

FLOWBUS[®]



R-type, RY-type

EPR-Series

Actuators for Quarter-Turn Valves



ISO 9001:2008
ISO 14001:2004
OHSAS 18001:2007

» **Introduction** The EPR-Series pneumatic actuator provides a rugged solution for quarter-turn actuation while reducing maintenance requirements.

The EPR-Series is a high quality, reliable and economical actuator, utilizing tried and tested methods of operation combined with Flowbus's technical know-how and experience with global valve actuators.



Reliable Solutions

Flowbus offers comprehensive solutions with the latest innovations in technology for project specific customer requirements. By combining our high quality product range, expertise and process experience, we are able to solve complicated process problems with reliable, on-time packages. Our aim is to exceed the quality and operational expectations of our customers, providing them with added value and service.

International Standards

All EPR-Series actuators comply with the latest ISO5211 valve interface standards, for optimum strength, standardized dimensions and direct mounting, and the NAMUR international interface standards to enable efficient and accurate assembly of automated packages.

Wide Range of Torque Outputs

The EPR double acting actuator has torque outputs from 11.5 to 5877 N.m (99 to 52003 ins.lbs.), while the spring return actuator produces spring end torques from 4.4 to 1197 N.m (38.6 to 10597 ins.lbs.). The actuators are rated for continuous operation at pneumatic supply pressures from 2 to 8 bar (40 to 100 psig). 10 bar (145 psig) is optionally available

High Quality, Cost Effective Actuator

By incorporating engineering excellence, and the latest precision manufacturing techniques, the EPR actuator is constructed to the highest quality standards and offers efficient, reliable performance in a cost effective package. The corrosion resistant, hard anodized treatment on both internal and external surfaces combined with permanently lubricated, replaceable bearings and guide plates ensures reliable operation and extended actuator life. To reduce installation space and increase flexibility, the housing length is identical for both spring return and double acting actuators.

Various Designs

EPR actuators are available with both rack and pinion and scotch yoke mechanisms with both designs incorporating an aluminium body with an advanced hard anodized exterior protection. They are compact and light weight actuators whose design produces a significant saving in the use of compressed air with less stroke volume.





>> R-type

Advantages

01_Hard Anodized Body

The extruded aluminum body incorporates an advanced, hard anodizing treatment on the internal and external surfaces. This provides reduced friction, increased durability and corrosion protection. The body can also be provided in a number of optional finishes including PTFE coated, electroless nickel plated and a variety of polyester powder coated colors.

02_Large Piston Design

R-type actuators are designed with an optimally sized piston rack. This minimizes backlash between the rack and pinion ensuring that they are precisely engaged. This feature guarantees excellent power delivery and accurate valve modulation.

03_Advanced Rack and Pinion Design

A compact, rugged construction, with dual rack and pinion, guarantees stable torque output throughout the actuator's travel. The design is also suitable for high-cycle, high-speed duties.

04_Travel Adjustment

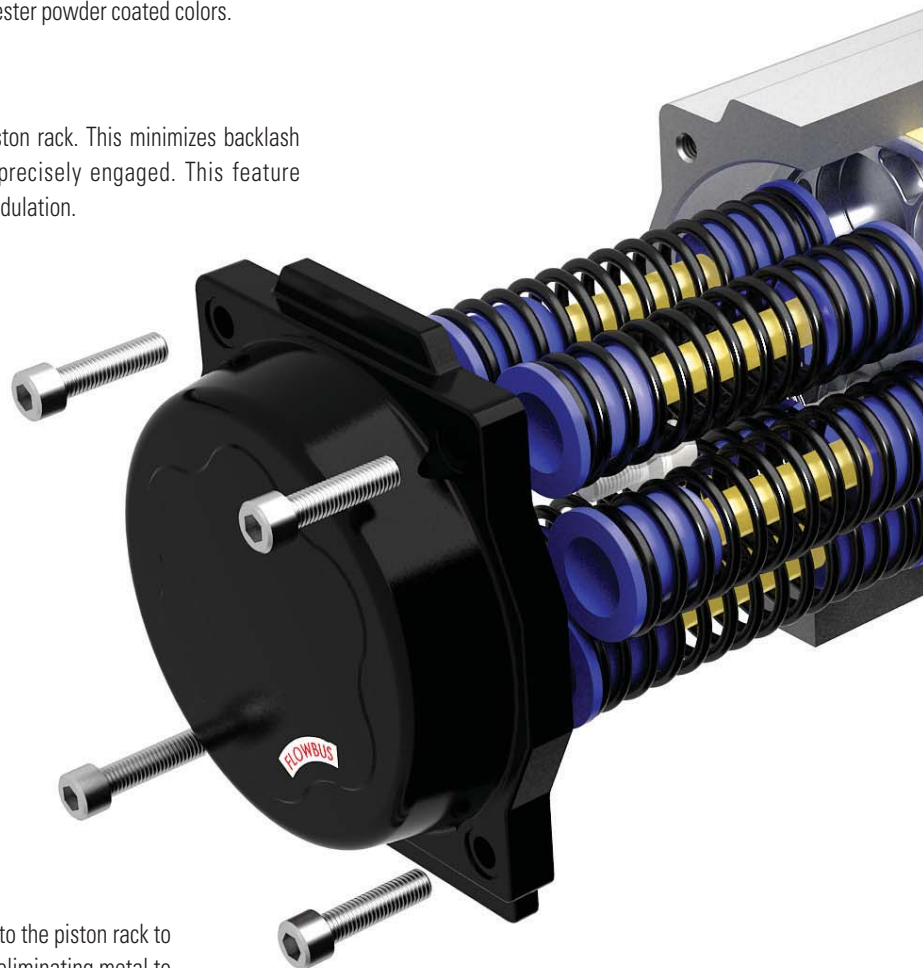
R-type actuators provide two external travel stops allowing for $\pm 5^\circ$ adjustment in both open and closed positions. This allows accurate valve alignment and provides actuator travel adjustment from 80° to 100° . Optional bolts fitted to the end caps can provide additional travel adjustment, for the open position. The externally adjusted bolts can provide open position travel from 0° to 100° .

05_Piston Guide Plate

A permanently lubricated, replaceable guide plate is fitted to the piston rack to absorb lateral deflection and ensure smooth operation by eliminating metal to metal contact, improving wear resistance and increasing efficiency.

06_Drive Shaft Bearings

R-type actuators have self-lubricating, replaceable shaft bearings providing low-friction, and high cycle life and reliable performance.





07_Corrosion Protection

Polyester powder coated end caps provide excellent anti-corrosion properties, and optional finishes are available, including PTFE coating, electroless nickel plating or hard anodizing.

08_Blow-Out Proof Drive Shaft

The pinion is fitted with an octagon shaped anti-blow out device combined with an oxy-nitriding plated blowout proof bearing, to provide safe, high cycle life. An electroless nickel is optionally available according to customer's requirement.

09_NAMUR Standard Interfaces

For ancillary equipment such as positioners and switchboxes, the latest VID/VDE 3845 mounting interface is provided to allow quick and simple mounting with direct pinion drive. A NAMUR solenoid mounting pad allows direct mounting of solenoid valves to the actuator.

10_ISO 5211 Valve Interface

The R-type actuator has valve mounting pads in accordance with ISO5211 standard, providing standardized mounting for ISO compatible quarter-turn valves.

11_Visual Position Indicator

R-type actuators are supplied as standard with a visual position indicator.

12_Simple to Convert

Converting from double acting to spring return configuration is simple and performed by removing the end caps and adding the unique spring cartridges. Actuator rotation is field reversible by simply removing, rotating by 180° and re-installing the pistons.



