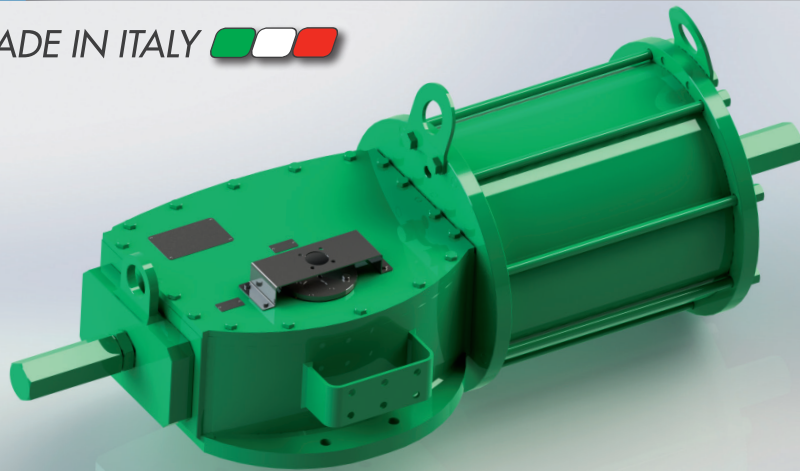


# Heavy Duty Pneumatic Actuator

MADE IN ITALY 



**ACTUATECH**  
ACTUATOR TECHNOLOGY

# GHDP Actuatech Pneumatic Actuator

## Actuators design

GHDP scotch yoke actuators are designed to operate heavy duty remote control of ball, butterfly and plug valves in quarter turn operation, either for ON/OFF and modulating duty. Fabricated in carbon steel frame, electroless nickel-plated cylinders and chromium plated piston rod ensure optimum performance. Thanks to the special working system that reduces the friction and avoids stick-slip effect GHDP actuators provide efficient service with minimum maintenance.

## Technical features and materials

- The scotch yoke rotary lever system allows generating high starting torque suitable for operate on ball, butterfly and plug part turn valves.
- Strong Bronze bushings ensure a smooth cycle for long lasting life without maintenance.
- Robust Thrust bar for high transverse forces and proper support.
- Piston rod and Thrust bar are chrome-plated to ensure minimum friction and best corrosion resistance.
- PTFE Graphite Filled sliding ring supports the piston to avoid stick-slip effect and reduce the friction.
- Multiple external studs structure for the cylinder and welded housing provide excellent solidity and resistance.
- Housing and cylinder caps are internal protected from corrosion by coating.
- 200 micron External protective coating

**The Scotch Yoke design with 9 Bushings minimizes the rotation and the sliding friction of the steel parts ensuring a long life without maintenance.**

Nr. **2** symmetrical scotch yoke bushings to support the rotation drive

Nr. **2** symmetrical sliding blocks against the asymmetrical thrusts between linear piston force and yoke rotary torque

Nr. **1** piston rod bushing

Nr. **2** guide thrust bar blocks

Nr. **2** spring cartridge stem bushings

**Actuators Nominal Torques:** from 2000 Nm to 32.000 Nm.

**Mounting Flange** according with DIN/ISO 5211, DIN 3337, F25 - F30 - F35.

**Rotation Angle:** 100° (-5°+95°).

**Stroke Adjustment:** 10°.

**Operating Pressure:** from 3bar to 8.5bar (Maximum operating pressure depends on the size of actuator).

**Maximum Allowable Working Pressure:** 12 Bar (Maximum pressure that can be applied to a fully stroked actuator against the travel stop).

The torque is directly proportional to the operating pressure.

For the simple acting (spring return) actuators the reverse torque is performed only by the spring action, and is independent from the operating pressure.

**Temperature** range: Standard version: -20°C to 80°C (Seal material: NBR).

Special version: High Temperature -20°C to 150°C (Seal material: FKM).

Special version: Low Temperature -50°C to 60°C (Seal material: FVMQ).

**Operating media:** compress filtered air not necessary lubricated, inert gases.

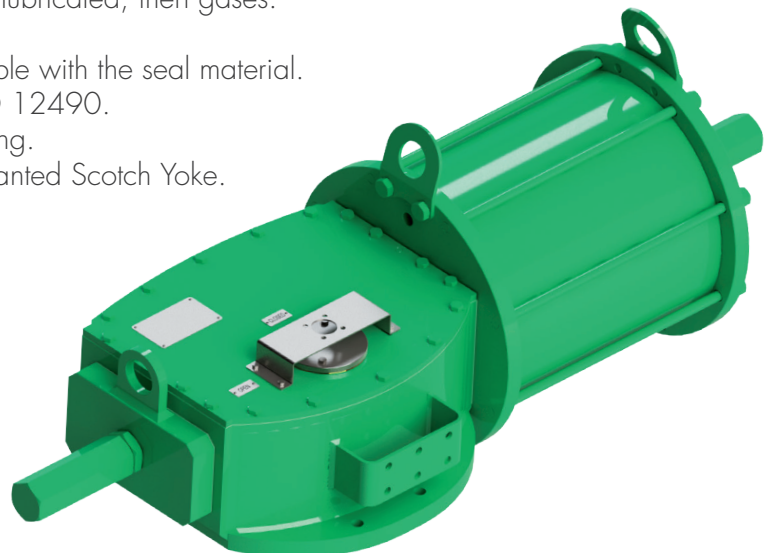
For temperature under 0°C use dry air.

In case of lubricated air use non-detergent oil compatible with the seal material.

**Design** according with EN 15714-3, ISO 5211, ISO 12490.

**Type:** Spring return Nc, Spring return No, Double acting.

**Torque output design:** Symmetric Scotch Yoke - or - Canted Scotch Yoke.



# Actuatech Scotch Yoke Design

Enclosed Stroke regulation

Chromium plated spring rod

Spring modules fully welded

Namur accessories connection

Mechanical position indicator

N° 3 Lifting rings

Totally enclosed housings

Symmetrical yoke bushing

Chromium plated guide bar

ISO 5211 Flange connection

Nickel-plated cylinder

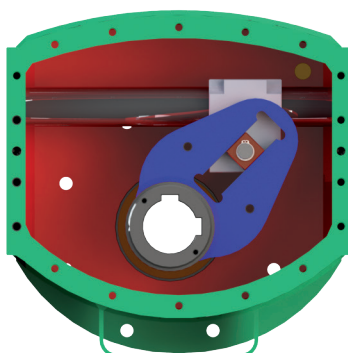
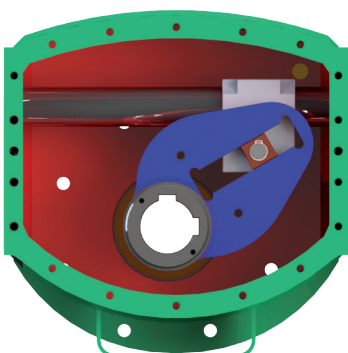
Chromium plated piston rod

