

High Quality Actuator

Sy-Pa

No metal to metal touch.

Torque curve \neq valve torque.

Double piston ring-EPDM & teflon.

Paint:surface-hard anodized.

Perfect weather proof.



Sy-Pa

Model :

APS65

Scotch - Yoke Type Actuator



MAX. PRESSURE : 10 bar (143 PSI)

**Pneumatic Actuator
Scotch-yoke Power actuator**

INTRODUCTION

Sy-Pa Cylinder actuator

The Sy-Pa rotary actuators are designed to operate rotating valves ;
Ball valves, V-notch ball valves, Plug valves & Butterfly valves for control as well as on-off service.
Small size, up to APD250 is Scotch-yoke mechanism which produces a torque curve that most closely
match as the torque requirements of rotating valves.
It produces great torque at the beginning & the end position of Ball valves and Butterfly valves.

DOUBLE ACTING TYPE : MODEL APD50 ~ APD250



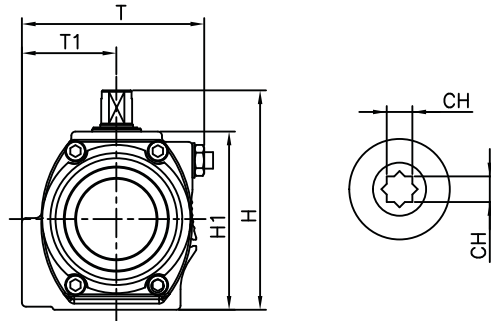
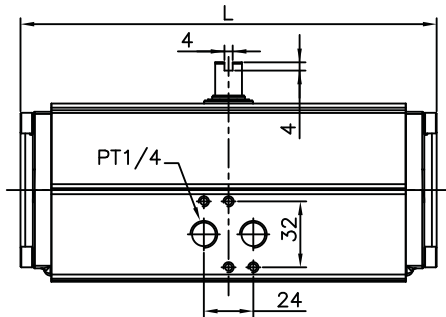
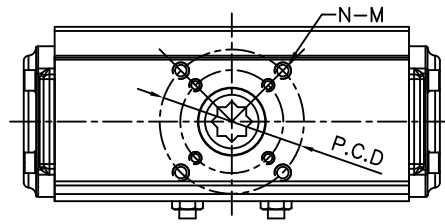
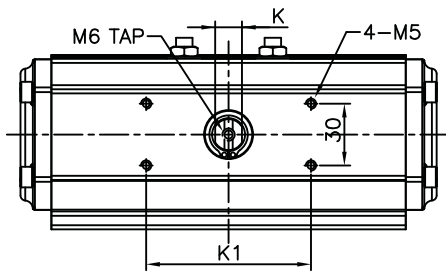
SINGLE ACTING TYPE : MODEL APS50 ~ APS250