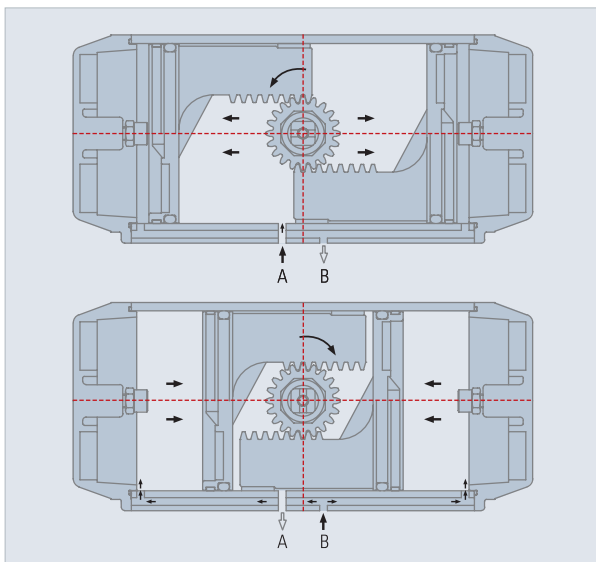


Specifications

Actuator Operation

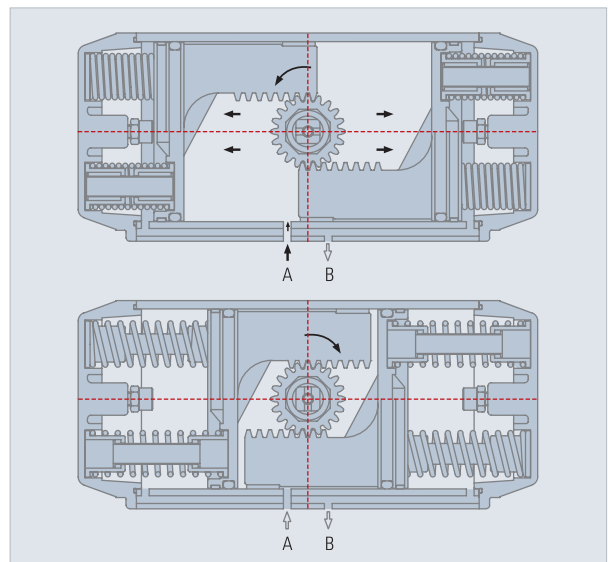
Double Acting Configuration

As standard the actuator is supplied for counterclockwise rotation when pressure is applied to port A. This pressurizes the internal chamber driving the pistons apart. When air is applied to port B the end chambers are pressurized driving the pistons together causing clockwise actuator rotation. If required, the pistons can be inverted in the housing resulting in clockwise rotation when pressure is applied to port A.



Spring Return Configuration

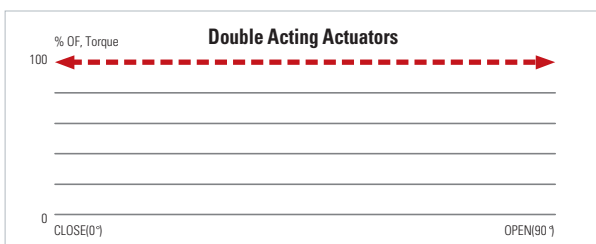
As standard the actuator is supplied for clockwise rotation in air failure mode. When port A is vented the springs drive the pistons together, causing clockwise rotation. When pressure is applied to port A the internal chamber is pressurized driving the pistons apart and compressing the springs, causing anti-clockwise actuator rotation. Port B is used as a breather for the spring chamber swept volume.



Torque Outputs

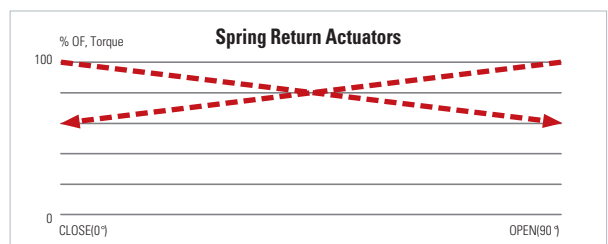
Double Acting

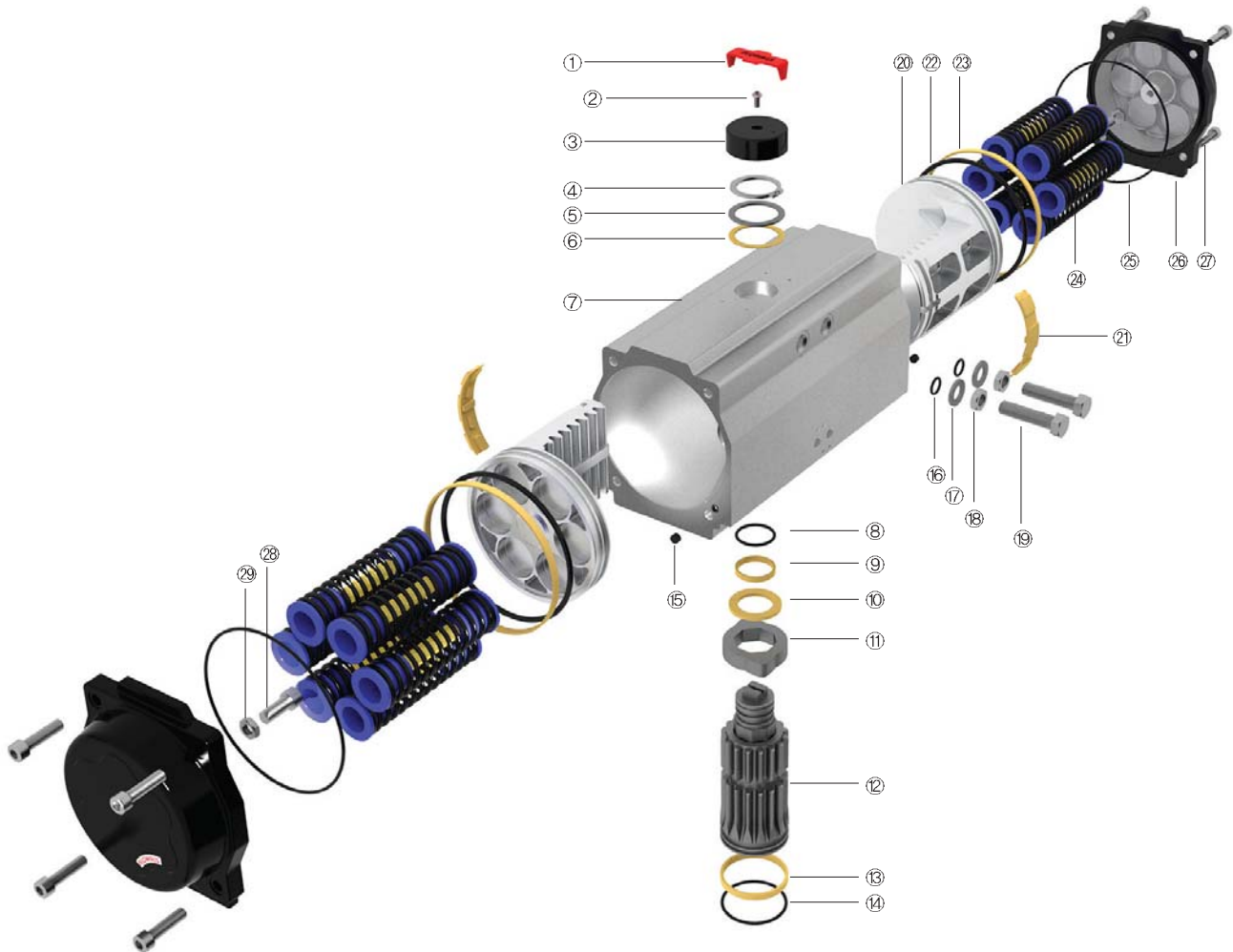
The R-type actuator is designed such that torque is independent of actuator travel and is constant throughout the travel range.



Spring Return

Spring return actuators have both spring and air torques and each torque has a higher start figure than the end figure. Then R-type actuator is designed such that the spring and air start torques are equal, as are the spring and air end torques.





Extended View

NO	Description	Q.ty	Standard Material	NO	Description	Q.ty	Standard Material
1	Outer Indicator	1	Engineering Plastics	16	Adjust O-Ring	2	NBR
2	Cap Screw	1	Stainless Steel	17	Adjust Plan Washer	2	Stainless Steel
3	Inner Indicator	1	Engineering Plastics	18	Adjust Nut	2	Stainless Steel
4	Snap Ring	1	Spring Steel, Nickel Plated	19	Adjust Bolt	2	Stainless Steel
5	Plan Washer A	1	Stainless Steel	20	Piston	2	Die Cast Aluminum, Anodized
6	Plan Washer B	1	Engineering Plastics	21	Guide Plate	2	Engineering Plastics
7	Housing	1	Extruded Aluminum Alloy, Hard Anodized	22	Piston O-Ring	2	NBR
8	Top O-Ring	1	NBR	23	Piston Bearing	2	Engineering Plastics
9	Top Bearing	1	Engineering Plastics	24	Spring Assembly	6-12	Spring Steel, Dip Coating
10	Spacer Washer	1	Engineering Plastics	25	End Cover O-Ring	2	NBR
11	Travel Cam	1	Alloy Steel, Nickel Plated	26	End Cover	2	Die Cast Aluminum, Powder Polyester Coated
12	Drive Shaft	1	Alloy Steel, Nitriding	27	End Cover Bolt	8	Stainless Steel
13	Bottom Bearing	1	Engineering Plastics	28	Stop Bolt	2	Stainless Steel
14	Bottom O-Ring	1	NBR	29	Stop Nut	2	Stainless Steel
15	Hole Sealant	2	NBR				



>> RY-type

Advantages

01_Scotch Yoke Mechanism

The RY-type pneumatic actuator features a modern scotch yoke mechanism that provides high start and end torque output in a very compact package. It is available in both double-acting and spring-return configurations.