Piston with Floating oring seal

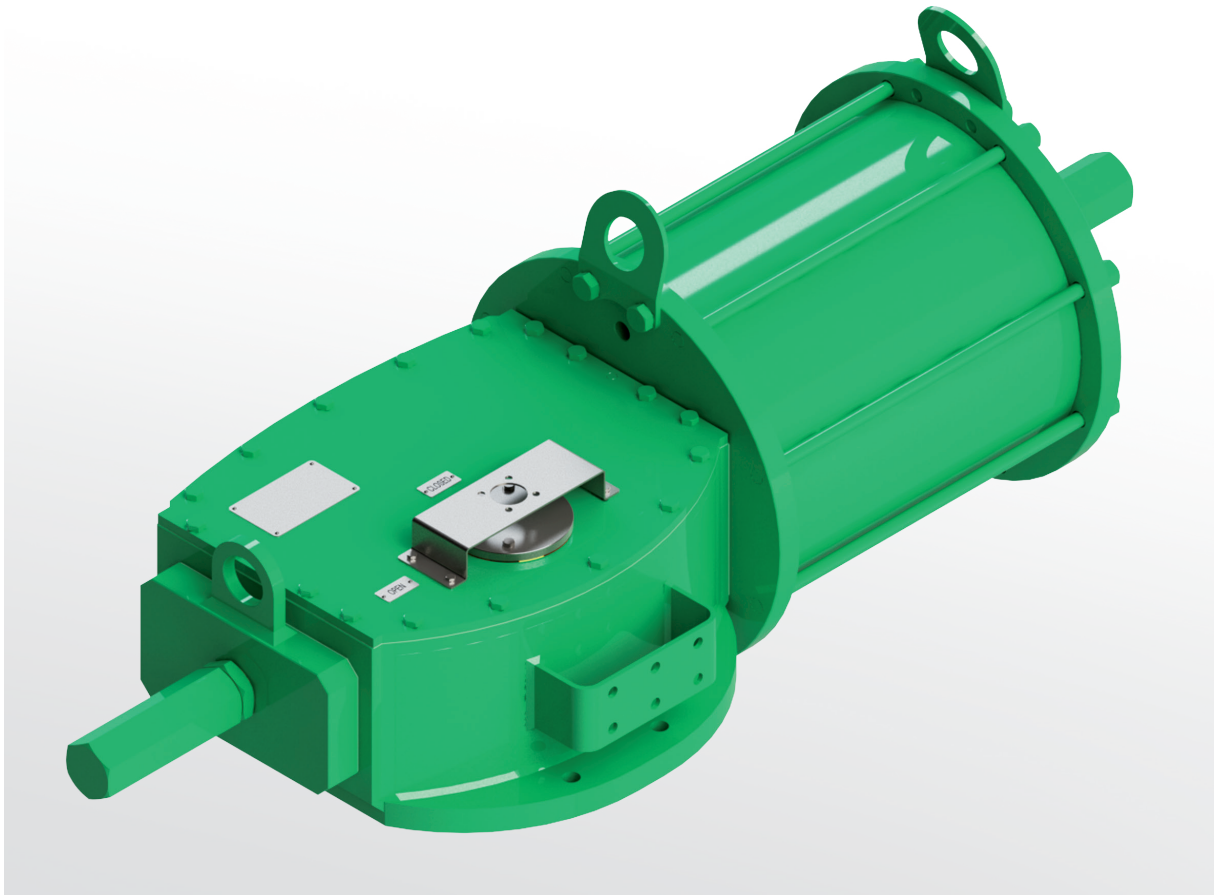
Enclosed Stroke regulation

Canted design

Symmetrical design

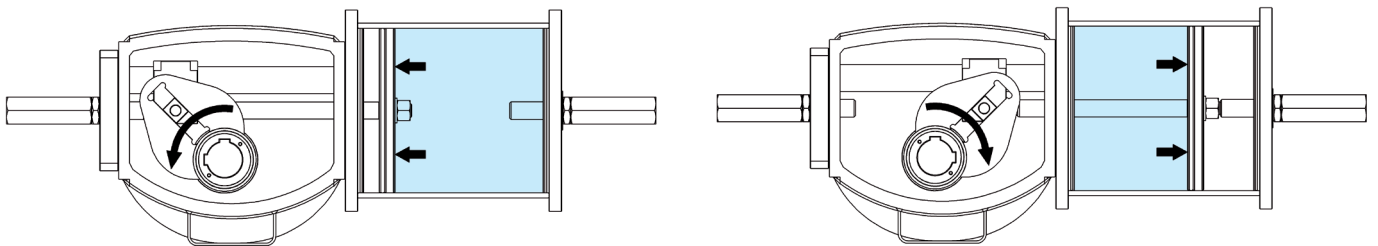


# Double Acting Type

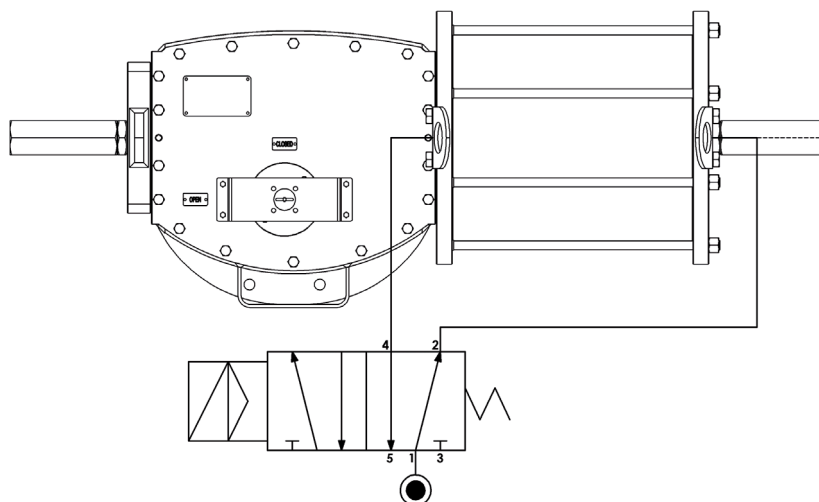


OPEN POSITION VALVE

CLOSE POSITION VALVE

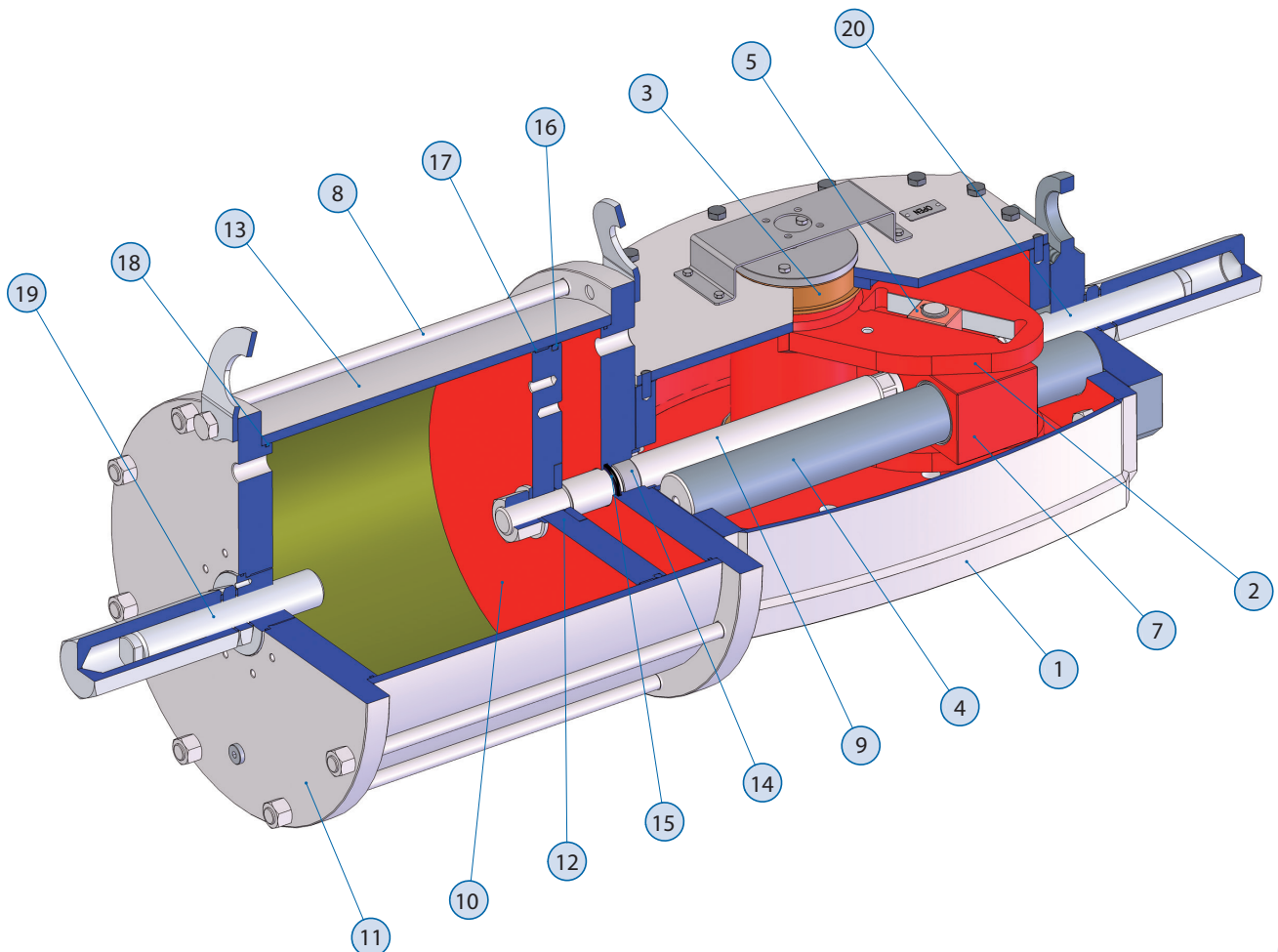


CONNECTION SCHEME

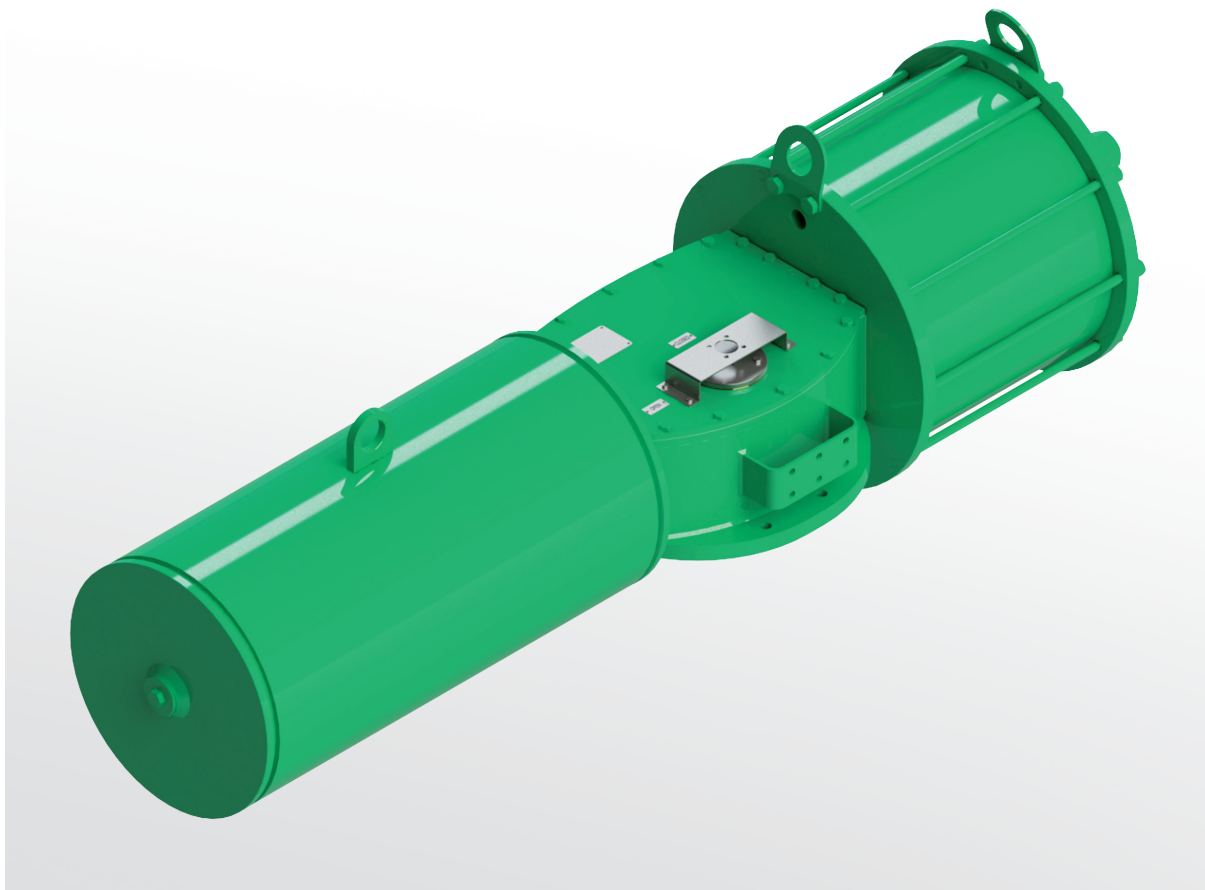


## Double Acting Part List

Pos	Denomination	Materials
1	Central body	Carbon steel
2	Yoke	Carbon steel
3	Yoke bushing	Bronze
4	Thrust bar	Alloy steel (chromium plated)
5	Sliding block	Bronze
6	Vent valve (not shown)	Brass
7	Guide block	Carbon steel
8	Tie rod	Alloy steel
9	Piston rod	Alloy steel (chromium plated)
10	Piston	Carbon steel
11	End flange	Carbon steel
12	O-ring	NBR
13	Cylinder tube	Carbon steel (nickel-plated)
14	Rod bushing	Steel + bronze + PTFE
15	Seal	NBR + Polyurethane
16	O-ring	NBR
17	Sliding ring	PTFE + graphite
18	O-ring	NBR
19	Stop setting screw	Alloy steel
20	Stop setting screw	Alloy steel

