PNEUMATIC ACTUATOR (EPR SERIES)

ACTUATOR DESIGN

EPR Series actuator's module structure, which makes it easy to change the structure of fail postion, enables the user to do simple and accurate arrangement of the module when assembling and maintaining the module.

① High Efficient Operation

Piston rod is propped by the high strength alloy steel guide rod, which has self-lubricating bearing. This framework guarantees the efficient operation, and the improvement of the energy delivery that goes to the valve stem from the actuator.

② External Tie Rods

The tie rod outside the cylinder prevents the unexpected damages during the field work, and also provides easy maintenance.

③ Piston Guide Ring

The high quality backup ring is installed to prevent the leaking and guarantee the high performance and longer expected operating life of the product.

④ Cylinder Tube Coating

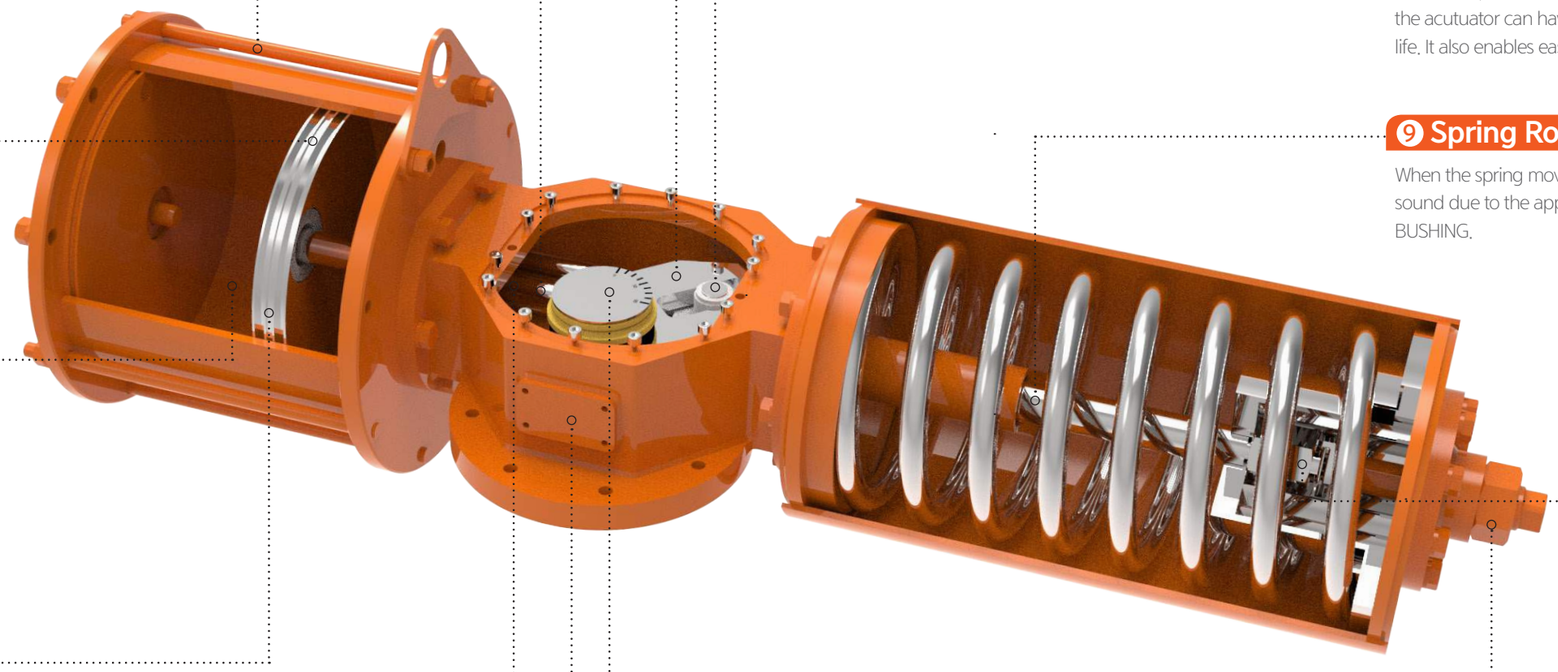
The inside of the cylinder is chrome-plated to prevent the corrossion, abrasion and the damages. In addition, lubricative finishing material is applied. It's design can also prevent the damage to the plating by PTFE + bronze seal (guide seal) even when u-packing get failed.

⑤ Sealing Compounds

PTFE and rubber seal are applied to the sealing. The first iron rubber u-packing provides high quality sealing and long service life, and the second PTFE + bronze seal guarantees self-lubrication and the smoothness.

⑥ Alignment of Modules

The center ring makes sure the exact alignment at between the housing and the cylinder case.



⑦ Namur Mounting Standard

EPR Series actuator follows namur mounting standard, thus the installation of the auxiliary equipment through the interface is quick and simple.

⑧ Replaceable Bearing

Self-lubricating bearing's lifetime lubrication function makes the low friction, thus the whole components can avoid damages and the acutuator can have smooth operation and longer operating life. It also enables easier replacement and maintenance work.

⑨ Spring Rod Guide

When the spring moves, the spring case is maintained safe and sound due to the application of spring rod guide and interior BUSHING.

⑩ Spring Rod Nut

The spring rod nut is designed to maintain the tension of the spring evenly, and the stability is improved by connecting it with the spring rod that's fixed to the housing.
Its double nut prevents loosening and the fluctuation of spring's tension when operated.

⑪ Indicator/Travel Stops

Open / Close can be set in the permissible range of ±5°. With its adjustment of moving range of -5°~95°, the indicator shows the actuator's current location simple and clear.

