double Acting Closing Flange	1	Carbon Steel, Epoxy Painted
44	Circlip for Piston Guide Bar Bush	3	Steel, Nickelplated
45	Piston Rod O-Ring	2	NBR
46	Lifting point	1	Carbon Steel, Epoxy Painted

Note: Pats list can be different on different models.



Scotch Yoke Series

Spring Return Actuator Part Diagram





Scotch Yoke Series

Spring Return Actuator Part List

Ref. No	Description	Quantity	Material
1	Box	1	Carbon Steel, Epoxy Painted
2	Lid	1	Carbon Steel, Epoxy Painted
3	Trolley Guide Bar 1	1	Chromed Steel
4	Trolley Guide Bar 2	1	Chromed Steel
5	Trolley	1	Carbon Steel, Phosphated
6	Yoke Bush	2	Bronze
7	Trolley Bush 1	2	Bronze
8	Trolley Bush 2	2	Bronze
9	Yoke	1	Carbon Steel, Phosphated
10	Piston and Flange O-Ring	4	NBR
11	Piston Bush O-Ring	9	NBR
12	Pin	1	Steel
15	Piston Rod Bush	1	Bronze
18	Namur Adaptor	1	Steel, Epoxy Painted
22	Lid Screws 1	10	Steel
23	Lid Screws 2	5	Steel
24	Upper Closing Flange	1	Carbon Steel, Epoxy Painted
26	Adjusting Screw	2	Steel
28	Adjusting Nut	2	Steel
32	Cylinder Housing	1	Steel, Nickelplated
33	Piston	1	Carbon Steel, Phosphated
34	Piston Rod	1	Chromed Steel
35	Cylinder Flange	1	Carbon Steel, Epoxy Painted
36	Cylinder Closing Flange	1	Carbon Steel, Epoxy Painted
37	Piston Guide Bar	3	Chromed Steel
39	Piston Guide Bar Bush	3	Bronze
40	Tie Bar	6	Carbon Steel, Epoxy Painted
41	Tie Bar Fixing Nut	6	Steel, Epoxy Painted
42	Flanges Fixing Screws	4	Steel
44	Circlip for Piston Guide Bar Bush	3	Steel, Nickelplated
45	Piston Rod O-Ring	2	NBR
46	Lifting point	1	Carbon Steel, Epoxy Painted
47	Spring Cartridge	1	Carbon Steel, Epoxy Painted
48	Spring Plate	1	Carbon Steel
49	Spring	1	SiCr
52	Spring Cartridge Flange	1	Carbon Steel, Epoxy Painted
55	Spring Rod	1	Chromed Steel

Note: Pats list can be different on different models.



Meridian™

VALVES & VALVE AUTOMATION



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