02_Travel Adjustment

RY-type actuators provide two external travel stops allowing for $\pm 4^\circ$ adjustment in both open and closed positions. This allows accurate valve alignment and provides actuator travel adjustment from 82° to 98° . Optional bolts fitted to the end caps can provide additional travel adjustment, for the open position. The externally adjusted bolts can provide open position travel from 0° to 98° .

03_Corrosion Protection

Polyester powder coated end caps provide excellent anti-corrosion properties, and optional finishes are available if required, including PTFE coating, electroless nickel plating or hard anodizing.

04_Wide Range of Torque Outputs

In order to provide the widest possible range of torque outputs, Flowbus have designed the EPRY actuator range with either a single piston or dual piston layout. Each actuator size is available in both single and dual piston, with the single piston design fitting just below the dual piston in the torque output table.

05_Hard Anodized Body

The extruded aluminum body incorporates an advanced, hard anodizing treatment on the internal and external surfaces. This provides reduced friction, increased durability and corrosion protection. The body can also be provided in a number of optional finishes including PTFE coated, electroless nickel plated and a variety of polyester powder coated colors.





06_NAMUR Standard Interfaces

For ancillary equipment such as positioners and switchboxes, the latest VID/VDE 3845 mounting interface is provided to allow quick and simple mounting with direct pinion drive. A NAMUR solenoid mounting pad allows direct mounting of solenoid valves to the actuator.

07_ISO 5211 Valve Interface

The RY-type actuator has valve mounting pads in accordance with ISO5211 standard, providing standardized mounting for ISO compatible quarter-turn valves.

08_Visual Position Indicator

RY-type actuators are supplied as standard with a visual position indicator.

09_Spring Cartridge Safe

The RY-type actuator has been designed with an inherently safe spring return unit. The actuator spring rod is connected to both the spring end cover and retainers so that the spring is fully retained during assembly or disassembly. This prevents accidental release of the spring force, and ensures that installation or maintenance can be performed in complete safety.

10_Various Manual Overrides

The jackscrew override is integrated in the end cap of the actuator and can be fitted to all RY-type actuators units in both double-acting and spring-return configurations. This manual override is the optimum solution for customers requiring a compact unit of minimum weight and size.





Specifications

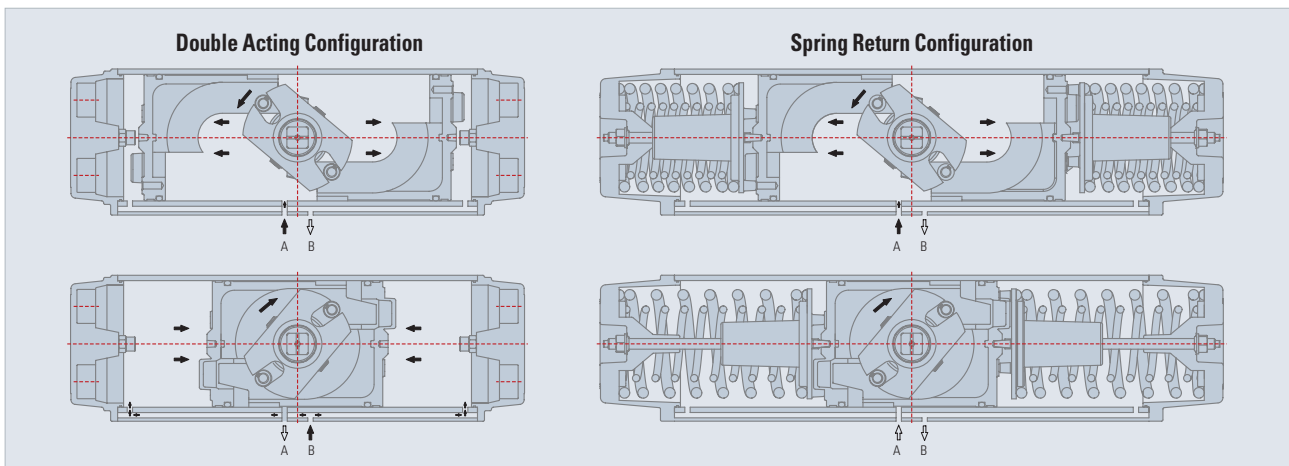
Actuator Operation

Double Acting Configuration

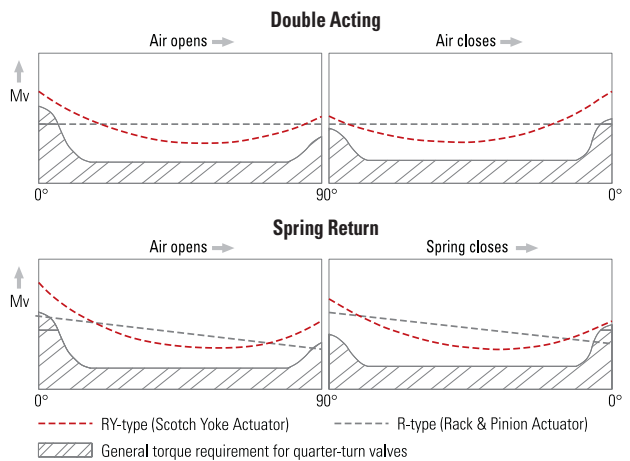
As standard the actuator is supplied for counterclockwise rotation when pressure is applied to port A. This pressurizes the internal chamber driving the pistons apart. When air is applied to port B the end chambers are pressurized driving the pistons together causing clockwise actuator rotation. If required, the pistons can be inverted in the housing resulting in clockwise rotation when pressure is applied to port A.

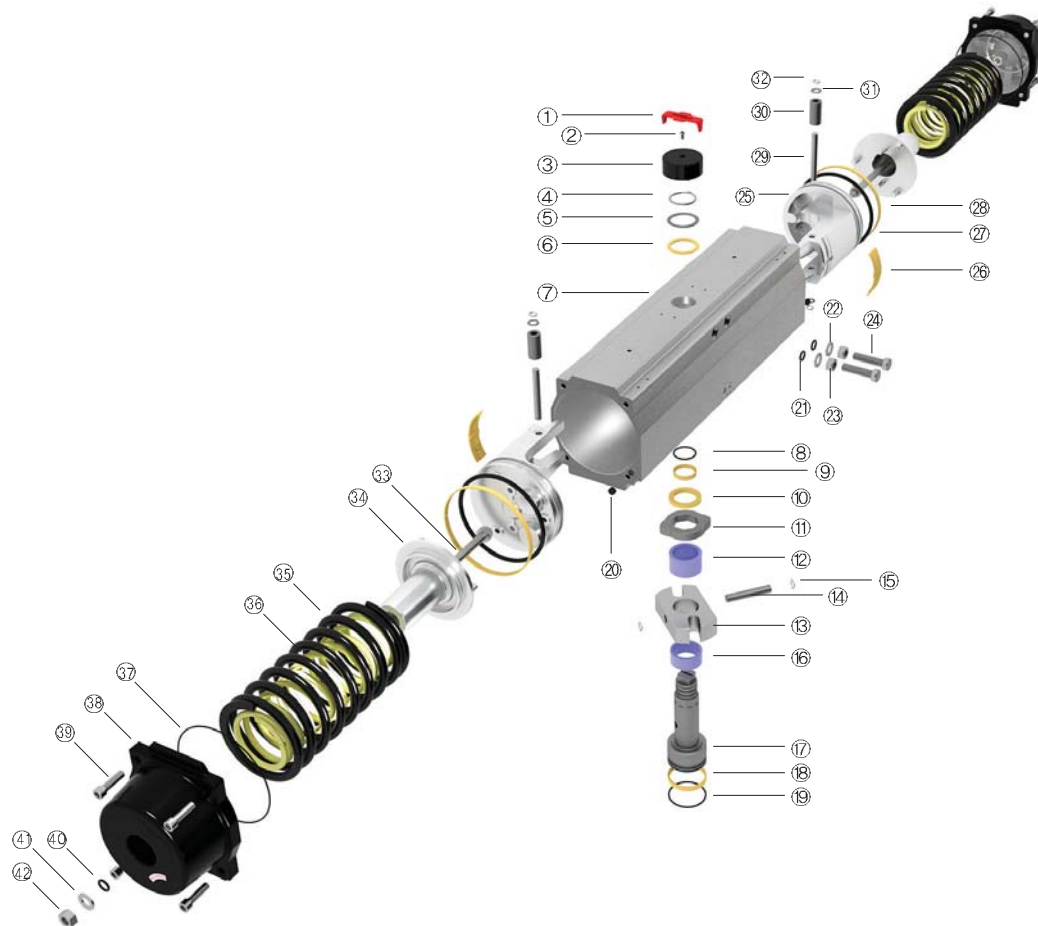
Spring Return Configuration

As standard the actuator is supplied for clockwise rotation in air failure mode. When port A is vented the springs drive the pistons together, causing clockwise rotation. When pressure is applied to port A the internal chamber is pressurized driving the pistons apart and compressing the springs, causing anti-clockwise actuator rotation. Port B is used as a breather for the spring chamber swept volume.