⑫ Ancillary Bracket

The user can operate the actuator with various composition of the optimal installation of multi functional auxiliary barckets where applicable.

EPR/L SERIES

EPR Series rotary actuator guarantees optimum performance for all quarter turn valves(butterfly, ball, plug, damper, etc.) in on-off or modulating service.
Actuator consists of three main parts: Housing part, cylinder part, and spring part
The yoke of housing converts linear motion into rotational motion, and the rod has a structure that alternately drives and compresses pneumatic cylinders and springs.

MAIN DESIGN FEATURES

EPR Series actuator is designed with modular construction design and is completely sealed to completely protect all operating components. Based on the housing in the center, the cylinder and spring are always assembled on the opposite side, and all parts are designed to ensure long life with minimal friction. The inside of the cylinder is designed to be strong against corrosion with chrome plating, and the spring is completely sealed to prevent separation. In order to operate the spring under the best conditions, the spring operation section is always designed to be the same no matter where it is located. In addition to the o-ring, the piston is equipped with a guide ring to slide with teflon to protect the inner cylinder when the o-ring is damaged, ensuring long life and perfect sealing, and there is an adjustable travel stopper to optimize the required valve stroke. (adjustable ± 5 degrees) Also, a mechanical indicator is installed on the housing to indicate the valve position. Upon customer request, it can be provided for use in special environments with low or high temperatures.

MANUAL OVERRIDE

For emergency use, manual override option can be installed upon customer request.
- Hydraulic hand pump
- Declutchable gearbox

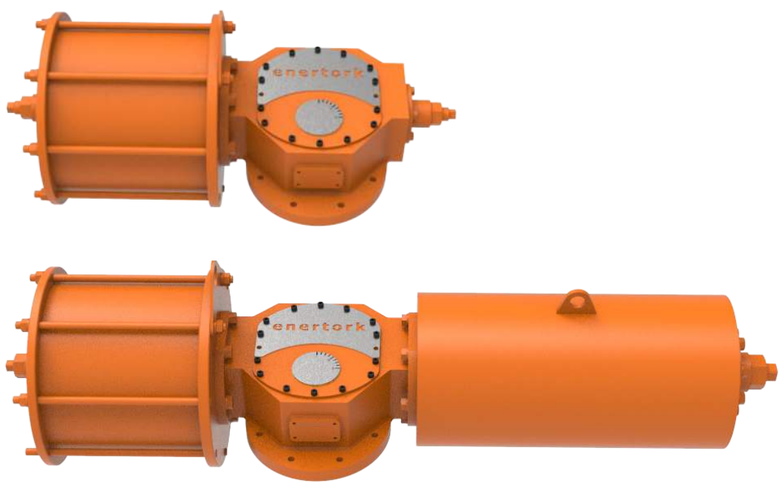
EQUIPMENTS

Below list of accessories may be required for local or remote operation and control :
- Solenoid valve
- Limit switches
- Airset
- Air operated valve
- Quick exhaust valve
- Positioner
- Position transmitter
- Control panel

TEST

Actuators that have been manufactured are subject to strict performance testing, and only those actuators that have been verified are delivered to our customers.

EPR(Rotary Type)



EPL(Linear Type)

EPR/L SERIES

TECHNICAL PERFORMANCE

PRESSURE RANGE
- Pressure range : Min 3 Bar.g, Max. 10 Bar.g
- Actuator test pressure : 1.2 times the operating pressure of the actuator

ADJUSTABLE STROKE
- 90 degree standard adjustable - 5º ~ +5º(travel stopper)

TEMPERATURE RANGE
- Standard : - 20°C ~ 80°C
- Option(on request) : Low : - 40°C ~ 80°C
  High : -20°C ~ 180°C

OPERATING MEDIUM
- Dry air or gas

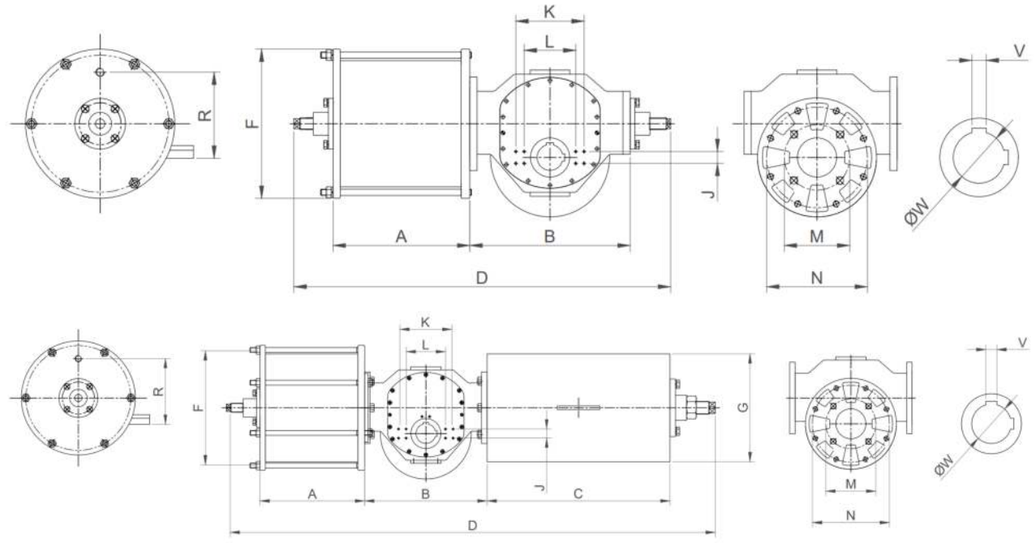
ACTUATOR SEAL MATERIAL
- Standard : N.B.R. (-20°C + 80°C)
- Low temp. : Fluorosilicone
- High temp. : Viton

PAINTING
- Sandblasting
- 1 primer layer
- 1 epoxy finish layer
- On request available other painting

MAINTENANCE

The internal parts of the actuator are designed to last a long life time through low friction structure, but if required, customer can replace internal o-rings for maintenance purpose.
Please also refer to the operating & maintenance manual provided at the time of delivery.