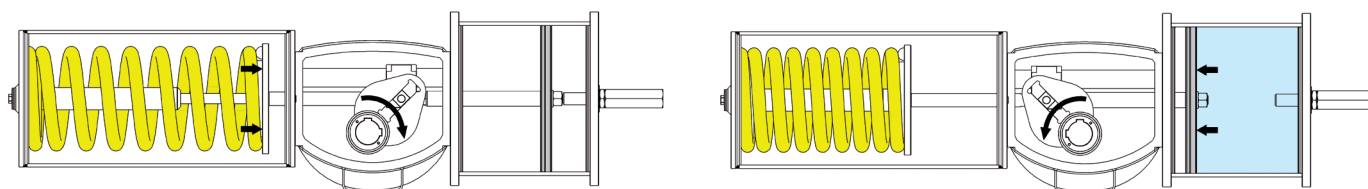


# Spring Return Type

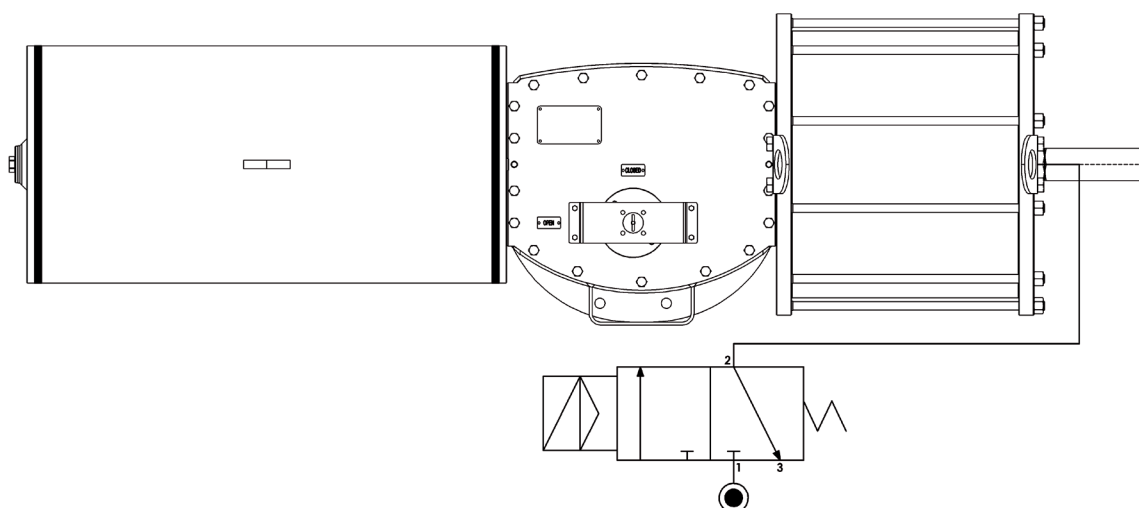


CLOSE POSITION VALVE

OPEN POSITION VALVE

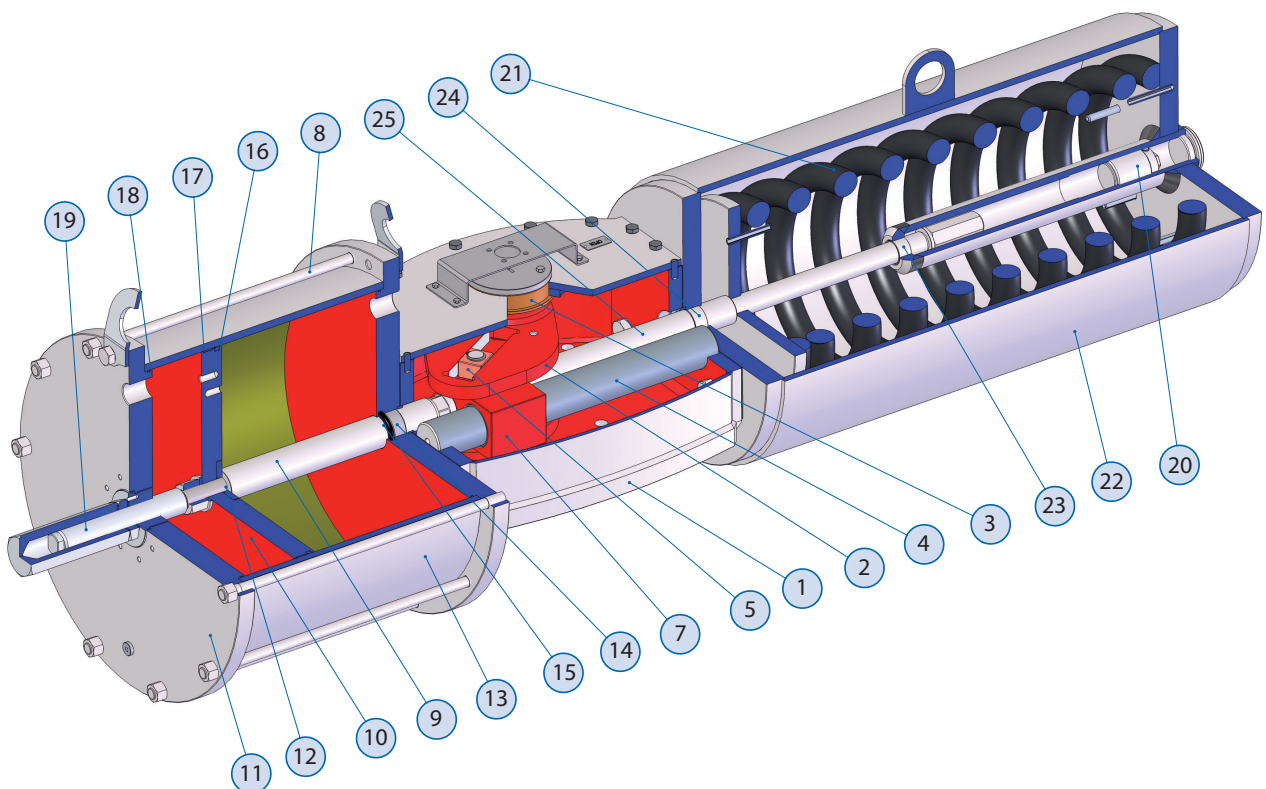


CONNECTION SCHEME



## Spring Return Part List

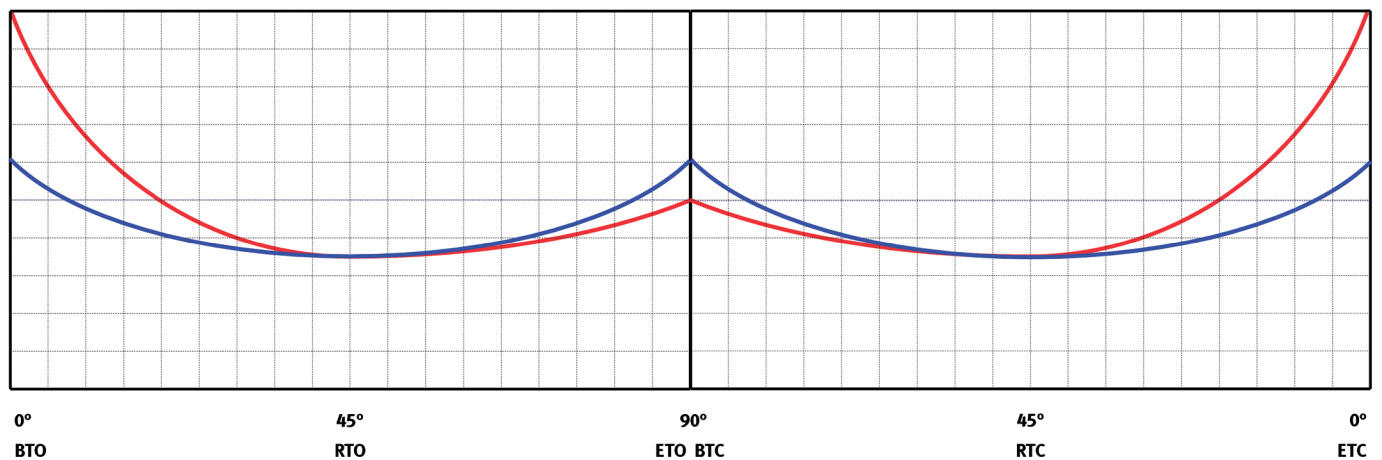
Pos	Denomination	Materials
1	Central body	Carbon steel
2	Yoke	Carbon steel
3	Yoke bushing	Bronze
4	Thrust bar	Alloy steel (chromium plated)
5	Sliding block	Bronze
6	Vent valve (not shown)	Brass
7	Guide block	Carbon steel
8	Tie rod	Alloy steel
9	Piston rod	Alloy steel (chromium plated)
10	Piston	Carbon steel
11	End flange	Carbon steel
12	O-ring	NBR
13	Cylinder tube	Carbon steel (nickel-plated)
14	Rod bushing	Steel + bronze + PTFE
15	Seal	NBR + Polyurethane
16	O-ring	NBR
17	Sliding ring	PTFE + graphite
18	O-ring	NBR
19	Stop setting screw	Alloy steel
20	Stop setting screw	Alloy steel
21	Spring	Alloy steel
22	Spring Cartridge	Carbon steel
23	Bushing	Steel + bronze + PTFE
24	Bushing	Steel + bronze + PTFE
25	Spring Cartridge Stem	Alloy steel (chromium plated)



# Double Acting Torque Table

## Double Acting

CANTED  
SYMMETRICAL



## Double Acting Torque Table – Stay put – CANTED TYPE

MODEL NUMBER	5 BAR Torque Output (Nm)					
	BTO	RTO	ETO	BTC	RTC	ETC
GHDP-085C-235A-D1	3.916	1.529	2.169	2.069	1.507	4.255
GHDP-085C-280A-D1	5.560	2.171	3.080	2.953	2.151	6.070
GHDP-085C-335A-D1	7.959	3.108	4.409	4.229	3.081	8.695
GHDP-100C-335A-D1	9.471	3.698	5.246	5.015	3.653	10.311
GHDP-100C-385A-D1	12.535	4.894	6.943	6.662	4.853	13.696
GHDP-100C-435A-D1	15.994	6.245	8.860	8.501	6.193	17.476
GHDP-130C-385A-D1	16.481	6.435	9.129	8.759	6.380	18.007
GHDP-130C-435A-D1	21.082	8.232	11.678	11.205	8.163	23.037
GHDP-130C-485A-D1	26.207	10.233	14.517	13.959	10.169	28.699