Torque Outputs





Extended View

NO	Description	Q.ty	Standard Material	NO	Description	Q.ty	Standard Material
1	Outer Indicator	1	Engineering Plastics	22	Adjust Plan Washer	2	Stainless Steel
2	Cap Screw	1	Stainless Steel	23	Adjust Nut	2	Stainless Steel
3	Inner Indicator	1	Engineering Plastics	24	Adjust Bolt	2	Stainless Steel
4	Snap Ring	1	Spring Steel, Nickel Plated	25	Piston	2/1	Die Cast Aluminum
5	Plan Washer A	1	Stainless Steel	26	Guide Plate	2/1	Engineering Plastics
6	Plan Washer B	1	Engineering Plastics	27	Piston Bearing	2/1	Engineering Plastics
7	Housing	1	Extruded Aluminum Alloy, Hard Anodized	28	Piston O-Ring	2/1	NBR
8	Top O-Ring	1	NBR	29	Roller Pin	2/1	Alloy Steel, Nitriding
9	Top Bearing	1	Engineering Plastics	30	Roller Bearing	2/1	Alloy Steel, Nitriding
10	Spacer Washer	1	Engineering Plastics	31	Plan Washer C	4/2	Stainless Steel
11	Travel Cam	1	Alloy Steel, Zin Plated	32	Snap Ring	4/2	Spring Steel
12	Top Guide	1	Engineering Plastics	33	Spring Rod	2/1	Stainless Steel
13	Yoke	1	Alloy Steel	34	Retainer	2/1	Die Cast Aluminum
14	Yoke Pin	1	Alloy Steel, Nitriding	35	Spring A	2/1	Spring Steel
15	Snap Ring	1	Spring Steel	36	Spring B	0/1/2	Spring Steel
16	Bottom Guide	1	Engineering Plastics	37	End Cover O-Ring	2	NBR
17	Drive Shaft	1	Alloy Steel, Nitriding	38	End Cover	2	Die Cast Aluminum, Powder Polyester Coated
18	Bottom Bearing	1	Engineering Plastics	39	End Cover Bolt	8	Stainless Steel
19	Bottom O-Ring	1	NBR	40	Spring Rod O-Ring	2/1	NBR
20	Hole Sealant	2	NBR	41	Spring Rod Washer	2/1	Stainless Steel
21	Adjust O-Ring	2	NBR	42	Spring Rod Nut	2/1	Stainless Steel



» EPR-Series General Information

Operational Data

Media

The operating media should be clean instrument air or non-corrosive gas. The media can be lubricated or non-lubricated. It should have a dew point of -20°C or at least 10°C below the ambient temperature, and a maximum particle size of 50 micron.

Supply Pressure

The EPR-Series is rated for continuous operation at pneumatic supply pressures from 2 to 8 bar (40 to 116 psig). 10 bar (145 psig) is optionally available.

Temperature Range

Standard Range : -20°C to 80°C (-4°F to 176°F)

Low Temperature (optional) : -40°C to 80°C (-40°F to 176°F)

High Temperature (optional) : -10°C to 150°C (14°F to 302°F)

Torque Outputs

The EPR double acting torque output ranges from 11.5 to 5877 N.m (99 to 52003 ins.lbs.) and the spring return actuator produces spring end torques from 4.4 to 1197 N.m (38.6 to 10597 ins.lbs.).

Construction Data

01_ EPR-Series actuators are a rugged and compact design, available in both double acting and spring return configurations for quarter-turn valves.

02_ The EPR-Series actuator combines a high precision, extruded aluminum alloy body with a hard anodized surface finish for excellent performance.

03_ Die-cast aluminum end caps are polyester powder coated for improved corrosion resistance.

04_ The EPR-series has designed, allowing efficient, reliable performance and long life.

05_ All moving parts are fitted with permanently lubricated, replaceable bearings and guide plates to eliminate metal to metal contact and minimize internal wear.

06_ The EPR-Series incorporates the latest VDI/VDE 3845 mounting interface and a visual position indicator as standard.

07_ EPR-Series actuators are designed to offer excellent corrosion resistance in industrial and commercial applications.

08_ The EPR-Series actuator is designed for low maintenance and does not require any special tools.





09_ The EPR-Series actuator is available with a declutchable gearbox option. This allows quick and simple operation of the highest torque valves when the air or power supply fails.

10_ EPR-Series actuators are certified to IP66/IP67 protection ratings.

11_ External travel stops provide $\pm 5^\circ$ (rack & pinion mechanism), $\pm 4^\circ$ (scotch yoke mechanism) of travel adjustment in both directions of pinion rotation. Optional bolts can be provided in the end caps for greater adjustment.

12_ Spring assemblies are designed for high torque and reliable performance.

13_ In case of rack & pinion mechanism, conversion from double acting to spring return configuration is simple and performed by removing the end caps and adding the required spring cartridges.

14_ The blow-out proof pinion provides safety and exceptional gear life.

15_ The gear teeth of rack and pinion are precisely manufactured to minimize back lash and offer excellent performance for modulating applications.

16_ RY-type actuators are designed with an inherently safe spring return unit to prevent accidental release of the spring forces.

17_ Approvals and industry Standards

- Manufactured in conformity with CE certification PED 97/23/EC
- Certified in accordance with ATEX 94/9/EC
- Designed and manufactured under a third party accredited ISO9001:2000 quality assurance program

Ancillary Equipment

Declutchable Gearbox

The EPR-Series actuator is available with a declutchable gear box option. This allows quick and simple operation of the highest torque valves when the air or power supply fails.

Declutchable Side Handwheel

The declutchable side handwheel is integrated in the end cap of the actuator and can be fitted to the RY-type actuator units in both double-acting and spring-return configurations.

Complete Actuator Packages

From simple on/off duties with switchboxes and solenoid valves to complete modulation packages with smart positioners or ESD partial stroke testing devices, Flowbus is able to supply an actuator package to suit any duty or customer requirement.

Mounting Kits & Coupling

Mounting kits and couplings for EPR-Series actuators can be designed and manufactured by Flowbus in accordance with ISO 5211 or specific customer requirements.





» Technical Data

Spring Return Actuators (Metric Unit)

(Unit : N.m)