ACTUATOR DIMENSION

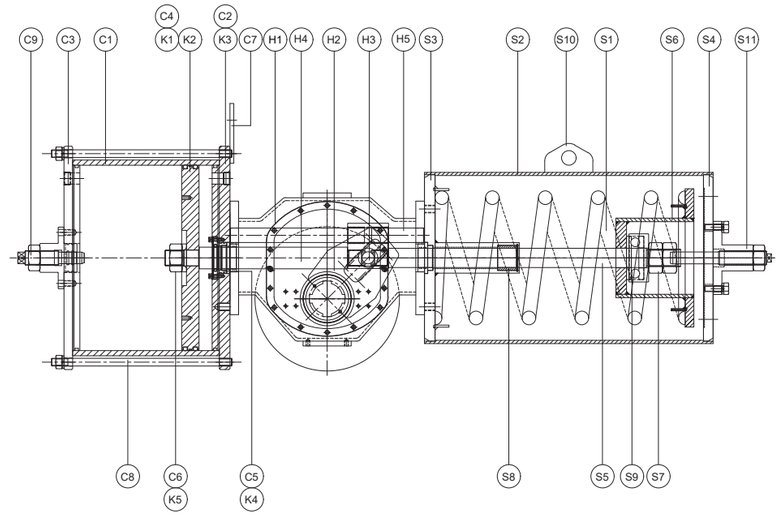


MODEL	Type	A	B	C	D	F	G	J	K	L	M	N	R	Air port	V	W
								Top mounting			Valve mounting		Air port		Stem Dia.	
EPR06DA-235	Double acting	305	294	-	700	310	-	30	-	130	Ø165 (4-M20)	-	98	1/2"	14	50
EPR06DA-250		305	294	-	700	325	-	30	-	130		-	105	1/2"	14	50
EPR06DA-300		305	294	-	700	376	-	30	-	130		-	130	1/2"	14	50
EPR06SR-C1	Single acting	305	294	488	1087	-	320	30	-	130		-	-	-	14	50
EPR06SR-C2		305	294	508	1107	-	320	30	-	130		-	-	-	14	50
EPR06SR-C3		305	294	528	1127	-	320	30	-	130		-	-	-	14	50
EPR06SR-C4		305	294	528	1127	-	320	30	-	130		-	-	-	14	50
EPR08DA-250	Double acting	345	404	-	949	325	-	30	172	130	Ø165 (4-M20)	Ø254 (8-M16)	105	1/2"	18	65
EPR08DA-300		345	404	-	949	376	-	30	172	130			130	1/2"	18	65
EPR08DA-335		345	404	-	949	411	-	30	172	130			140	3/4"	18	65
EPR08DA-385		345	404	-	949	461	-	30	172	130			165	3/4"	18	65
EPR08SR-C1	Single acting	345	404	641	1390	-	356	30	172	130			-	-	18	65
EPR08SR-C2		345	404	601	1350	-	356	30	172	130			-	-	18	65
EPR08SR-C3		345	404	571	1320	-	356	30	172	130			-	-	18	65
EPR08SR-C4		345	404	551	1300	-	356	30	172	130			-	-	18	65
EPR08SR-C5		345	404	603	948	-	356	30	172	130			-	-	18	65
EPR08SR-C6		345	404	603	1378	-	356	30	172	130			-	-	18	65
EPR08SR-C7		345	404	683	1458	-	356	30	172	130			-	-	18	65
EPR08SR-C8		345	404	683	1458	-	356	30	172	130			-	-	18	65
EPR10DA-335	Double acting	375	430	-	1025	411	-	30	198	150	Ø254 (8-M16)	-	140	3/4"	20	75
EPR10DA-385		375	430	-	1025	461	-	30	198	150		-	165	3/4"	20	75
EPR10DA-435		375	430	-	1025	521	-	30	198	150		-	190	3/4"	20	75
EPR10SR-C1	Single acting	375	430	760	1565	-	410	30	198	150		-	-	-	20	75
EPR10SR-C2		375	430	760	1565	-	410	30	198	150		-	-	-	20	75