## Double Acting Torque Table – Stay put – SYMMETRICAL TYPE

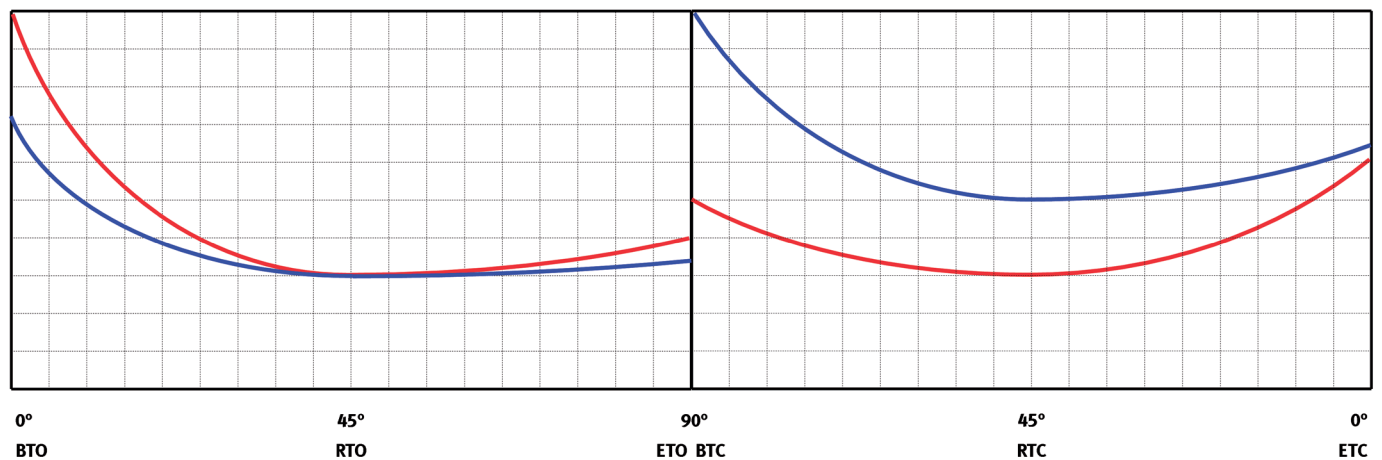
MODEL NUMBER	5 BAR Torque Output (Nm)					
	BTO	RTO	ETO	BTC	RTC	ETC
GHDP-085S-235A-D1	2.494	1.548	2.726	2.453	1.525	2.681
GHDP-085S-280A-D1	3.541	2.198	3.870	3.500	2.177	3.825
GHDP-085S-335A-D1	5.069	3.146	5.541	5.013	3.118	5.479
GHDP-085S-385A-D1	6.708	4.164	7.333	6.652	4.137	7.271
GHDP-100S-385A-D1	7.983	4.955	8.726	7.896	4.911	8.631
GHDP-100S-435A-D1	10.212	6.339	11.163	10.102	6.283	11.042
GHDP-100S-485A-D1	12.695	7.880	13.876	12.584	7.827	13.756
GHDP-100S-535A-D1	15.286	9.554	16.860	15.178	9.486	16.741
GHDP-130S-385A-D1	10.496	6.515	11.473	10.382	6.457	11.348
GHDP-130S-435A-D1	13.427	8.334	14.676	13.282	8.261	14.518
GHDP-130S-485A-D1	16.691	10.361	18.244	16.546	10.291	18.086
GHDP-130S-535A-D1	20.351	12.633	22.245	20.206	12.567	22.086
GHDP-130S-585A-D1	24.382	15.135	26.651	24.237	15.074	26.492
GHDP-130S-635A-D1	28.785	17.868	31.464	28.640	17.813	31.306



# Spring Return Normally Closed Torque Table

## Spring Return NC

CANTED  
SYMMETRICAL



## Single Acting Torque Table – Fail To close – CANTED TYPE

MODEL NUMBER	5 BAR			SPRING		
	Torque Output (Nm)					
	BTO	RTO	ETO	BTC	RTC	ETC
GHDP-085C-280A-C2	3.093	706	722	2.026	1.224	2.378
GHDP-085C-385A-C3	6.668	1.805	2.044	3.258	1.953	3.722
GHDP-085C-435A-C5	9.049	2.754	3.363	3.526	2.151	4.272
GHDP-100C-435A-C1	10.692	2.472	2.545	5.474	3.110	5.160
GHDP-100C-485A-C2	12.636	3.283	3.622	6.403	3.801	7.070
GHDP-100C-535A-C3	15.412	4.022	4.485	7.851	4.615	8.491
GHDP-100C-585A-C4 *	15.321	3.995	4.439	8.881	5.365	10.614
GHDP-130C-535A-C1	21.496	6.691	8.286	8.124	5.007	10.167
GHDP-130C-585A-C2	26.320	7.908	9.576	10.082	6.073	11.701
GHDP-130C-635A-C5	30.800	9.911	12.534	10.875	6.792	14.189
GHDP-130C-735A-C6 **	30.977	8.688	10.064	14.563	8.808	17.139