DIMENSION TABLE

DOUBLE ACTING TYPE : MODEL APD50 ~ APD250

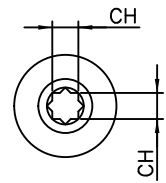
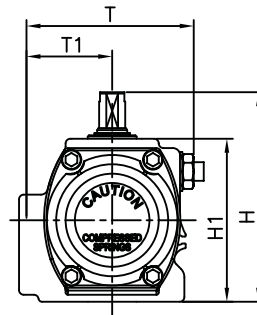
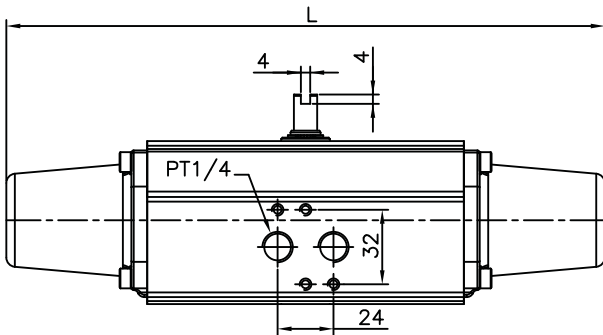
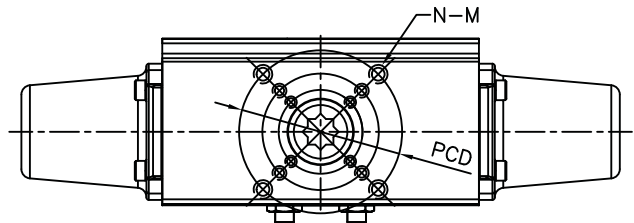
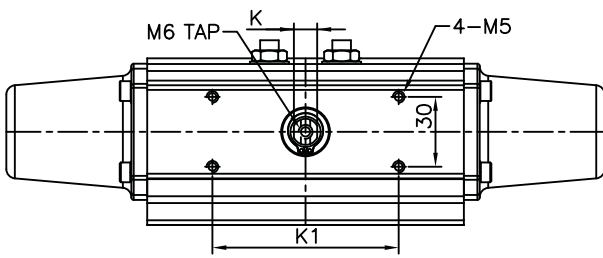


	L	T	T1	H	H1	K	K1	CH	DEPTH	ISO 5211	PCD	N-M	WEIGHT
APD50	162	75	40	90	70	9	80	11X11	13	F03/F05/F07	35/50/70	4-M5/M6/M8	1.5
								14X14	14				
APD65	202	89	46	107	87	13	80	14X14	17	F05/F07	50/70	4-M6/M8	2.5
APD80	262	101	50	126	106	13	80	17X17	19	F07	70	4-M8	4
APD100	311	129	62	148	128	19	80	22X22	26	F07/F10	70/102	4-M8/M10	6.7
APD125	390	151	72	174	154	19	80	22X22	26	F07/F10	70/102	4-M8/M10	11.3
APD140	431	164	77	192	172	24	80	22X22	30	F10/F12	102/125	4-M10/M12	16.5
								27X27					
APD160	506	188	89	216	196	24	80	27X27	30	F10/F12	102/125	4-M10/M12	24
								36X36		F14	140	4-M16	
APD185	578	217	102	254	224	30	130	22X22	30	F07/F10	70/102	4-M16	34.8
APD210	605	231	115	284	254	36	130	36X36	50	F14	165	4-M20	46
								46X46	60	F16			
APD250	755	301	152	335	305	36	130	55X55	60	F07/F10	70/102	4-M20	66