EPR/L SERIES

MODEL	Type	A	B	C	D	F	G	J	K	L	M	N	R	Air port	V	W
								Top mounting			Valve mounting		Air port		Stem Dia.	
EPR13DA-335	Double acting	435	490	-	1165	411	-	30	260	200	Ø298 (8-M20)	-	140	3/4"	28	110
EPR13 DA-385		435	490	-	1165	461	-	30	260	200		-	165	3/4"	28	110
EPR13 DA-435		435	490	-	1165	521	-	30	260	200		-	190	3/4"	28	110
EPR13 DA-485		435	490	-	1165	571	-	30	260	200		-	210	3/4"	28	110
EPR13 DA-535		435	490	-	1165	621	-	30	260	200		-	236	1"	28	110
EPR13 DA-585		435	490	-	1165	671	-	30	260	200		-	260	1"	28	110
EPR13 DA-635		435	490	-	1165	721	-	30	260	200		-	287	1"	28	110
EPR13SR-C1	Single acting	435	490	850	1775	-	460	30	260	200		-	-	-	28	110
EPR13SR-C2		435	490	850	1775	-	460	30	260	200		-	-	-	28	110
EPR13SR-C3		435	490	850	1775	-	460	30	260	200		-	-	-	28	110
EPR13SR-C4		435	490	850	1775	-	460	30	260	200		-	-	-	28	110
EPR13SR-C5		435	490	860	1785	-	460	30	260	200		-	-	-	28	110
EPR13SR-C6		435	490	860	1785	-	460	30	260	200		-	-	-	28	110
EPR16 DA-485	Double acting	505	550	-	1315	571	-	30	172	130	Ø356 (8-M30)	-	210	3/4"	32	130
EPR16 DA-535		505	550	-	1315	621	-	30	172	130		-	236	1"	32	130
EPR16 DA-585		505	550	-	1315	671	-	30	172	130		-	260	1"	32	130
EPR16 DA-635		505	550	-	1315	721	-	30	172	130		-	287	1"	32	130
EPR16 DA-685		505	550	-	1315	771	-	30	172	130		-	310	1"	32	130
EPR16SR-C1	Single acting	505	550	1030	2085	-	610	30	172	130		-	-	-	32	130
EPR16SR-C2		505	550	1220	2275	-	610	30	172	130		-	-	-	32	130
EPR16SR-C3		505	550	1220	2275	-	610	30	172	130		-	-	-	32	130
EPR16SR-C4		505	550	1250	2305	-	610	30	172	130		-	-	-	32	130
EPR16SR-C5		505	550	1180	2235	-	610	30	172	130		-	-	-	32	130
EPR20 DA-535	Double acting	590	630	-	1480	621	-	30	350	300	Ø406 (8-M36)	-	236	1"	40	160
EPR20 DA-585		590	630	-	1480	671	-	30	350	300		-	260	1"	40	160
EPR20 DA-635		590	630	-	1480	721	-	30	350	300		-	287	1"	40	160
EPR20 DA-685		590	630	-	1480	771	-	30	350	300		-	310	1"	40	160
EPR20 DA-735		590	630	-	1480	841	-	30	350	300		-	335	1"	40	160
EPR20 DA-785		590	630	-	1480	891	-	30	350	300		-	361	1"	40	160
EPR20 DA-835		590	630	-	1480	941	-	30	350	300		-	386	1"	40	160
EPR20 DA-885		590	630	-	1480	991	-	30	350	300		-	411	1-1/2"	40	160
EPR20 DA-935		590	630	-	1480	1041	-	30	350	300		-	436	-	40	160

BILL OF MATERIALS



Model	DESCRIPTION	MATERIAL	Model	DESCRIPTION	MATERIAL
H1	HOUSING	FCD40	S2	SPRING CASE	STPG
H2	YOKE	C.S	S3	SPRING FRONT COVER	SS400
H3	BEARING	S45C	S4	SPRING END COVER	SS400
H4	PISTON ROD	S45C+Cr Coat	S5	SPRING ROD	S45C
H5	GUIDE BAR	S45C+Cr Coat	S6	SPRING GUIDE	C.S
H6	STOPPER BOLT	SUS	S7	ROD NUT	C.S
C1	CYLINDER	STPG	S8	CENTER RING	BRASS
C2	FRONT FLANGE	SS400	S9	BEARING	BRASS
C3	END FLANGE	SS400	S10	LIFTING LUG	SS400
C4	PISTON	SS400	K1	BACK UP RING	PTFE
C5	SEAL BUSH	BRASS	K2	PISTON O-RING	NBR
C6	PISTON ROD NUT	S45C	K3	O-RING(FRONT & END)	NBR
C7	LIFTING LUG	SS400	K4	SEAL BUSH O-RING	NBR
C8	TIE ROD	S45C	K5	PISTON ROD O-RING	NBR
S1	SPRING	SUP9			

TORQUE TABLE

DOUBLE ACTING TORQUE TABLE(4Bar.g ~ 7Bar.g)