\*4,5 bar

\*\*4 bar

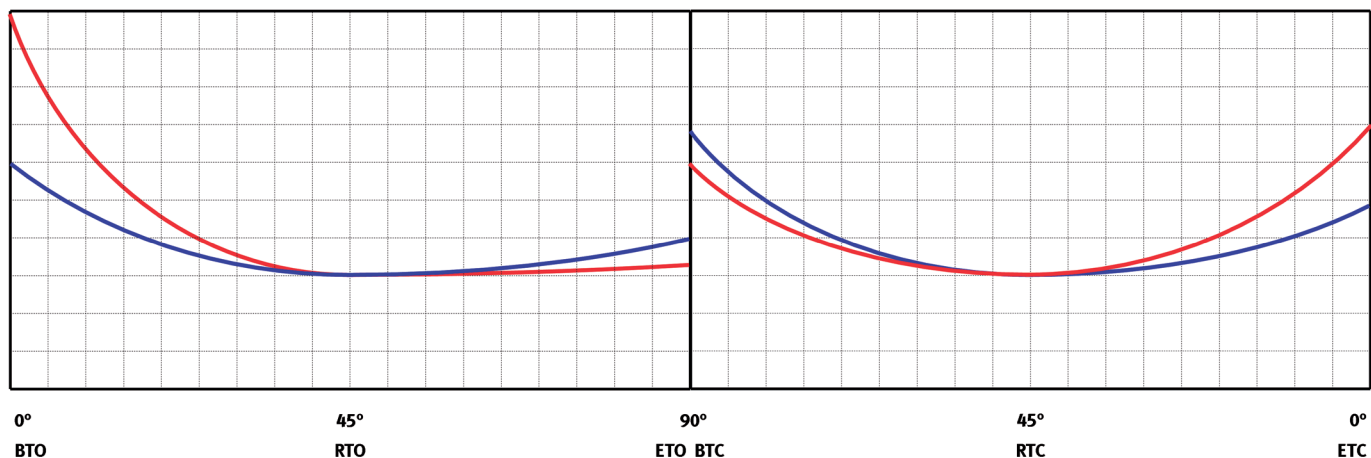
## Single Acting Torque Table – Fail To close – SYMMETRICAL TYPE

MODEL NUMBER	5 BAR			SPRING		
	Torque Output (Nm)					
	BTO	RTO	ETO	BTC	RTC	ETC
GHDP-085S-280A-C2	1.970	845	961	2.357	1.136	1.498
GHDP-085S-335A-C3	2.826	1.120	1.025	3.797	1.811	2.356
GHDP-085S-385A-C5	3.890	1.805	2.268	4.110	2.010	2.698
GHDP-085S-435A-C6	5.211	2.479	3.215	5.016	2.435	3.238
GHDP-100S-435A-C1	6.809	2.944	3.382	6.336	2.779	3.252
GHDP-100S-485A-C2	8.047	3.748	4.735	7.438	3.492	4.456
GHDP-100S-535A-C3	9.932	4.560	5.695	9.139	4.386	5.400
GHDP-100S-585A-C4	11.621	5.534	7.332	10.363	5.151	6.750
GHDP-130S-535A-C1	13.690	7.222	10.610	9.466	4.694	6.407
GHDP-130S-585A-C2	16.762	8.626	12.307	11.725	5.626	7.374
GHDP-130S-685A-C5	24.327	13.539	21.147	12.668	6.396	8.922
GHDP-130S-735A-C6	27.472	14.557	21.498	16.943	8.179	10.802

# Spring Return Normally Open Torque Table

## Spring Return NO

CANTED  
SYMMETRICAL



## Single Acting Torque Table – Fail To Open – CANTED TYPE

MODEL NUMBER	SPRING			5 BAR		
	Torque Output (Nm)					
	BTO	RTO	ETO	BTC	RTC	ETC
GHDP-085C-280A-O2	3.887	1.035	1.155	1.714	921	1.399
GHDP-085C-385A-O3	6.251	1.637	1.810	3.694	2.144	3.954
GHDP-085C-435A-O6	8.270	2.225	2.498	4.533	2.618	4.776
GHDP-100C-435A-O1	10.501	2.427	2.509	5.924	3.201	4.926
GHDP-100C-485A-O2	12.284	3.148	3.438	7.000	3.984	7.008
GHDP-100C-535A-O3	14.390	4.172	4.228	8.744	4.956	9.118
GHDP-100C-585A-O4	16.317	4.928	5.286	10.230	5.982	11.738
GHDP-130C-485A-O1	15.581	4.323	4.942	8.724	5.148	9.869
GHDP-130C-535A-O2	19.315	5.106	5.676	11.075	6.410	11.745
GHDP-130C-585A-O5	20.814	5.924	6.875	13.231	8.091	16.836
GHDP-130C-685A-O6	27.973	7.470	8.353	19.488	11.794	23.972

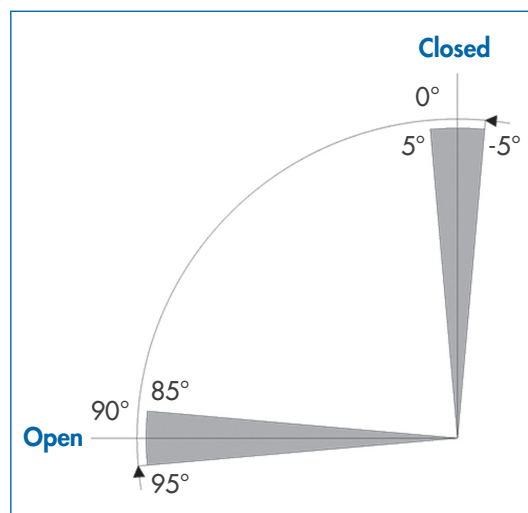
## Single Acting Torque Table – Fail To Open – SYMMETRICAL TYPE

MODEL NUMBER	SPRING			5 BAR		
	Torque Output (Nm)					
	BTO	RTO	ETO	BTC	RTC	ETC
GHDP-085S-280A-O2	2.356	1.136	1.497	1.971	845	962
GHDP-085S-385A-O3	3.787	1.804	2.345	4.247	2.033	2.659
GHDP-085S-385A-O5	4.110	2.010	2.697	3.890	1.805	2.269
GHDP-085S-435A-O6	5.015	2.434	3.237	5.212	2.479	3.216
GHDP-100S-435A-O1	6.336	2.779	3.252	6.809	2.944	3.382
GHDP-100S-485A-O2	7.438	3.492	4.456	8.047	3.748	4.735
GHDP-100S-535A-O3	8.736	4.386	5.400	9.626	4.560	5.876
GHDP-100S-585A-O4	9.906	5.151	6.750	11.263	5.534	7.565
GHDP-130S-485A-O1	9.462	4.692	6.403	10.030	4.914	6.609
GHDP-130S-535A-O2	11.708	5.615	7.356	12.731	6.073	7.901
GHDP-130S-585A-O5	12.655	6.388	8.908	15.211	7.832	11.184
GHDP-130S-685A-O6	16.962	8.192	10.823	22.404	11.370	15.959

