

ES Series Hydraulic Actuator Quarter Turn



General

ES Series Hydraulic Actuator is a type actuator based on advanced technology, designed and optimized by SolidWorks. It has a more compact and reasonable construction, whilst being more reliable and stable, and having a longer life and bigger output torque when compared to similar products on the market. ES series actuators can be used to control ball valves, butterfly valves, plug valves and other part turn devices. Local/Remote Automation of ball valves, butterfly valves, plug valves and other part turn equipment can be realized by the actuator with other components, such as hydraulic solenoid valves, flow control valves, limit switch box etc.



Features:

- 1) Unique structure design, ensuring longer life.
- 2) Spring return and double acting configurations are both supported.
- 3) Sub-plate mounting block is optional, convenience to direct mounting all kinds of hydraulic blocks.
- 4) Rack and Pinion design, simple and reliable, small volume, smooth action, big output torque.
- 5) Rack and Pinion using material ASTM 1045.
- 6) Hydraulic Cylinders adopting ASTM 1045 seamless steel pipe with smooth inner wall, low friction, make sure long life of actuator.
- 7) Two travel stops, supports bi-directional travel adjustment, range of adjustment $\pm 5^\circ$.
- 8) Bottom connection conforms to ISO5211.
- 9) Top connection conforms to NAMUR

Working Condition:

- 1) Hydraulic Oil: wearable non-corrosive hydraulic oil, with medium viscosity.
- 2) Rated Pressure: design pressure is 20MPa, maximum working pressure is 16MPa.
- 3) Working Temperature: $-20\sim+80^\circ\text{C}$
- 4) Anti-vibration: work properly under condition without strong vibration.
- 5) Lubrication: no routine maintenance or lubrication is required. All moving parts are lubricated with heavy duty grease.
- 6) Installation: suited for indoor or outdoor application.

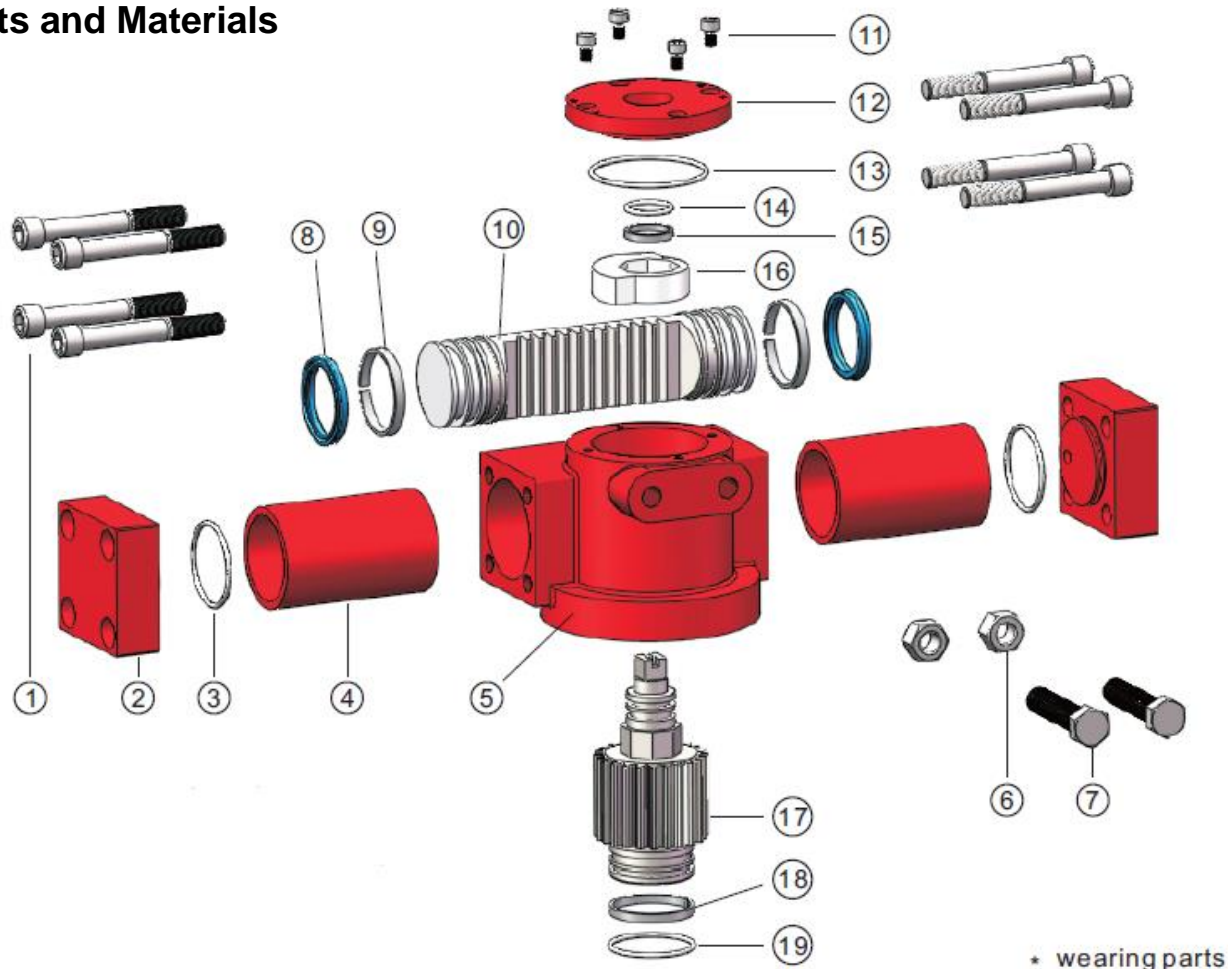
Accessories:

- 1) De-clutchable manual override or hydraulic pump for manual emergency control.
- 2) Limit switch boxes available with a wide range of switches and position transmitters.
- 3) Hydraulic circuits with solenoid valves, electro-hydraulic supply system, accumulator, etc, for valve operation and control.

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Parts and Materials



* wearing parts

Part No.		Part Name	Materials
1		Bolt of end caps	stainless steel / grade 8.8 or above
2		End caps	Q235A
3	*	O-ring of end caps	NBR
4		Hydraulic cylinder	ASTM 1045 seamless steel pipe
5		Housing	ductile iron
6		Lock nut of travel stops	stainless steel
7		Adjusting bolt (travel stops)	stainless steel
8	*	Y-shaped oil seal ring	P2B
9	*	Guide ring	POM/PF
10		Rack	ASTM 1045
11		Bolts of top cover	stainless steel
12		Top cover	Q235A
13	*	O-ring of top cover	NBR
14	*	O-ring of pinion	NBR
15	*	Guide ring of pinion	POM
16		Locating piece	Q235A
17		Pinion	ASTM 1045
18	*	Guide ring of pinion	POM
19	*	O-ring of pinion	NBR

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Working Principle

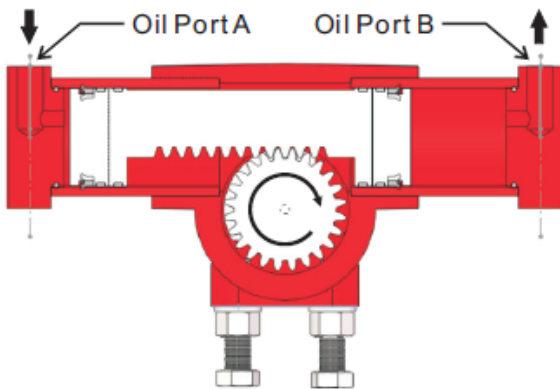


Fig 3.1

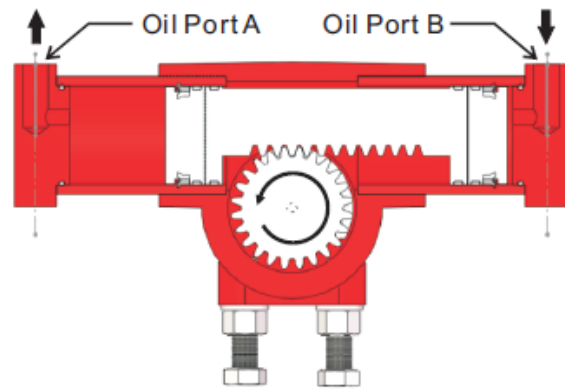


Fig 3.2

- 1) Hydraulic oil is supplied to Oil Port A, as shown in the Fig 3.1, which forces the rack to move towards right, with the exhaust oil exiting from Oil Port B, causing the valve to close accordingly. Turning the right travel stop can adjust the valve stroke $\pm 5^\circ$ to ensure the valve is closed completely. The lock nut should be loosed, before adjusting the travel stop and should be fastened after adjustment.
- 2) Hydraulic oil supplied to Oil Port B, as shown in the Fig 3.2, which forces the rack to move towards left, with the exhaust oil exiting from Oil Port A, causing the valve to close accordingly. Likewise turning the travel stop on the left side, can adjust the valve stroke $\pm 5^\circ$ to ensure the valve is closed completely.