Actuator Model	Spring Q'ty	Spring Torque Position of Stroke		Pneumatic Stroke Torque (N.m) at Operating Pressure (bar)																		
		Start	End	3		3.5		4		4.5		5		5.5		6		7		8		
EPR 052-SR	6	6.7	4.4	6.7	4.3	8.6	6.1	10.4	7.8													
	7	7.9	5.1	6.0	3.2	7.9	5.0	9.7	6.8	11.5	8.5											
	8	9.0	5.8	5.3	2.1	7.2	3.9	9.0	5.7	10.8	7.5	12.7	9.3									
	9	10.1	6.5					8.3	4.6	10.1	6.4	12.0	8.2	13.8	10.0							
	10	11.2	7.3							9.4	5.3	11.2	7.1	13.1	8.9	14.9	10.7					
	11	12.4	8.0									10.5	6.1	12.4	7.8	14.2	9.6	17.9	13.2			
EPR 063-SR	6	12.5	7.2	12.3	7.0	15.5	10.1	18.8	13.2													
	7	14.5	8.4	11.1	5.0	14.4	8.1	17.6	11.3	20.8	14.4											
	8	16.6	9.6	9.9	3.0	13.2	6.2	16.4	9.3	19.6	12.4	22.9	15.6									
	9	18.7	10.9					15.2	7.3	18.5	10.4	21.7	13.6	24.9	16.7							
	10	20.8	12.1							17.3	8.5	20.5	11.6	23.7	15.2	27.0	17.9					
	11	22.8	13.3									19.3	9.6	22.6	12.8	25.8	15.9	32.3	22.2			
EPR 075-SR	6	20.7	11.9	20.4	11.4	25.8	16.6	31.1	21.8													
	7	24.1	13.8	18.5	8.2	23.9	13.3	29.2	18.5	34.5	23.7											
	8	27.6	15.8	16.6	4.9	21.9	10.1	27.3	15.3	32.6	20.4	37.9	25.6									
	9	31.0	17.8					25.3	12.0	30.7	17.2	36.0	22.3	41.4	27.5							
	10	34.5	19.8							28.7	13.9	34.1	19.1	39.4	24.2	44.8	29.4					
	11	37.9	21.8									32.1	15.8	37.5	21.0	42.8	26.2	53.5	36.5			
EPR 083-SR	6	26.2	16.7	28.5	18.2	36.0	25.3	43.5	32.4													
	7	30.6	19.5	25.8	14.2	33.3	21.3	40.7	28.4	48.2	35.5											
	8	34.9	22.3	23.0	10.1	30.5	17.2	38.0	24.3	45.5	31.4	53.0	38.5									
	9	39.3	25.1					35.3	20.2	42.8	27.3	50.2	34.4	57.7	41.5							
	10	43.7	27.9							40.0	23.3	47.5	30.4	55.0	37.5	62.5	44.6					
	11	48.1	30.7									44.8	26.3	52.3	33.4	59.7	40.5	74.7	54.7			
EPR 092-SR	6	39.7	23.3	39.2	22.5	49.5	32.5	59.9	42.5													
	7	46.3	27.2	35.4	16.2	45.7	26.2	56.1	36.2	66.4	46.3											
	8	52.9	31.1	31.6	9.9	41.9	19.9	52.2	30.0	62.6	40.0	72.9	50.0									
	9	59.5	35.0					48.4	23.7	58.8	33.7	69.1	43.7	79.5	53.8							
	10	66.1	38.9							55.0	27.4	65.3	37.5	75.7	47.5	86.0	57.5					
	11	72.7	42.8									61.5	31.2	71.8	41.2	82.2	51.2	102.9	71.3			
EPR 105-SR	6	54.8	30.9	59.6	33.2	74.5	46.9	89.5	60.7													
	7	63.9	36.0	54.5	25.0	69.5	38.7	84.5	52.5	99.4	66.2											
	8	73.0	41.1	49.5	16.7	64.5	30.5	79.4	44.2	94.4	58.0	109.4	71.7									
	9	82.2	46.3					74.4	36.0	89.4	49.8	104.3	63.5	119.3	77.3							
	10	91.3	51.4							84.3	41.5	99.3	55.3	114.3	69.0	129.2	82.8					
	11	100.4	56.6									94.3	47.1	109.2	60.8	124.2	74.6	154.1	102.1			
EPR 125-SR	6	100.3	56.2	97.7	52.8	123.1	77.5	148.6	102.1													
	7	117.0	65.5	88.5	36.9	114.0	61.6	139.4	86.3	164.9	110.9											
	8	133.7	74.9	79.3	21.0	104.8	45.7	130.3	70.4	155.7	95.1	181.2	119.7									
	9	150.5	84.3					121.1	54.5	146.5	79.2	172.0	103.9	197.4	128.5							
	10	167.2	93.6							137.4	63.3	162.8	88.0	188.3	112.6	213.7	137.3					
	11	183.9	103.0									153.6	72.1	179.1	96.8	204.6	121.4	255.5	170.8			
EPR 140-SR	6	153	90	152	87	192	126	231	164													
	7	178	105	137	63	177	101	217	140	257	179											
	8	204	120	122	39	162	77	202	116	242	155	282	193									
	9	229	135					187	92	227	130	267	169	307	208							
	10	255	150							213	106	253	145	293	184	332	222					
	11	280	164									238	121	278	159	318	198	398	276			
EPR 160-SR	6	228	145	233	147	296	208	359	268													
	7	266	169	210	111	272	171	335	232	398	293											
	8	304	193	186	75	249	135	311	196	374	257	436	317									
	9	343	217					288	160	350	220	413	281	475	342							
	10	381	241							327	184	389	245	452	306	514	366					
	11	419	265									366	209	428	269	491	330	616	451			
EPR 190-SR	6	389	223	373	207	472	305	571	403													
	7	454	260	337	143	436	241	535	339	634	437											
	8	519	297	300	80	399	178	498	276	597	374	696	472									
	9	584	335					461	212	560	310	659	408	758	506							
	10	649	372							523	247	622	345	721	443	820	541					
	11	713	409									586	281	685	379	784	477	982	673			
EPR 210-SR	6	471	265	459	249	579	365	698	482													
	7	549	309	416	175	535	291	655	407	775	523											
	8	628	353	372	100	492	216	612	332	732	449	851	565									
	9	706	397					569	258	688	374	808	490	928	606							
	10	784	442							645	300	765	416	885	532	1004	648					
	11	863	486									722	341	841	457	961	573	1201	805			

Spring Return Actuators (Imperial Unit)

(Unit : inch.pounds)

Actuator Model	Spring Q'TY	Spring Torque		Pneumatic Stroke Torque (in.lb) at Operating Pressure (psig)															
		Position of Stroke		40		60		65		70		80		90		100			
		Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End	Start	End		
EPR 052-SR	6	59.7	38.6	58.8	36.9	107.1	83.7												
	7	69.6	45.0	52.5	27.5	100.8	74.3	112.9	86.0										
	8	79.6	51.4	46.2	18.0	94.5	64.8	106.6	76.6	118.6	88.3								
	9	89.5	57.9			88.2	55.4	100.3	67.1	112.3	78.8	136.5	102.2						
	10	99.5	64.3					94.0	57.7	106.0	69.4	130.2	92.8	154.3	116.2				
	11	109.4	70.7							99.7	59.9	123.9	83.3	148.0	106.7	172.2	130.1		
12	119.4	77.1									117.6	73.9	141.7	97.3	165.9	120.7			
EPR 063-SR	6	110	64	107	60	192	143												
	7	129	75	97	43	182	125	203	146										
	8	147	85	86	25	171	108	193	128	214	149								
	9	165	96			161	90	182	111	204	131	246	173						
	10	184	107					172	93	193	114	236	155	278	196				
	11	202	117							183	96	225	138	268	179	310	220		
12	221	128									215	120	257	161	300	203			
EPR 075-SR	6	183	105	178	99	319	235												
	7	214	123	161	70	302	206	337	240										
	8	244	140	144	41	285	177	320	211	355	245								
	9	275	158			267	148	303	182	338	216	408	284						
	10	305	175					285	153	321	187	391	255	461	324				
	11	336	193							303	158	374	226	444	295	514	363		
12	366	210									357	197	427	266	497	334			
EPR 083-SR	6	232	148	249	161	446	352												
	7	271	173	224	125	421	315	471	363										
	8	309	197	200	88	397	279	446	326	496	374								
	9	348	222			373	242	422	290	471	337	570	433						
	10	387	247					398	253	447	301	546	396	644	491				
	11	425	271							423	264	522	359	620	455	718	550		
12	464	296									497	323	596	418	694	513			
EPR 092-SR	6	351	207	342	194	614	458												
	7	410	241	308	138	580	402	648	468										
	8	468	275	274	83	546	347	614	413	682	478								
	9	527	310			513	291	581	357	649	423	785	555						
	10	585	344					547	301	615	367	751	499	887	631				
	11	644	379							581	312	717	444	853	575	989	707		
12	702	413									684	388	820	520	956	652			
EPR 105-SR	6	485	273	520	303	914	685												
	7	566	319	475	226	869	608	968	703										
	8	647	364	431	149	825	531	923	626	1021	722								
	9	727	410			780	454	878	550	977	645	1174	836						
	10	808	455					834	473	932	568	1129	759	1326	950				
	11	889	501							861	492	1085	682	1281	873	1478	1064		
12	970	546									1040	606	1237	797	1434	987			
EPR 125-SR	6	888	497	852	455	1522	1104												
	7	1036	580	771	315	1441	964	1608	1126										
	8	1184	663	690	174	1359	823	1527	986	1694	1148								
	9	1332	746			1278	683	1446	845	1613	1007	1948	1332						
	10	1480	829					1365	704	1532	867	1867	1191	2202	1516				
	11	1628	912							1451	726	1786	1051	2120	1375	2455	1700		
12	1776	994									1704	910	2039	1235	2374	1559			
EPR 140-SR	6	1353	794	1322	751	2372	1769												
	7	1578	926	1192	537	2243	1555	2505	1809										
	8	1803	1059	1063	323	2113	1341	2375	1595	2638	1850								
	9	2029	1191			1983	1127	2246	1381	2508	1636	3033	2145						
	10	2254	1323					2116	1167	2379	1421	2904	1930	3429	2439				
	11	2480	1456							2249	1207	2774	1716	3299	2225	3824	2734		
12	2705	1588									2644	1502	3169	2011	3694	2520			
EPR 160-SR	6	2021	1282	2036	1271	3682	2867												
	7	2358	1495	1827	951	3473	2547	3884	2946										
	8	2695	1709	1617	631	3263	2227	3675	2626	4086	3025								
	9	3031	1922			3054	1907	3466	2306	3877	2705	4700	3502						
	10	3368	2136					3256	1986	3668	2385	4491	3182	5314	3980				
	11	3705	2349							3458	2065	4281	2862	5104	3660	5927	4458		
12	4042	2563									4072	2542	4895	3340	5718	4138			
EPR 190-SR	6	3444	1974	3224	1728	5802	4228												
	7	4018	2303	2901	1183	5480	3683	6125	4308										
	8	4592	2632	2579	638	5158	3138	5802	3763	6447	4388								
	9	5166	2961			4835	2593	5480	3218	6125	3842	7414	5092						
	10	5740	3290					5158	2672	5802	3297	7092	4547	8381	5797				
	11	6314	3619							5480	2752	6769	4002	8059	5252	9348	6502		
12	6888	3948									6447	3457	7737	4707	9026	5957			
EPR 210-SR	6	4166	2345	4003	2150	7154	5204												
	7	4860	2735	3620	1491	6771	4545	7558	5308										
	8	5555	3126	3237	831	6388	3885	7175	4649	7963	5412								
	9	6249	3517			6005	3226	6792	3989	7580	4753	9155	6280						
	10	6943	3908					6409	3330	7197	4093	8772	5620	10347	7147				
	11	7637	4299							6814	3433	8389	4960	9964	6487	11540	8014		
12	8332	4689									8006	4301	9581	5828	11157	7355			