DIMENSION TABLE

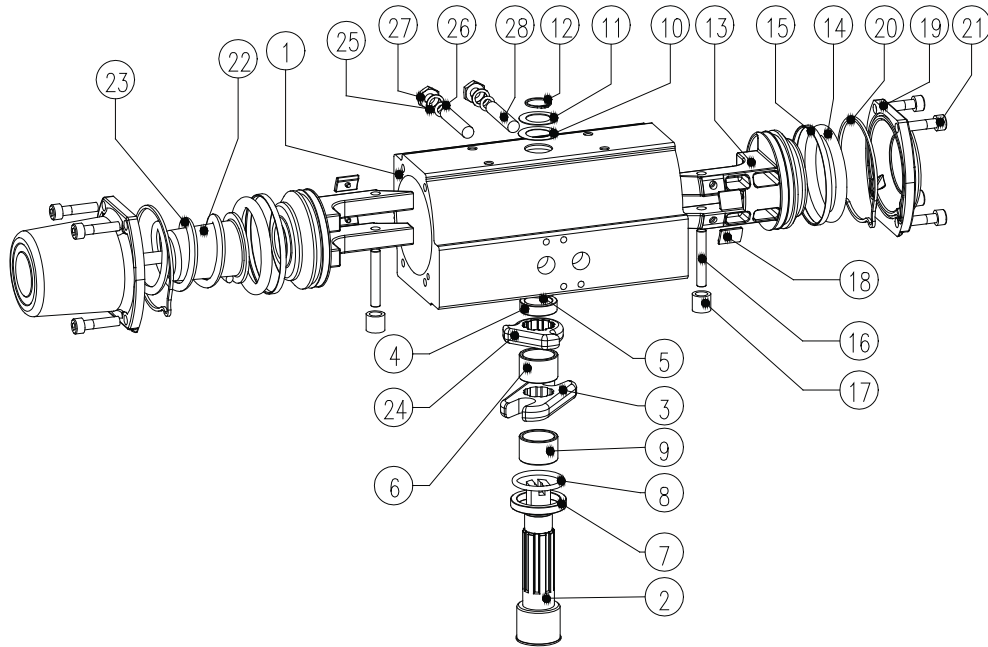
FAIL SAFE TYPE : MODEL APS50 ~ APS250



	L	T	T1	H	H1	K	K1	CH	DEPTH	ISO 5211	PCD	N-M	WEIGHT
APD50	257	75	40	90	70	9	80	11X11	13	F03/F05/F07	35/50/70	4-M5/M6/M8	1.6
								14X14	14				
APD65	314	89	46	107	87	13	80	14X14	17	F05/F07	50/70	4-M6/M8	3
APD80	430	101	50	126	106	13	80	17X17	19	F07	70	4-M8	5.3
APD100	500	129	62	148	128	19	80	22X22	26	F07/F10	70/102	4-M8/M10	9.5
APD125	606	151	72	174	154	19	80	22X22	26	F07/F10	70/102	4-M8/M10	17.6
APD140	682	164	77	192	172	24	80	22X22	30	F10/F12	102/125	4-M10/M12	23.9
								27X27					
APD160	781	188	89	216	196	24	80	27X27	30	F10/F12	102/125	4-M10/M12	36.6
								36X36					
APD185	894	217	102	254	224	30	130	22X22	30	F07/F10	70/102	4-M16	57
APD210	982	231	115	284	254	36	130	36X36	50	F14	165	4-M20	77.2
								46X46	60				
APD250	1108	301	152	335	305	36	130	55X55	60	F07/F10	70/102	4-M20	119.6

ASSEMBLY DRAWING & PARTS LIST

APD , APS SERIES



No.	PART NAME	MATERIALS	REMARKS
1	BODY	EXTRUDED ALUMINIUM ALLOY	HARD ANODIZED
2	SHAFT	STEEL ALLOY	NICKEL PLATED
3	CRANK	STEEL ALLOY	
4	BODY TOP BEARING	ENGINEERING PLASTIC	
5	BODY TOP O-RING	NBR / EPDM / FKM	STANDARD : NBR
6	TOP SHAFT ROLLER	ENGINEERING PLASTIC	
7	BODY BOTTOM BEARING	ENGINEERING PLASTIC	
8	BODY BOTTOM O-RING	NBR / EPDM / FKM	STANDARD : NBR
9	BOTTOM SHAFT ROLLER	ENGINEERING PLASTIC	APD100 ~ APD160 : AI DIECAST
10	BODY BOTTOM WASHER	STEEL ALLOY	SK5 (HRc53/Zn PLATED)
11	BODY TOP WASHER	STEEL ALLOY	SK5 (HRc53/Zn PLATED)
12	BODY SNAP RING	STEEL ALLOY	SK5 (HRc53/Zn PLATED)
13	PISTON	ALUMINUM DIECASTING	
14	PISTON O-RING	NBR / EPDM / FKM	STANDARD : NBR
15	PISTON GUIDE RING	ENGINEERING PLASTIC	
16	PISTON PIN	STEEL ALLOY	
17	PISTON ROLLER	STEEL ALLOY	
18	PISTON PAD	ENGINEERING PLASTIC	
19	END COVER	ALUMINUM DIECASTING	BLACK EPOXY COATED
20	COVER O-RING	NBR / EPDM / FKM	
21	COVER BOLT	STEEL ALLOY	
22	SPRING CAP	ENGINEERING PLASTIC	
23	SPRING	SPRING ALLOY	EPOXY COATED
24	STOPPER	STEEL ALLOY	
25	ADJUST WASHER	STAINLESS STEEL	
26	ADJUST NUT	STAINLESS STEEL	
27	ADJUST O-RING	NBR / EPDM / FKM	STANDARD : NBR
28	ADJUST BOLT	STEEL ALLOY	