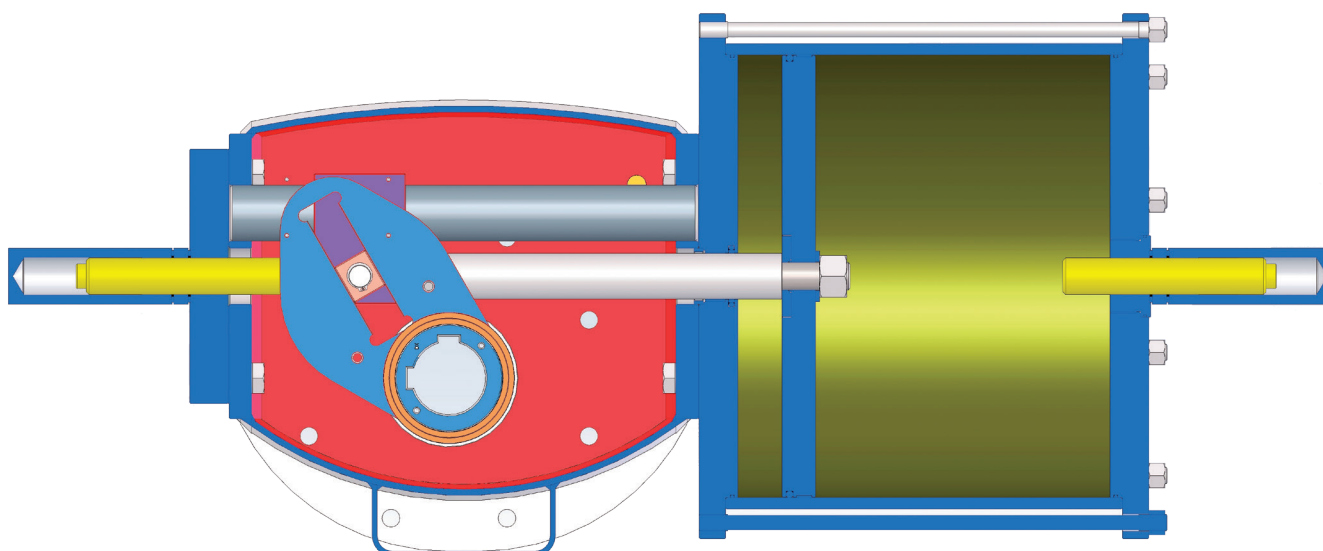
# Stroke Adjustment

- Total rotation angle  $100^\circ$  ( $-5^\circ + 95^\circ$ )
- The external end stops allow precise adjustments of  $\pm 5^\circ$  rotation in both opening and closing position. The end stops are also protected by locknuts protective steel caps that preserve their integrity and functionality.

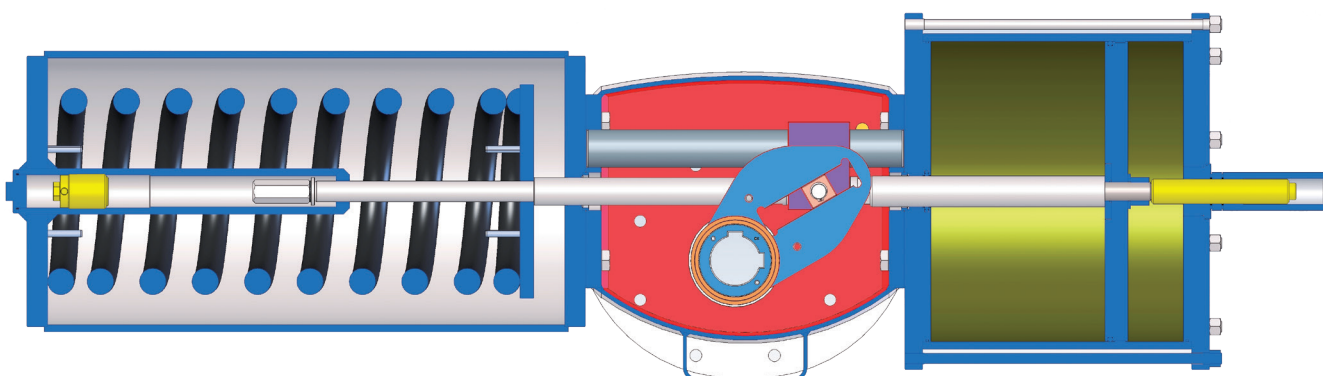
(see the instructions manual for more informations).



## DOUBLE ACTING STROKE ADJUSTMENT



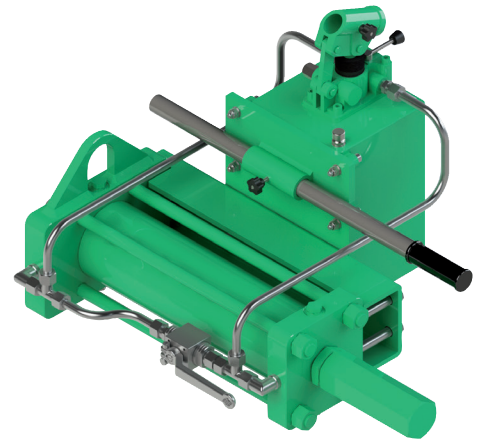
## SPRING RETURN STROKE ADJUSTMENT



## Accessories

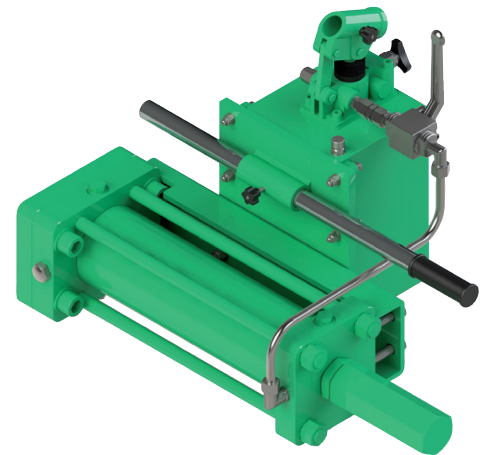
### MANUAL HYDRAULIC OVERRIDE FOR DOUBLE ACTING ACTUATOR

- COMPACT PUMP
- HYDRAULIC CYLINDER
- OIL TANK
- CHECK VALVE
- RELIEF VALVE

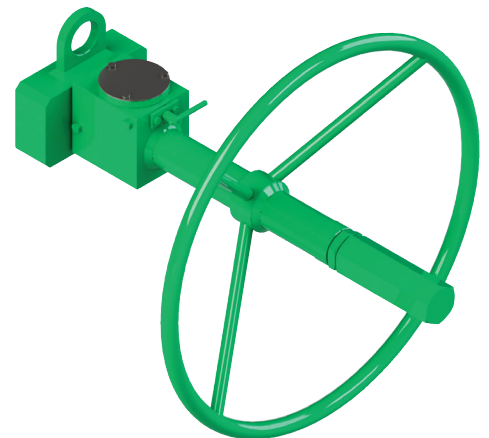


### MANUAL HYDRAULIC OVERRIDE FOR SPRING RETURN ACTUATOR

- COMPACT PUMP
- HYDRAULIC CYLINDER
- OIL TANK
- CHECK VALVE
- RELIEF VALVE



### MANUAL HANDWHEEL OVERRIDE DECLUTCHABLE FOR DOUBLE ACTING ACTUATOR



### MANUAL HANDWHEEL OVERRIDE JACK SCREW FOR SPRING RETURN ACTUATOR





# Actuatech Standard Paint Specification

General service application outdoor steel equipment for chemical plants pipeline, refineries and offshore application.