» Technical Data

Double Acting Actuators (Metric Unit)

(Unit : N.m)

Actuator Model	Pneumatic Stroke Torque (N.m) at Operating Pressure (bar)								
	3	3.5	4	4.5	5	5.5	6	7	8
EPR 052-DA	11.5	13.4	15.3	17.2	19.1	21.1	23.0	26.8	30.6
EPR 063-DA	20.2	23.6	27.0	30.4	33.7	37.1	40.5	47.2	54.0
EPR 075-DA	33.5	39.0	44.6	50.2	55.8	61.3	66.9	78.1	89.2
EPR 083-DA	47.3	55.2	63.1	71.0	78.9	86.8	94.7	110.5	126.2
EPR 092-DA	64.7	75.5	86.3	97.1	107.9	118.7	129.5	151.0	172.6
EPR 105-DA	95	110	126	142	158	174	189	221	253
EPR 125-DA	163	190	217	244	271	298	326	380	434
EPR 140-DA	255	298	340	383	425	468	511	596	681
EPR 160-DA	404	472	539	606	674	741	809	943	1078
EPR 190-DA	647	755	862	970	1078	1186	1294	1509	1725
EPR 210-DA	790	922	1054	1185	1317	1449	1580	1844	2107

Double Acting Actuators (Imperial Unit)

(Unit : inch.pounds)

Actuator Model	Pneumatic Stroke Torque (in.lb) at Operating Pressure (psig)								
	40	60	65	70	80	90	100	116	
EPR 052-DA	99	148	160	172	197	222	246	286	
EPR 063-DA	174	260	282	304	347	391	434	503	
EPR 075-DA	287	431	466	502	574	646	718	832	
EPR 083-DA	402	603	653	703	803	904	1004	1165	
EPR 092-DA	555	833	902	972	1111	1249	1388	1610	
EPR 105-DA	804	1206	1306	1406	1607	1808	2009	2331	
EPR 125-DA	1367	2050	2221	2392	2734	3075	3417	3964	
EPR 140-DA	2143	3215	3483	3751	4286	4822	5358	6215	
EPR 160-DA	3359	5039	5458	5878	6718	7558	8398	9741	
EPR 190-DA	5263	7895	8553	9210	10526	11842	13158	15263	
EPR 210-DA	6429	9644	10448	11252	12859	14466	16074	18645	

Air Consumption (Air Volume Opening & Closing)

Actuator Model	Metric Unit (g)		Imperial Unit (Cu.in)	
	Opening	Closing	Opening	Closing
EPR 052	0.12	0.16	7.3	9.8
EPR 063	0.2	0.26	12.2	15.9
EPR 075	0.33	0.42	20.1	25.6
EPR 083	0.47	0.62	28.7	37.8
EPR 092	0.64	0.86	39.1	52.5
EPR 105	0.93	1.24	56.8	75.7
EPR 125	1.6	2.06	97.6	125.7
EPR 140	2.42	3.34	147.7	203.8
EPR 160	3.9	5.1	238.0	311.2
EPR 190	6.1	8.1	372.2	494.3
EPR 210	7.4	10.3	451.6	628.5

Air Consumption depends on Air Supply, Air volume and Action cycle times, the calculating as follows : $Q/Min = Air\ volume\ (Air\ volume\ Opening + Air\ volume\ closing) \times \left[\frac{Air\ Supply\ (Kpa) + 101.3}{101.3} \right] \times Action\ cycle\ times\ (/Min)$

Weights Table

Actuator Model	Metric Unit (kg)		Imperial Unit (pounds)	
	Double Acting	Spring Return	Double Acting	Spring Return
EPR 052	1.4	1.5	3.1	3.3
EPR 063	2.2	2.5	4.9	5.5
EPR 075	3	3.4	6.6	7.5
EPR 083	3.8	4.3	8.4	9.5
EPR 092	5.2	6	11.5	13.2
EPR 105	6.7	8	14.8	17.6
EPR 125	10.4	12.3	22.9	27.1
EPR 140	15.6	18.6	34.4	41.0
EPR 160	22.7	27.2	50.0	60.0
EPR 190	35.3	42.7	77.8	94.1
EPR 210	44.8	55.0	98.8	121.3

Operating Time

(Unit : sec)

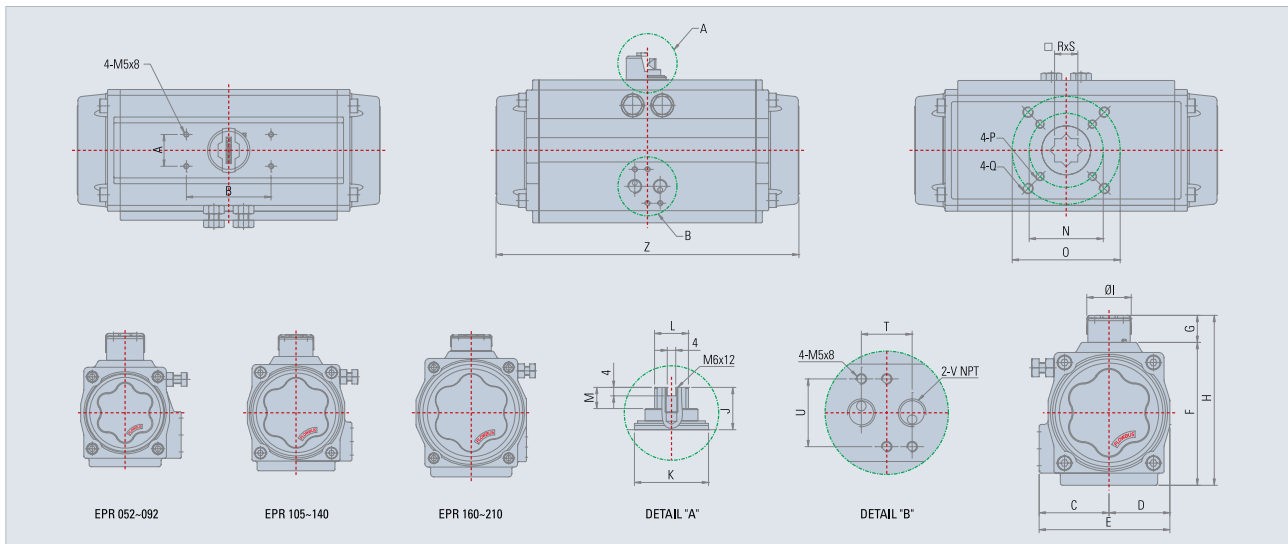
Actuator Model	Opening Time		Closing Time		Actuator Model	Opening Time		Closing Time	
	Double Acting	Spring Return	Double Acting	Spring Return		Double Acting	Spring Return	Double Acting	Spring Return
EPR 052	0.07	0.11	0.10	0.19	EPR 125	1.1	1.5	1.2	2.0
EPR 063	0.13	0.18	0.17	0.32	EPR 140	1.6	2.1	1.8	2.1
EPR 075	0.21	0.31	0.31	0.51	EPR 160	2.4	3.5	2.8	3.0
EPR 083	0.30	0.44	0.40	0.73	EPR 190	3.8	6.1	4.5	4.7
EPR 092	0.4	0.6	0.6	0.8	EPR 210	4.6	6.6	5.6	6.5
EPR 105	0.6	0.9	0.8	1.2					

The above indicated moving time of the actuator, are obtained in the following test conditions :

1.flow capacity Qn=800 Liter/min 2.solenoid valve with orifice of 5.7mm 3.inside pipe diameter 8mm 4.Air supply pressure 5.5bar (79.75psi) 5.Medium clean air 6.Temperature :ATM 7.Actuator without external resistance load.