ACTUATOR & VALVE TORQUE

TORQUE TABLE

“ Sy-Pa ” Double Acting Actuators Output Torques (N-m)

Model	Angle	Supply Air											
		3Bar		4Bar		5Bar		6Bar		7Bar		8Bar	
		Close	Open	Close	Open	Close	Open	Close	Open	Close	Open	Close	Open
APD50	0°	29.0	21.0	37.0	28.0	38.0	37.0	42.0	41.0	46.5	45.4	50.4	49.2
	45°	15.0	16.0	20.0	21.0	25.0	26.0	30.0	31.0	33.2	34.4	36.0	37.2
	90°	25.0	25.0	33.0	38.0	39.0	40.0	50.0	52.0	55.4	57.6	60.0	62.4
APD65	0°	63.0	59.0	85.0	78.0	105.0	95.0	131.0	116.0	145.2	128.6	157.2	139.2
	45°	33.0	38.0	45.0	49.0	57.0	63.0	68.0	73.0	75.4	80.9	81.6	87.6
	90°	54.0	52.0	72.0	71.0	88.0	93.0	107.0	107.0	118.6	118.6	128.4	128.4
APD80	0°	121.0	105.0	162.0	143.0	209.0	183.0	261.0	210.0	289.3	232.7	313.2	252.0
	45°	65.0	69.0	84.0	92.0	112.0	121.0	130.0	144.0	144.1	159.6	156.0	172.8
	90°	97.0	101.0	130.0	133.0	171.0	156.0	198.0	209.0	219.4	231.6	237.6	250.8
APD100	0°	194.0	186.0	265.0	247.0	332.0	292.0	393.0	368.0	435.5	407.8	471.6	441.6
	45°	110.0	127.0	147.0	165.0	185.0	196.0	237.0	250.0	262.7	277.1	284.4	300.0
	90°	173.0	179.0	231.0	237.0	297.0	301.0	348.0	363.0	385.7	402.3	417.6	435.6
APD125	0°	428.0	432.0	576.0	551.0	725.0	678.0	886.9	793.9	983.0	880.0	1,064.3	952.7
	45°	255.0	273.0	339.0	360.0	425.0	443.0	513.0	531.0	568.5	588.5	615.6	637.2
	90°	385.0	375.0	510.0	491.0	635.0	613.0	750.0	732.0	831.2	811.2	899.9	878.3
APD140	0°	623.0	576.0	829.9	753.9	1,104.9	922.9	1,310.9	1,096.9	1,452.9	1,215.8	1,573.1	1,316.3
	45°	333.0	331.0	450.0	455.0	579.0	582.0	691.0	668.0	765.8	740.3	829.1	801.5
	90°	520.0	523.0	689.0	720.0	862.9	879.9	1,054.9	969.9	1,169.2	1,075.0	1,265.9	1,163.9
APD160	0°	952.9	812.9	1,146.9	1,061.9	1,484.9	1,311.9	1,799.9	1,599.9	1,994.9	1,773.2	2,159.9	1,919.9
	45°	540.0	569.0	730.0	757.9	919.9	948.9	1,109.9	1,132.9	1,230.2	1,255.7	1,331.9	1,359.5
	90°	879.9	978.9	1,169.9	1,319.9	1,447.9	1,634.9	1,749.9	2,026.9	1,939.5	2,246.4	2,099.9	2,432.2
APD185	0°	1,528.8	1,304.2	1,840.0	1,703.6	2,382.2	2,104.7	2,887.5	2,566.7	3,200.4	2,844.8	3,465.1	3,080.0
	45°	830.2	874.8	1,122.3	1,165.3	1,414.4	1,458.9	1,706.5	1,741.8	1,891.3	1,930.5	2,047.7	2,090.2
	90°	1,294.0	1,439.6	1,720.5	1,941.1	2,129.3	2,404.3	2,573.4	2,980.7	2,852.2	3,303.6	3,088.1	3,576.9
APD210	0°	1,979.9	1,909.9	2,799.8	2,599.8	3,299.8	3,199.8	3,919.7	3,819.7	4,344.4	4,233.6	4,703.7	4,583.7
	45°	1,099.9	1,149.9	1,459.9	1,499.9	1,919.9	1,949.9	2,299.8	2,399.8	2,549.0	2,659.8	2,759.8	2,879.8
	90°	1,669.9	1,719.9	2,149.9	2,299.8	2,799.8	2,899.8	3,349.8	3,449.8	3,712.7	3,823.5	4,019.7	4,139.7
APD250	0°	4,100.0	3,000.0	5,500.0	3,950.0	7,100.0	4,850.0	8,480.0	5,750.0	9,398.7	6,372.9	10,176.0	6,900.0
	45°	1,880.0	1,850.0	2,550.0	2,500.0	3,200.0	3,150.0	3,800.0	3,760.0	4,211.7	4,167.3	4,560.0	4,512.0
	90°	3,100.0	3,400.0	4,180.0	4,580.0	5,240.0	5,850.0	6,180.0	7,050.0	6,849.5	7,813.8	7,416.0	8,460.0