※ Unit : Nm

Actuator Model	Rotation angle	Pressure (bar)			
		4.0	5.0	6.0	7.0
EPR06DA-235	Break to	1,476	1,845	2,214	2,583
	Run to	909	1,137	1,364	1,591
	End to	1,615	2,018	2,422	2,826
EPR06DA-250	Break to	1,669	2,087	2,504	2,921
	Run to	1,029	1,287	1,544	1,801
	End to	1,828	2,285	2,742	3,199
EPR06DA-300	Break to	2,405	3,007	-	-
	Run to	1,483	1,853	-	-
	End to	2,632	3,290	-	-
EPR08DA-235	Break to	1,939	2,424	2,909	3,394
	Run to	1,184	1,480	1,775	2,071
	End to	2,123	2,654	3,185	3,715
EPR08DA-250	Break to	2,195	2,743	3,292	3,841
	Run to	1,340	1,674	2,009	2,344
	End to	2,403	3,003	3,604	4,205
EPR08DA-300	Break to	3,160	3,951	4,741	5,531
	Run to	1,929	2,411	2,893	3,376
	End to	3,460	4,325	5,190	6,055
EPR08DA-335	Break to	3,941	4,926	5,911	6,897
	Run to	2,405	3,007	3,608	4,209
	End to	4,314	5,393	6,471	7,550
EPR08DA-385	Break to	5,205	6,506	7,808	-
	Run to	3,177	3,971	4,765	-
	End to	5,698	7,123	8,547	-
EPR10DA-335	Break to	4,636	5,795	6,955	8,114
	Run to	2,830	3,537	4,245	4,952
	End to	5,076	6,345	7,613	8,882
EPR10DA-385	Break to	6,124	7,655	9,185	10,716
	Run to	3,738	4,672	5,606	6,541
	End to	6,704	8,380	10,056	11,732
EPR10DA-435	Break to	7,817	9,772	11,726	-
	Run to	4,771	5,964	7,157	-
	End to	8,558	10,698	12,837	-
EPR13DA-335	Break to	6,154	7,693	9,231	10,770
	Run to	3,813	4,767	5,720	6,673
	End to	6,725	8,406	10,088	11,769
EPR13DA-385	Break to	8,128	10,160	12,193	14,225
	Run to	5,037	6,296	7,555	8,814
	End to	8,883	11,103	13,324	15,544
EPR13DA-435	Break to	10,377	12,971	15,565	18,159
	Run to	6,430	8,037	9,645	11,252
	End to	11,339	14,174	17,009	19,844
EPR13DA-485	Break to	12,899	16,124	19,349	22,574
	Run to	7,993	9,991	11,989	13,987
	End to	14,096	17,620	21,144	24,668
EPR13DA-535	Break to	15,696	19,620	23,544	27,468
	Run to	9,726	12,157	14,589	17,020
	End to	17,152	21,440	25,728	30,016

※ Unit : Nm

Actuator Model	Rotation angle	Pressure (bar)			
		4.0	5.0	6.0	7.0
EPR13DA-585	Break to	18,767	23,459	28,150	-
	Run to	11,629	14,536	17,443	-
	End to	20,508	25,635	30,762	-
EPR13DA-635	Break to	22,112	27,640	-	-
	Run to	13,701	17,127	-	-
	End to	24,164	30,205	-	-
EPR16DA-485	Break to	16,203	20,254	24,305	28,356
	Run to	9,953	12,441	14,930	17,418
	End to	17,513	21,891	26,269	30,647
EPR16DA-535	Break to	19,716	24,646	29,575	34,504
	Run to	12,111	15,139	18,167	21,194
	End to	21,310	26,637	31,964	37,292
EPR16DA-585	Break to	23,517	29,467	35,361	41,254
	Run to	14,481	18,101	21,721	25,341
	End to	25,479	31,849	38,218	44,588
EPR16DA-635	Break to	27,771	34,713	41,656	48,599
	Run to	17,236	21,545	25,854	30,163
	End to	30,333	37,917	45,500	53,083
EPR16DA-685	Break to	33,141	41,468	-	-
	Run to	20,594	25,769	-	-
	End to	36,225	45,327	-	-
EPR20DA-535	Break to	24,625	30,754	37,047	43,507
	Run to	15,287	19,126	22,835	26,892
	End to	27,034	33,754	40,435	47,408
EPR20DA-585	Break to	29,535	37,010	44,358	51,913
	Run to	18,428	23,169	27,817	32,478
	End to	32,598	40,654	48,816	57,125
EPR20DA-635	Break to	34,877	43,523	52,267	61,175
	Run to	21,524	27,075	32,312	37,982
	End to	38,070	47,667	57,220	66,812
EPR20DA-685	Break to	40,512	50,782	60,904	71,103
	Run to	25,137	31,523	37,810	44,108
	End to	44,409	55,521	66,510	77,735
EPR20DA-735	Break to	46,785	58,412	70,173	82,010
	Run to	28,982	36,229	43,412	50,871
	End to	51,146	64,027	76,702	89,610
EPR20DA-785	Break to	53,369	66,759	80,011	93,532
	Run to	33,088	41,316	49,623	58,014
	End to	58,354	73,060	87,512	102,208
EPR20DA-835	Break to	60,312	75,523	90,512	105,852
	Run to	37,456	46,879	56,103	65,610
	End to	66,027	82,523	99,038	115,675
EPR20DA-885	Break to	67,811	84,812	101,853	118,902
	Run to	42,046	52,648	63,139	73,859
	End to	74,162	92,723	111,242	130,013
EPR20DA-935	Break to	75,758	94,721	113,702	132,812
	Run to	47,003	58,865	70,542	82,523
	End to	82,798	103,534	124,310	145,275

TORQUE TABLE

SPRING RETURN TORQUE TABLE(4Bar.g ~ 7Bar.g)