Cautions :obviously on the field applications when one or more of the above parameter are different, the moving time will be different

Dimensions



Actuator Model	Metric Unit (mm)																						
	A	B	C	D	E	F	G	H	φI	J	φK	L	M	φN	φO	P	Q	R	S	T	U	V(ISO228)	Z
EPR 052	30	80	41.5	29.5	71	73	25.6	98.6	37	20	22	12	36	50		M6 ×10	11	14	24	32	1/4"NPT	150	
EPR 063	30	80	47	35.5	82.5	88	25.6	113.6	37	20	26	12	36	70	M6 ×10	M8 ×13	14	16	24	32	1/4"NPT	177.4	
EPR 075	30	80	53	42	95	100.5	25.6	126.1	37	20	30	12	36	70	M6 ×10	M8 ×13	14	17	24	32	1/4"NPT	200	
EPR 083	30	80	57	46.5	103.5	109	25.6	134.6	37	20	30	12	36	70	M6 ×10	M8 ×13	17	21	24	32	1/4"NPT	234.2	
EPR 092	30	80	61	51	112	119.5	25.5	145.0	42	20	35	16	36	102	M8 ×13	M10 ×16	17	21	24	32	1/4"NPT	262	
EPR 105	30	80	66	57.5	123.5	135	25.5	160.5	42	20	35	16	36	102	M8 ×13	M10 ×16	22	26	24	32	1/4"NPT	286.2	
EPR 125	30	80	74	68	142	157.5	25.8	183.3	65	20	48	22	36	102	M8 ×13	M10 ×16	22	26	24	32	1/4"NPT	336	
EPR 140	30	80	81	75.5	156.5	175	25.8	200.8	65	20	53	22	36	102	M10 ×16	M12 ×20	27	31	24	32	1/4"NPT	417.4	
EPR 160	30	80	87	87	174	198	25.8	223.8	65	20	58	22	36	102	M10 ×16	M12 ×20	27	31	24	32	1/4"NPT	494.2	
EPR 190	30	130	103	103	206	234	35.8	269.8	83	30	64	32	18	125	M12 ×20			36	40	24	32	1/4"NPT	547.2
EPR 210	30	130	113	113	226	259	35.8	294.8	83	30	74	32	18	140	M16 ×25			36	40	24	32	1/4"NPT	566.6

Actuator Model	Imperial Unit (inches)																						
	A	B	C	D	E	F	G	H	φI	J	φK	L	M	φN	φO	P	Q	R	S	T	U	V(ISO228)	Z
EPR 052	1.18	3.15	1.63	1.16	2.80	2.87	1.01	3.88	1.46	0.79	0.87	0.47	0.47	1.42	1.97		M6 ×10	0.433	0.55	0.945	1.26	1/4"NPT	5.91
EPR 063	1.18	3.15	1.85	1.40	3.25	3.46	1.01	4.47	1.46	0.79	1.02	0.47	0.47	1.97	2.76	M6 ×10	M8 ×13	0.551	0.63	0.945	1.26	1/4"NPT	6.98
EPR 075	1.18	3.15	2.09	1.65	3.74	3.96	1.01	4.96	1.46	0.79	1.18	0.47	0.47	1.97	2.76	M6 ×10	M8 ×13	0.551	0.67	0.945	1.26	1/4"NPT	7.87
EPR 083	1.18	3.15	2.24	1.83	4.07	4.29	1.01	5.30	1.46	0.79	1.18	0.47	0.47	1.97	2.76	M6 ×10	M8 ×13	0.669	0.83	0.945	1.26	1/4"NPT	9.22
EPR 092	1.18	3.15	2.40	2.01	4.41	4.70	1.00	5.71	1.65	0.79	1.38	0.63	0.47	2.76	4.02	M8 ×13	M10 ×16	0.669	0.83	0.945	1.26	1/4"NPT	10.31
EPR 105	1.18	3.15	2.60	2.26	4.86	5.31	1.00	6.32	1.65	0.79	1.38	0.63	0.47	2.76	4.02	M8 ×13	M10 ×16	0.866	1.02	0.945	1.26	1/4"NPT	11.27
EPR 125	1.18	3.15	2.91	2.68	5.59	6.20	1.02	7.22	2.56	0.79	1.89	0.87	0.47	2.76	4.02	M8 ×13	M10 ×16	0.866	1.02	0.945	1.26	1/4"NPT	13.23
EPR 140	1.18	3.15	3.19	2.97	6.16	6.89	1.02	7.91	2.56	0.79	2.09	0.87	0.47	4.02	4.92	M10 ×16	M12 ×20	1.063	1.22	0.945	1.26	1/4"NPT	16.43
EPR 160	1.18	3.15	3.43	3.43	6.85	7.80	1.02	8.81	2.56	0.79	2.28	0.87	0.47	4.02	4.92	M10 ×16	M12 ×20	1.063	1.22	0.945	1.26	1/4"NPT	19.46
EPR 190	1.18	5.12	4.06	4.06	8.11	9.21	1.41	10.62	3.27	1.18	2.52	1.26	0.71	4.92		M12 ×20		1.417	1.57	0.945	1.26	1/4"NPT	21.54
EPR 210	1.18	5.12	4.45	4.45	8.90	10.20	1.41	11.61	3.27	1.18	2.91	1.26	0.71	5.51		M16 ×25		1.417	1.57	0.945	1.26	1/4"NPT	22.31



» Technical Data

Spring Return Output Torque (N.m)

(Unit : N.m)

Actuator Model	Spring Torque		Pneumatic Stroke Torque (N.m) at Operating Pressure (bar)							
	Position of stroke	Position of stroke	3	4	4.5	5	5.5	6	7	
EPRY160E-S1	Break	260	Start	305	461	539	617	695	773	
	Run	125	Run	88	151	182	214	245	277	
	End	184	Break	93	204	260	316	372	427	
EPRY160E-S2	Break	371	Start		391	469	548	626	704	860
	Run	178	Run		109	140	171	203	234	297
	End	262	Break		101	157	213	269	325	436
EPRY160-S1	Break	520	Start	609	922	1078	1234	1390	1546	
	Run	250	Run	177	302	365	428	490	553	
	End	368	Break	185	408	520	631	743	855	
EPRY160-S2	Break	741	Start		783	939	1095	1251	1407	1720
	Run	356	Run		217	280	343	406	468	594
	End	524	Break		203	314	426	538	649	872
EPRY190E-S1	Break	442	Start	513	777	909	1041	1173	1305	
	Run	216	Run	151	259	313	367	421	475	
	End	312	Break	154	342	437	531	625	719	
EPRY190E-S2	Break	641	Start		653	784	916	1048	1180	1444
	Run	313	Run		181	235	289	343	397	505
	End	452	Break		158	252	346	440	535	723
EPRY190-S1	Break	884	Start	1027	1554	1818	2082	2346	2609	
	Run	432	Run	302	518	626	734	842	950	
	End	624	Break	308	685	873	1061	1250	1438	
EPRY190-S2	Break	1281	Start		1305	1569	1833	2097	2360	2888
	Run	626	Run		363	471	579	687	795	1011
	End	904	Break		316	504	693	881	1069	1446
EPRY210E-S1	Break	591	Start	699	1056	1234	1413	1591	1769	
	Run	289	Run	201	345	417	489	561	633	
	End	416	Break	214	469	596	724	851	978	
EPRY210E-S2	Break	850	Start		894	1072	1250	1429	1607	1964
	Run	415	Run		244	316	388	460	532	676
	End	599	Break		228	355	483	610	738	992
EPRY210-S1	Break	1183	Start	1399	2112	2469	2825	3182	3538	
	Run	578	Run	402	690	834	978	1122	1266	
	End	833	Break	428	938	1193	1447	1702	1957	
EPRY210-S2	Break	1701	Start		1787	2144	2501	2857	3214	3927
	Run	831	Run		488	632	776	920	1064	1352
	End	1197	Break		456	711	966	1220	1475	1985