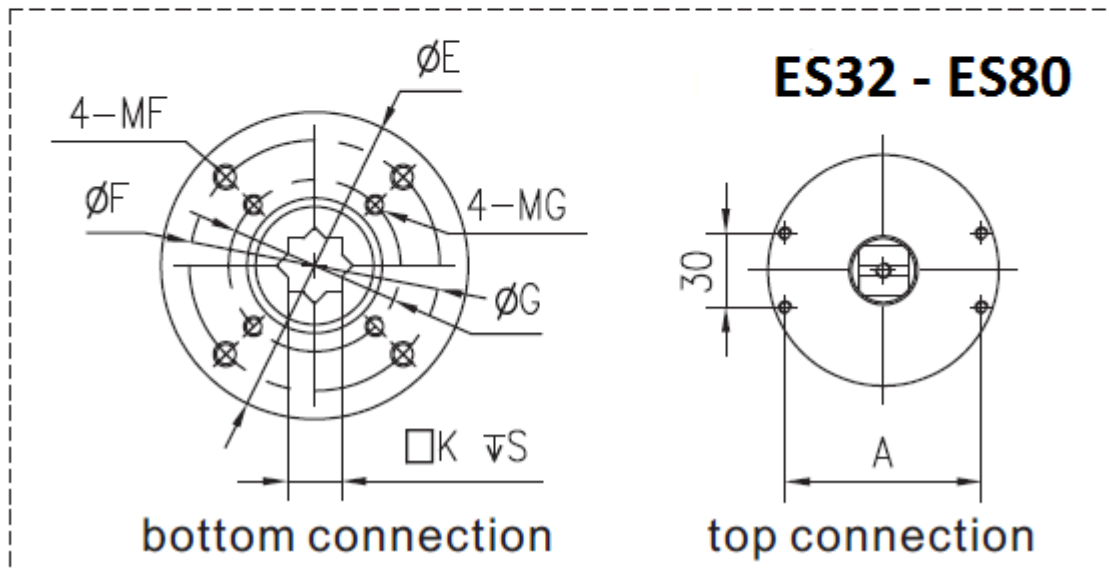
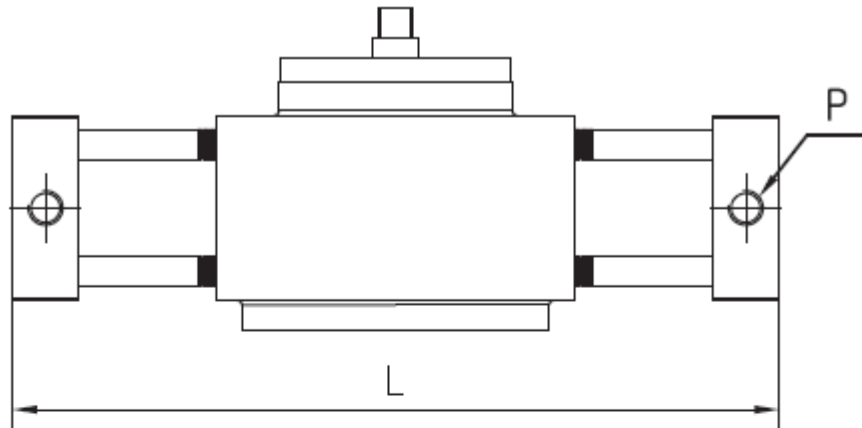
Output Torque (Nm)

Model	Hydraulic Pressure (MPa)														
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
ES32	26.5	39.7	52.9	66.1	79.3	92.3	105.8	119	132.2	145.4	158.6	172	185	198	212
ES50	96.2	144.2	192.3	240	288.5	336.6	384.7	432.7	481	529	577	625	673	721	769
ES80	376	564	752	940	1128	1317	1505	1693	1881	2069	2258	2446	2634	2822	3010

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Main Dimensions



Model	L	W	H	H1	E	F	MF	G	MG	K	S	A	h	Weight
ES32	228	110	94	74	90	70	M8	50	M6	14	20	50	20	5.5 KG
ES50	313	161	131	111	125	102	M10	70	M8	22	25	80	20	15.6 KG
ES80	406	220	187	157	175	140	M16	/	/	36	40	80	30	37.5 KG