※ Unit : Nm

Actuator Model	Spring size	Rotation angle	Spring torque	Pressure (bar) * Standard - Fail close *			
				4.0	5.0	6.0	7.0
EPR06SR-235	C1	Break to	859	741	1,118	1,510	1,880
		Run to	461	317	566	808	1,029
		End to	658	411	827	1,237	1,627
EPR06SR-250		Break to	859	947	1,370	1,803	2,221
		Run to	461	473	729	984	1,250
		End to	658	683	1,110	1,555	2,014
EPR06SR-300		Break to	859	1,701	2,305	2,913	3,541
		Run to	461	917	1,299	1,669	2,067
		End to	658	1,427	2,094	2,829	3,510
EPR06SR-235	C2	Break to	1,269	-	-	1,133	1,502
		Run to	681	-	-	480	712
		End to	978	-	-	625	1,025
EPR06SR-250		Break to	1,269	-	995	1,426	1,849
		Run to	681	-	405	673	961
		End to	978	-	497	966	1,434
EPR06SR-300		Break to	1,269	1,325	1,935	2,592	3,170
		Run to	681	584	1,018	1,382	1,779
		End to	978	825	1,544	2,151	2,928
EPR06SR-250	C3	Break to	1,458	-	-	1,316	1,736
		Run to	762	-	-	545	838
		End to	1,067	-	-	693	1,192
EPR06SR-300		Break to	1,458	1,219	1,818	2,435	3,063
		Run to	762	499	882	1,282	1,655
		End to	1,067	628	1,259	1,933	2,590
EPR06SR-300	C4	Break to	1,927	-	1,418	2,034	2,648
		Run to	1,004	-	555	879	1,348
		End to	1,432	-	654	1,218	1,977
EPR08SR-250	C1	Break to	1,182	1,306	1,860	2,430	2,981
		Run to	598	580	940	1,285	1,633
		End to	792	781	1,373	1,969	2,625
EPR08SR-300		Break to	1,182	2,298	3,097	3,892	4,671
		Run to	598	1,196	1,706	2,208	2,645
		End to	792	1,803	2,779	3,551	4,433
EPR08SR-335		Break to	1,182	3,087	4,068	5,087	6,138
		Run to	598	1,700	2,289	2,930	3,596
		End to	792	2,769	3,818	4,914	6,074
EPR08SR-385		Break to	1,182	4,346	5,713	7,098	8,467
		Run to	598	2,453	3,322	4,197	5,029
		End to	792	4,102	5,543	7,114	8,553
EPR08SR-250	C2	Break to	1,297	1,212	1,759	2,330	2,891
		Run to	652	485	857	1,209	1,551
		End to	869	592	1,203	1,797	2,398
EPR08SR-300		Break to	1,297	2,188	3,001	3,803	4,583
		Run to	652	1,129	1,615	2,146	2,588
		End to	869	1,669	2,516	3,434	4,329
EPR08SR-335		Break to	1,297	2,992	3,989	4,998	5,998
		Run to	652	1,610	2,258	2,872	3,469
		End to	869	2,506	3,622	4,808	5,807
EPR08SR-385		Break to	1,297	4,269	5,576	6,974	8,361
		Run to	652	2,427	3,191	4,095	4,959
		End to	869	3,911	5,335	6,932	8,425

※ Unit : Nm

Actuator Model	Spring size	Rotation angle	Spring torque	Pressure (bar) * Standard - Fail close *			
				4.0	5.0	6.0	7.0
EPR08SR-250	C3	Break to	1,763	-	1,396	1,962	2,516
		Run to	870	-	528	879	1,255
		End to	1,168	-	597	1,195	1,799
EPR08SR-300		Break to	1,763	1,830	2,632	3,450	4,245
		Run to	870	762	1,329	1,805	2,305
		End to	1,168	1,016	1,930	2,732	3,679
EPR08SR-335		Break to	1,763	2,618	3,637	4,634	5,627
		Run to	870	1,317	1,931	2,561	3,195
		End to	1,168	1,904	2,971	4,185	5,143
EPR08SR-385		Break to	1,763	3,917	5,235	3,553	7,896
		Run to	870	2,101	2,957	3,743	4,575
		End to	1,168	3,249	4,733	6,263	7,661
EPR08SR-300	C4	Break to	2,096	1,570	2,374	3,178	4,004
		Run to	1,058	580	1,058	1,600	2,081
		End to	1,402	637	1,431	2,313	3,095
EPR08SR-335		Break to	2,096	2,365	3,369	4,384	5,379
		Run to	1,058	1,054	1,721	2,321	2,952
		End to	1,402	1,424	2,521	3,562	4,795
EPR08SR-385		Break to	2,096	3,661	4,983	6,302	7,605
		Run to	1,058	1,887	2,695	3,553	4,310
		End to	1,402	2,785	4,285	5,677	7,198
EPR08SR-300	C5	Break to	2,436	-	2,145	2,933	3,739
		Run to	1,218	-	843	1,361	1,887
		End to	1,613	-	1,010	1,868	2,736
EPR08SR-335		Break to	2,436	2,099	3,119	4,180	5,124
		Run to	1,218	945	1,501	2,151	2,856
		End to	1,613	1,096	2,085	3,276	4,380
EPR08SR-385		Break to	2,436	3,435	4,786	6,170	7,456
		Run to	1,218	1,698	2,578	3,392	4,256
		End to	1,613	2,497	3,977	5,459	6,876
EPR08SR-300	C6	Break to	2,795	-	1,845	2,660	3,439
		Run to	1,413	-	617	1,083	1,599
		End to	1,852	-	547	1,409	2,199
EPR08SR-335		Break to	2,795	1,835	2,840	3,835	4,850
		Run to	1,413	613	1,170	1,894	2,500
		End to	1,852	543	1,541	2,691	3,690
EPR08SR-385		Break to	2,795	3,177	4,441	5,784	7,091
		Run to	1,413	1,387	2,269	3,061	3,886
		End to	1,852	1,873	3,322	4,696	6,254
EPR08SR-335	C7	Break to	3,415	-	2,413	3,433	4,411
		Run to	1,707	-	817	1,405	2,117
		End to	2,202	-	735	1,838	2,929
EPR08SR-385		Break to	3,415	2,691	4,025	5,343	6,704
		Run to	1,707	1,002	1,853	2,693	3,488
		End to	2,202	1,109	2,522	3,898	5,251
EPR08SR-335	C8	Break to	3,942	-	-	2,893	3,910
		Run to	2,019	-	-	1,074	1,614
		End to	2,657	-	-	1,189	2,132
EPR08SR-385		Break to	3,942	2,140	3,514	4,812	6,138
		Run to	2,019	677	1,392	2,246	3,113
		End to	2,657	572	1,684	3,101	4,533