Double Acting Output Torque (N.m)

(Unit : N.m)

Actuator Model	Position of stroke	Pneumatic Stroke Torque (N.m) at Operating Pressure (bar)							
		3.0	4.0	4.5	5.0	5.5	6.0	7.0	8.0
EPRY160E-DA	Start	483	643	724	804	885	965	1126	1287
	Run	212	282	318	353	388	424	494	565
	Break	351	468	527	585	644	702	819	936
EPRY160-DA	Start	965	1287	1448	1609	1769	1930	2252	2574
	Run	424	565	635	706	777	847	988	1129
	Break	702	936	1053	1170	1287	1404	1638	1872
EPRY190E-DA	Start	815	1087	1223	1358	1494	1630	1902	2173
	Run	362	483	543	604	664	724	845	966
	Break	593	791	889	988	1087	1186	1383	1581
EPRY190-DA	Start	1630	2173	2445	2717	2988	3260	3803	4347
	Run	724	966	1087	1207	1328	1449	1690	1932
	Break	1186	1581	1779	1976	2174	2372	2767	3162
EPRY210E-DA	Start	1102	1469	1653	1837	2020	2204	2571	2939
	Run	490	653	735	816	898	979	1143	1306
	Break	802	1069	1202	1336	1470	1603	1871	2138
EPRY210-DA	Start	2204	2939	3306	3673	4041	4408	5142	5877
	Run	979	1306	1469	1632	1795	1959	2285	2612
	Break	1603	2138	2405	2672	2939	3207	3741	4276

* Imperial unit can be provided if required. Contact our sales division at sales@flowbus.com

Air Consumption (Air volume opening & closing)

(Unit : l)

Actuator Model	Opening	Closing
EPRY160E	5.1	3.2
EPRY160	5.8	6.4
EPRY190E	8.5	5.2
EPRY190	9.1	10.3
EPRY210E	10.6	7.2
EPRY210	10.8	14.3

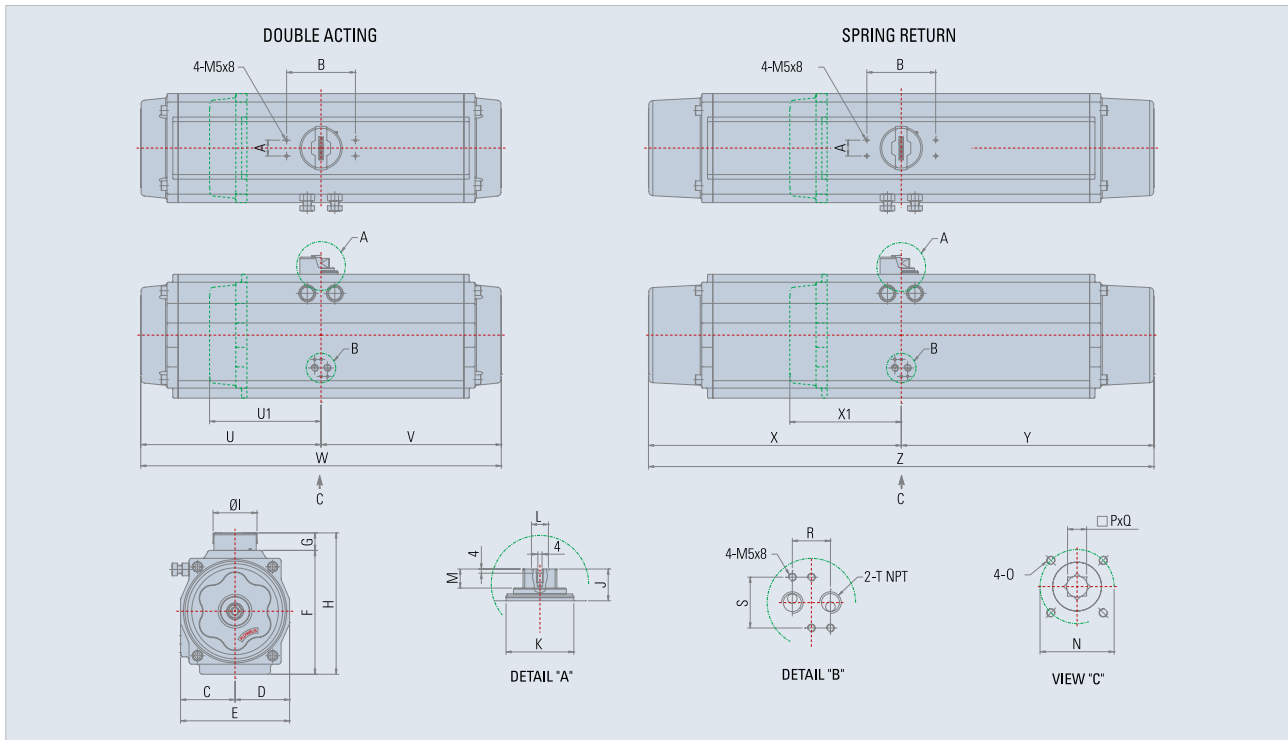
Air Consumption depends on Air Supply, Air volume and Action cycle times, the calculating as follows: $Q/Min = Air\ volume\ (Air\ volume\ Opening + Air\ volume\ closing) \times \left[\frac{Air\ Supply\ (Kpa) + 101.3}{101.3} \right] \times Action\ cycle\ times\ (/Min)$

Weight Table

(Unit :kg)

Actuator Model	Double Acting	Spring Return
EPRY160E	22.5	30.1
EPRY160	28	43.2
EPRY190E	35.2	50.1
EPRY190	43.8	74
EPRY210E	48.2	68.6
EPRY210	59.7	100.8

Dimensions



(Unit : mm)

Actuator Model	A	B	C	D	E	F	G	H	ØI	J	ØK	L	M	ØN	O	P	Q	R	S	T	U/U1	V	W	X/X1	Y	Z
EPRY160E	30	130	87	87	174	198	35.8	233.8	83	30	55	32	18	125	M12×20	36	40	24	32	1/4"NPT	188.1	298.1	486.2	188.1	404.6	592.7
EPRY160	30	130	87	87	174	198	35.8	233.8	83	30	55	32	18	125	M12×20	36	40	24	32	1/4"NPT	298.1	298.1	596.2	404.6	404.6	809.2
EPRY190E	30	130	103	103	206	234	35.8	269.8	83	30	64	32	18	140	M16×25	36	40	24	32	1/4"NPT	210.6	340.6	551.2	210.6	477.6	688.2
EPRY190	30	130	103	103	206	234	35.8	269.8	83	30	64	32	18	140	M16×25	36	40	24	32	1/4"NPT	340.6	340.6	681.2	477.6	477.6	955.2
EPRY210E	30	130	113	113	226	259	35.8	294.8	83	30	64	32	18	140	M20×30	46	51	24	32	1/4"NPT	227.8	374.8	602.6	227.8	526.3	754.1
EPRY210	30	130	113	113	226	259	35.8	294.8	83	30	64	32	18	165	M20×30	46	51	24	32	1/4"NPT	374.8	374.8	749.6	526.3	526.3	1052.6

* Imperial unit can be provided if required. Contact our sales division at sales@flowbus.com

Ordering Codes

R-type

EPR 075-SR08-FC-JO

- : Manual Override JO : Jackscrew Override
- : Fail Position
 - FC : Close
 - FO : Open
- : Action Mode
 - DA : Double Actions
 - SR□□ : Spring Return
- : Cylinder Diameter
- : Rack & Pinion Mechanism

RY-type

EPRY 190 E-S1-FC-JO

- : Manual Override JO : Jackscrew Override
- : Fail Position
 - FC : Close
 - FO : Open
- : Action Mode
 - DA : Double Action
 - S□ : Spring Return (S1,S2)
- : Piston Design
 - None : Dual Piston
 - E : Single Piston
- : Cylinder Diameter
- : Scotch Yoke Mechanism



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Due to continuous development product data is subject to change without prior notice.