“ Sy-Pa ” Spring Return Actuators Output Torques (N-m)

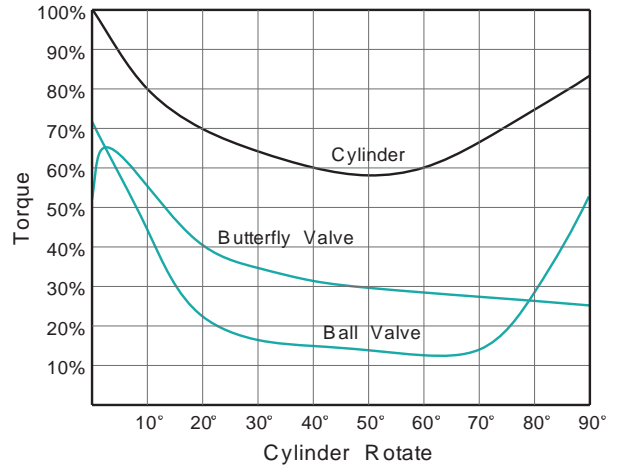
Model	Angle	Spring torque: Weak		Spring torque: Middle		Spring torque: Strong	
		Spring to Close	Air to Open:3Bar	Spring to Close	Air to Open:4.5Bar	Spring to Close	Air to Open:6Bar
APS50	0°	10.0	20.0	14.0	26.0	17.0	34.0
	45°	9.0	9.0	12.0	12.0	15.0	15.0
	90°	20.0	10.0	26.0	14.0	34.0	17.0
APS65	0°	22.0	39.0	35.0	54.0	48.0	70.0
	45°	18.0	18.0	23.0	28.0	37.0	32.0
	90°	39.0	22.0	54.0	35.0	70.0	48.0
APS80	0°	40.0	70.0	60.0	100.0	80.0	130.0
	45°	30.0	30.0	50.0	50.0	70.0	70.0
	90°	70.0	40.0	100.0	60.0	130.0	80.0
APS100	0°	70.0	140.0	100.0	190.0	130.0	240.0
	45°	50.0	50.0	80.0	80.0	110.0	110.0
	90°	140.0	70.0	190.0	100.0	240.0	130.0
APS125	0°	175.0	251.0	243.0	403.0	358.0	520.0
	45°	105.0	125.0	177.0	182.0	215.0	254.0
	90°	215.0	168.0	395.0	210.0	441.0	341.0
APS140	0°	200.0	370.0	371.0	576.0	480.0	726.0
	45°	170.0	170.0	236.0	265.0	330.0	360.0
	90°	370.0	200.0	447.0	366.0	680.0	430.0
APS160	0°	400.0	540.0	550.0	750.0	769.9	1,149.9
	45°	290.0	290.0	420.0	420.0	560.0	560.0
	90°	540.0	400.0	750.0	550.0	1,149.9	769.9
APS185	0°	641.7	866.3	882.3	1,203.1	1,235.2	1,844.8
	45°	445.8	445.8	645.7	645.7	860.9	860.9
	90°	794.1	588.2	1,102.9	808.8	1,691.1	1,132.3
APS210	0°	840.0	910.0	1,250.0	1,510.0	1,750.0	2,160.0
	45°	500.0	430.0	740.0	780.0	1,040.0	1,130.0
	90°	1,000.0	500.0	1,500.0	920.0	2,140.0	1,370.0
APS250	0°	1,540.0	1,900.0	2,120.0	2,760.0	3,060.0	3,660.0
	45°	920.0	950.0	1,320.0	1,370.0	1,830.0	1,900.0
	90°	1,800.0	1,400.0	2,470.0	2,200.0	3,550.0	2,760.0