TORQUE TABLE

SPRING RETURN TORQUE TABLE(4Bar.g ~ 7Bar.g)

※ Unit : Nm

Actuator Model	Spring size	Rotation angle	Spring torque	Pressure (bar) * Standard - Fail close *			
				4.0	5.0	6.0	7.0
EPR10SR-385	C1	Break to	5,848	-	4,489	6,115	7,660
		Run to	2,636	-	989	2,357	3,328
		End to	2,912	-	980	2,837	4,330
EPR10SR-435		Break to	5,848	4,647	6,698	8,738	10,911
		Run to	2,636	1,041	2,654	4,008	5,211
		End to	2,912	1,057	3,299	5,492	7,739
EPR10SR-385	C2	Break to	6,904	-	-	4,759	6,440
		Run to	3,324	-	-	1,063	2,390
		End to	4,001	-	-	1,130	2,910
EPR10SR-435		Break to	6,904	-	5,434	7,473	9,494
		Run to	3,324	-	1,659	3,095	4,442
		End to	4,001	-	1,816	4,080	6,260
EPR13SR-385	C1	Break to	7,976	-	4,080	6,164	8,395
		Run to	4,096	-	1,200	2,628	3,976
		End to	5,687	-	1,144	3,080	5,295
EPR13SR-435		Break to	7,976	4,292	6,960	9,762	12,518
		Run to	4,096	1,283	3,173	4,930	6,741
		End to	5,687	1,241	4,143	7,035	10,035
EPR13SR-485		Break to	7,976	6,888	10,394	13,783	17,153
		Run to	4,096	3,135	5,310	7,506	9,613
		End to	5,687	4,087	7,767	11,363	15,153
EPR13SR-535		Break to	7,976	9,895	13,972	18,159	22,282
		Run to	4,096	5,006	7,672	10,254	12,737
		End to	5,687	7,151	11,802	16,224	20,706
EPR13SR-585		Break to	7,976	13,148	18,071	23,004	27,881
		Run to	4,096	7,122	10,201	13,188	16,211
		End to	5,687	10,676	16,137	21,463	26,533
EPR13SR-385	C2	Break to	8,849	-	-	5,813	7,888
		Run to	4,502	-	-	2,077	3,502
		End to	6,015	-	-	2,287	4,437
EPR13SR-435		Break to	8,849	-	6,617	9,432	12,150
		Run to	4,502	-	2,701	4,515	6,124
		End to	6,015	-	3,017	5,947	8,827
EPR13SR-485		Break to	8,849	6,546	10,002	13,402	16,814
		Run to	4,502	2,665	4,833	7,041	9,108
		End to	6,015	2,969	6,416	10,295	13,970
EPR13SR-535		Break to	8,849	9,587	13,698	17,821	21,915
		Run to	4,502	4,632	7,239	9,780	12,304
		End to	6,015	6,125	10,594	15,167	19,393
EPR13SR-585		Break to	8,849	12,809	17,733	22,633	27,542
		Run to	4,502	6,583	9,727	12,741	15,749
		End to	6,015	9,668	15,081	20,464	25,507
EPR13SR-635		Break to	8,849	16,337	22,093	27,880	33,630
		Run to	4,502	8,827	12,411	15,953	19,544
		End to	6,015	13,512	19,569	25,848	32,378

※ Unit : Nm

Actuator Model	Spring size	Rotation angle	Spring torque	Pressure (bar) * Standard - Fail close *			
				4.0	5.0	6.0	7.0
EPR13SR-385	C3	Break to	9,832	-	-	4,978	7,058
		Run to	5,002	-	-	1,367	2,726
		End to	6,712	-	-	1,187	3,013
EPR13SR-435		Break to	9,832	-	5,740	8,434	11,269
		Run to	5,002	-	1,663	3,705	5,446
		End to	6,712	-	1,535	4,650	7,231
EPR13SR-485		Break to	9,832	5,670	9,010	12,520	15,833
		Run to	5,002	1,635	4,098	6,225	8,834
		End to	6,712	1,503	5,303	8,832	13,837
EPR13SR-535		Break to	9,832	8,565	12,979	16,961	21,063
		Run to	5,002	3,775	6,382	9,087	11,651
		End to	6,712	4,751	9,076	13,549	18,147
EPR13SR-585		Break to	9,832	11,889	16,873	21,769	26,688
		Run to	5,002	5,856	9,035	12,072	15,074
		End to	6,712	8,153	13,466	18,837	24,263
EPR13SR-635		Break to	9,832	15,438	21,241	27,026	32,799
		Run to	5,002	8,166	11,757	15,277	18,827
		End to	6,712	11,952	18,321	24,603	30,554
EPR13SR-485	C4	Break to	11,892	-	7,554	10,855	14,265
		Run to	6,041	-	2,672	4,945	7,235
		End to	8,009	-	2,912	6,409	10,149
EPR13SR-535		Break to	11,892	7,094	11,239	15,423	19,387
		Run to	6,041	2,271	5,152	7,713	10,452
		End to	8,009	2,408	6,719	11,010	15,748
EPR13SR-585		Break to	11,892	10,252	15,335	20,292	25,023
		Run to	6,041	4,521	7,664	10,874	13,973
		End to	8,009	5,693	10,933	16,214	21,908
EPR13SR-635		Break to	11,892	13,894	19,726	25,532	31,176
		Run to	6,041	6,822	10,542	14,140	17,808
		End to	8,009	9,473	15,630	22,042	28,634
EPR13SR-485	C5	Break to	13,228	-	-	9,804	13,210
		Run to	6,714	-	-	3,988	6,111
		End to	8,981	-	-	4,439	8,034
EPR13SR-535		Break to	13,228	-	10,073	14,333	18,495
		Run to	6,714	-	4,125	6,874	9,410
		End to	8,981	-	4,621	9,068	13,512
EPR13SR-585		Break to	13,228	9,201	14,246	19,197	24,136
		Run to	6,714	3,509	6,825	9,864	13,016
		End to	8,981	3,880	8,996	14,453	19,790
EPR13SR-635		Break to	13,228	12,744	18,672	24,489	30,218
		Run to	6,714	5,857	9,511	13,228	16,873
		End to	8,981	7,657	13,670	20,248	26,422
EPR13SR-535	C6	Break to	15,478	-	-	12,798	17,463
		Run to	7,715	-	-	5,347	5,233
		End to	10,152	-	-	6,079	10,558
EPR13SR-585		Break to	15,478	-	12,714	17,909	23,099
		Run to	7,715	-	5,303	8,639	11,809
		End to	10,152	-	6,019	11,778	16,719
EPR13SR-635		Break to	15,478	11,333	17,290	23,131	29,252
		Run to	7,715	4,267	8,199	11,849	15,673
		End to	10,152	4,628	10,673	17,290	23,444