SURFACE PREPARATION

SANDBLASTING TO GRADE SA 2.1/2

COAT	TYPE OF PAINT	DRY FILM THICKNESS
PRIMER COAT	INORGANIC ZINC	75 $\mu$
INTERMEDIATE COAT	EPOXY	110 $\mu$
FINAL COAT	POLYURETHANE	40 $\mu$
<b>TOTAL DRY FILM THICKNESS</b>		<b>225 <math>\mu</math></b>

## Interface Dimensions

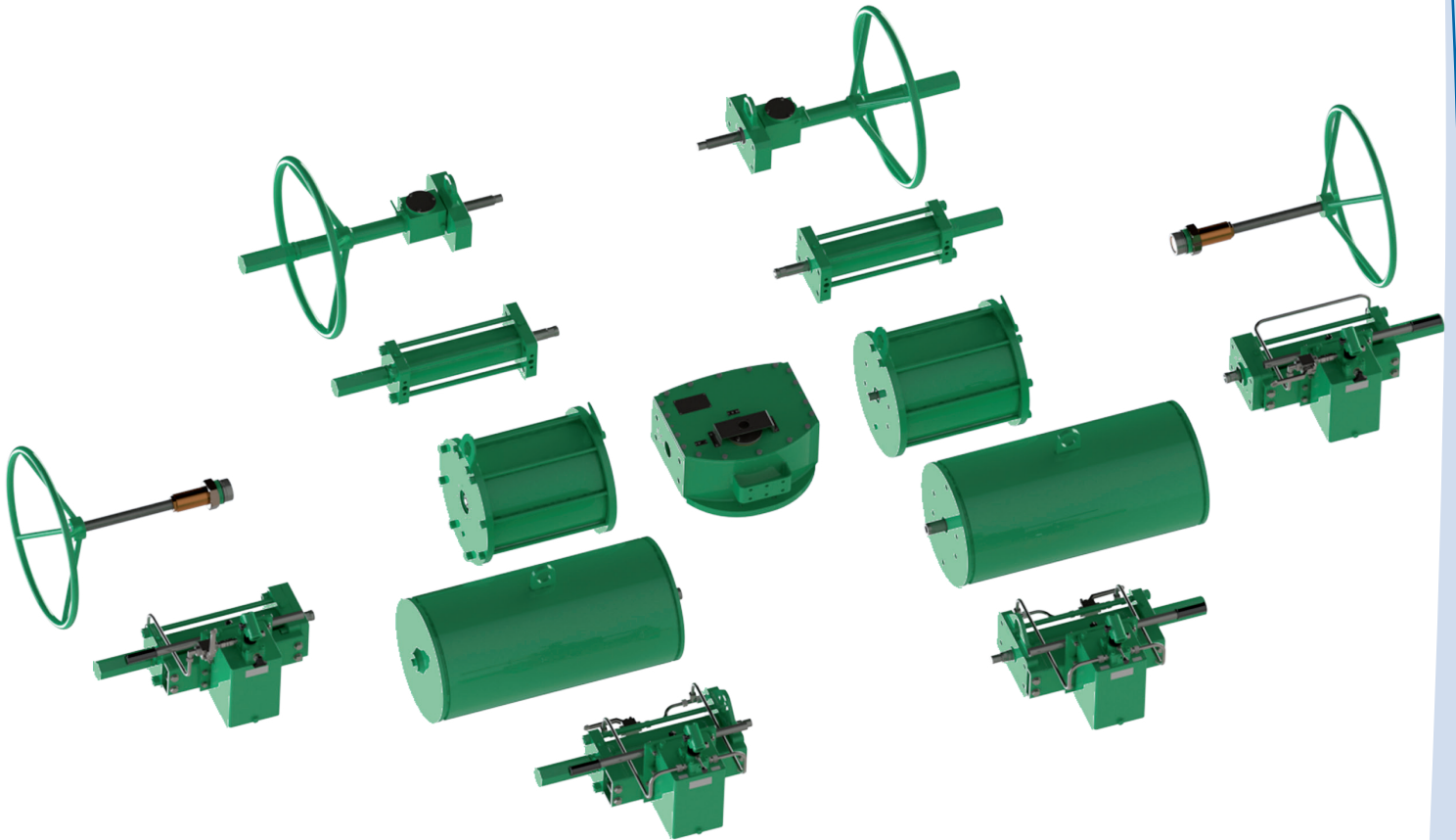
BODY SIZE	INTERFACE	STEM
G085	F25	$\varnothing$ 60 - Key 18
G100	F30	$\varnothing$ 72 - Key 20
G130	F35	$\varnothing$ 120 - Key 32

## Codification Table

Letter position	1°	2°	3°	4°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°	16°	17°	18°	19°	20°
Letter	G	H	D	P	1	0	0	C	4	3	5	A	D	1	H	1	C	C	O	D
1°	G= Glifo rotary actuator																			
2°	HD = Heavy Duty Series total rotation 100° stroke regulation $\pm$ 5°																			
3°																				
4°	P = Pneumatic / inert gas , H =Hydraulic ( oil )																			
5°	Central body size																			
6°																				
7°																				
8°	Yoke type : C = Canted , S = Symmetrical																			
9°	Cylinder size ( DN )																			
10°																				
11°																				
12°	Temperature : A= -20°C +80°C ; B= -20°C +150°C ; C= -50°C +60°C																			
13°	Action : D1=Double acting DX - D2=Double acting double cylinder - D3 =Double acting SX																			
14°	C0 - C9=Spring return NC - O0 - O9=Spring return NO																			
15°	Manual override : H1 = Hydraulic pump M2 = Handweel double acting M3 = Handweel spring return																			
16°																				
17°	CWTC standard , field blank , CC = CCWTC																			
18°																				
19°	Manual pump orientation standard , field blank;																			
20°	OD = Orizzontal DX ; OS = Orizzontal SX ; VA= Vertical Top ; VB = Vertical Bottom																			

## Modular Construction Design

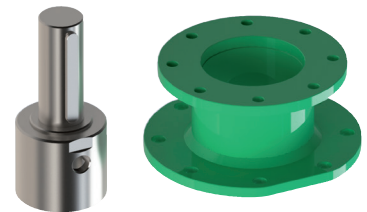
GHDP actuators modular design ensures a complete versatility application. Modular construction allows assembling the components according with the application requirements.



## Spool piece – Stem extension

The actuator design has taken into consideration mounting pad connections conforming to the latest international standards for easy and direct assemblage onto valves and ancillaries.

Actuatech completes its service with customized mounting kits, spool piece and stem extension.



**Actuatech SPA** Designs, Produces, Assembles, Controls all the parts in his own facility according with the **ISO9001** and **ISO14001** Certified Quality System.



MADE IN ITALY 



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