AIR CONSUMPTION

TORQUE CURVE

※Scotch-yoke Design

The Sy-Pa Actuator design which produces the ideal torque curve that is mostly similar to the required curve of valves operation.



AIR CONSUMPTION

*Spring return Cylinder
< APS Series >

$$V = B \times \left(\frac{P+1}{1} \right) \times N$$

*Double Acting Cylinder
< APD Series >

$$V = (B + A) \times \left(\frac{P+1}{1} \right) \times N$$

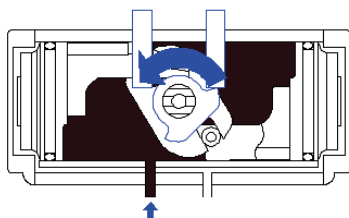
V = Air Consumption
(N Liter)

P = Supply Air Pressure
(Kgf/cm²)

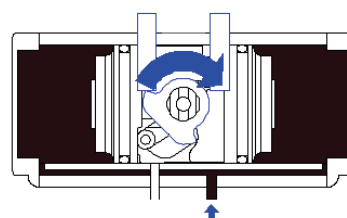
A, B = Cylinder Volume
(Liter)

N = Operation Time

Double acting			Spring return		
MODEL	A	B	MODEL	A	B
AD50	0.2	0.2	AS50	0.2	0.2
AD65	0.3	0.3	AS65	0.3	0.3
AD80	0.6	0.5	AS80	0.6	0.5
AD100	1.2	1.1	AS100	1.2	1.0
AD125	2.5	2.2	AS125	2.5	2.1
AD140	3.9	3.5	AS140	3.9	3.3
AD160	4.8	4.3	AS160	4.8	4.0
AD185	5.8	7.5	AS185	5.8	6.1
AD210	6.2	9.9	AS210	6.2	7.6
AD250	8.0	12.8	AS250	8.0	9.9



Volume "B"