EPR/L SERIES

TORQUE TABLE

SPRING RETURN TORQUE TABLE(4Bar.g ~ 7Bar.g)

※ Unit : Nm

Actuator Model	Spring size	Rotation angle	Spring torque	Pressure (bar) * Standard - Fail close *			
				4.0	5.0	6.0	7.0
EPR16SR-485	C1	Break to	11,214	7,123	11,635	15,944	20,034
		Run to	5,812	2,534	5,412	8,013	10,841
		End to	8,012	3,127	7,010	11,815	16,330
EPR16SR-535		Break to	11,214	11,089	16,313	21,345	26,487
		Run to	5,812	5,078	8,357	11,552	14,810
		End to	8,012	6,910	12,408	17,930	23,335
EPR16SR-585		Break to	11,214	15,156	21,357	27,208	33,508
		Run to	5,812	7,745	11,634	15,246	19,160
		End to	8,012	11,130	18,004	24,215	31,067
EPR16SR-635		Break to	11,214	19,512	26,710	34,003	-
		Run to	5,812	10,475	15,034	19,105	-
		End to	8,012	15,816	23,635	31,275	-
EPR16SR-685		Break to	11,214	24,224	32,534	-	-
		Run to	5,812	13,440	18,320	-	-
		End to	8,012	21,036	30,038	-	-
EPR16SR-485	C2	Break to	15,153	-	7,196	11,349	15,820
		Run to	8,112	-	2,156	5,048	7,664
		End to	11,810	-	2,152	6,120	10,412
EPR16SR-535		Break to	15,153	-	11,634	17,093	22,203
		Run to	8,112	-	5,198	8,650	11,863
		End to	11,810	-	6,558	12,007	18,061
EPR16SR-585		Break to	15,153	10,517	16,903	23,091	29,280
		Run to	8,112	4,471	8,514	12,560	16,306
		End to	11,810	5,683	12,503	19,093	25,854
EPR16SR-635		Break to	15,153	15,141	22,306	29,692	36,903
		Run to	8,112	7,203	12,072	16,550	21,042
		End to	11,810	10,067	18,317	26,174	33,953
EPR16SR-685		Break to	15,153	19,874	28,313	36,801	-
		Run to	8,112	10,258	15,804	21,042	-
		End to	11,810	15,570	24,970	33,701	-
EPR16SR-485	C3	Break to	16,253	-	-	9,078	13,069
		Run to	8,412	-	-	8,954	5,681
		End to	12,310	-	-	2,651	7,059
EPR16SR-535		Break to	16,253	-	9,142	14,271	19,564
		Run to	8,412	-	2,934	6,439	9,962
		End to	12,310	-	3,075	8,021	13,846
EPR16SR-585		Break to	16,253	8,102	14,201	20,501	26,746
		Run to	8,412	2,304	6,383	10,482	14,345
		End to	12,310	2,438	8,182	15,378	22,072
EPR16SR-635		Break to	16,253	12,498	19,859	27,138	34,442
		Run to	8,412	5,164	10,084	14,559	19,194
		End to	12,310	6,272	14,076	22,401	30,368
EPR16SR-685		Break to	16,253	17,158	25,809	34,294	-
		Run to	8,412	8,345	13,745	19,137	-
		End to	12,310	11,635	21,035	30,146	-
EPR16SR-535	C4	Break to	22,975	-	-	9,897	14,763
		Run to	12,386	-	-	3,042	5,734
		End to	18,182	-	-	3,081	7,085
EPR16SR-585		Break to	22,975	-	9,657	15,712	21,992
		Run to	12,386	-	3,015	6,418	10,626
		End to	18,182	-	3,023	7,913	14,842
EPR16SR-635		Break to	22,975	-	15,097	22,304	29,684
		Run to	12,386	-	5,812	10,858	15,429
		End to	18,182	-	7,021	15,294	23,040
EPR16SR-685		Break to	22,975	12,565	20,885	29,610	38,029
		Run to	12,386	4,023	10,087	15,312	21,033
		End to	18,182	4,087	13,949	22,918	32,078

PNEUMATIC ACTUATOR ORDERING GUIDE

EPR/L SERIES ACTUATOR CODE MODE