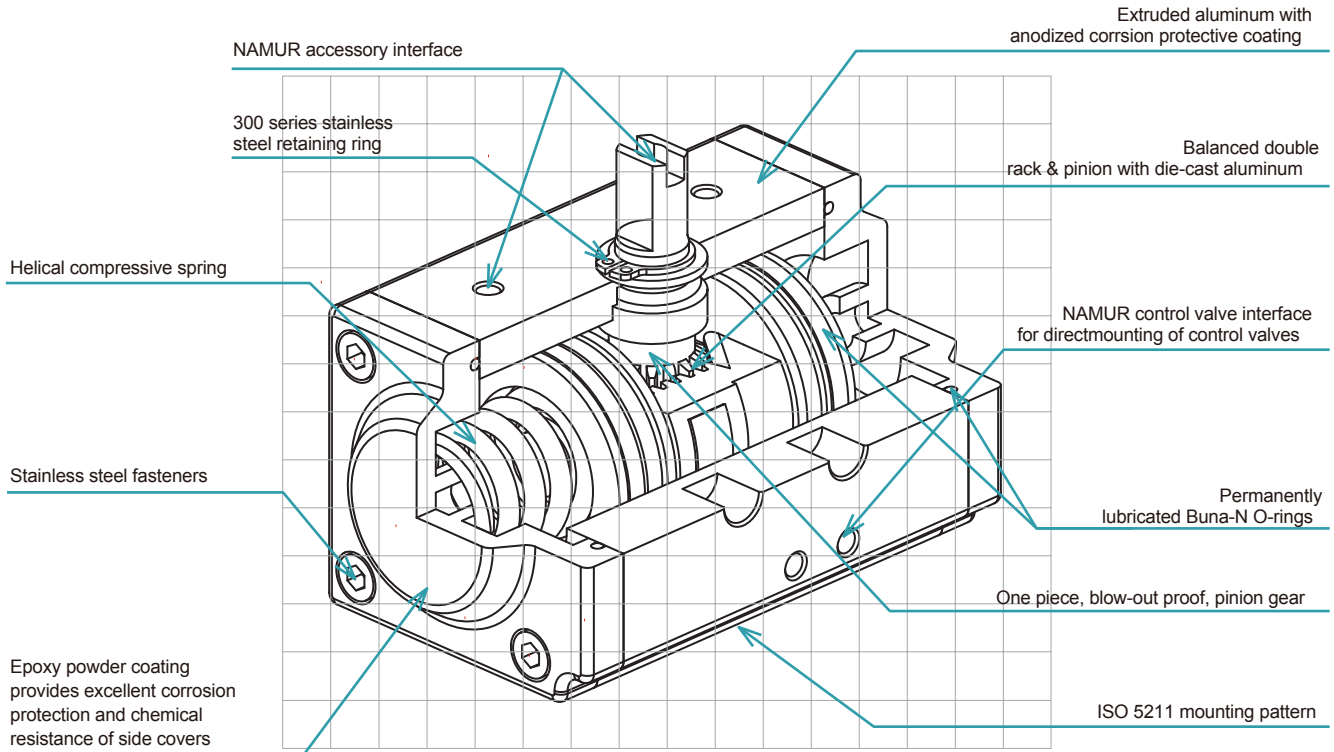


Volume "A"

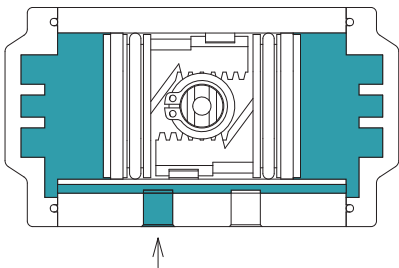


RACK & PINION ACTUATOR

FEATURES



TORQUE TABLE

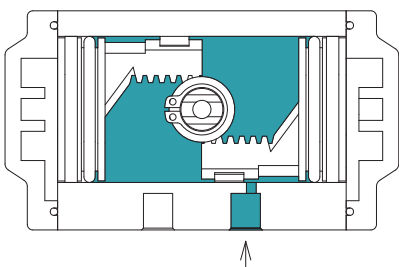


Air Volume :
0.1 Liter

APD40
DOUBLE ACTING (bar, N-m)

PRESSURE	3	4	5	6	7	8
TORQUE	5.0	7.0	9.0	11.0	12.8	14.7

※Please be sure to include appropriate safety factors and all service conditions variables when sizing.



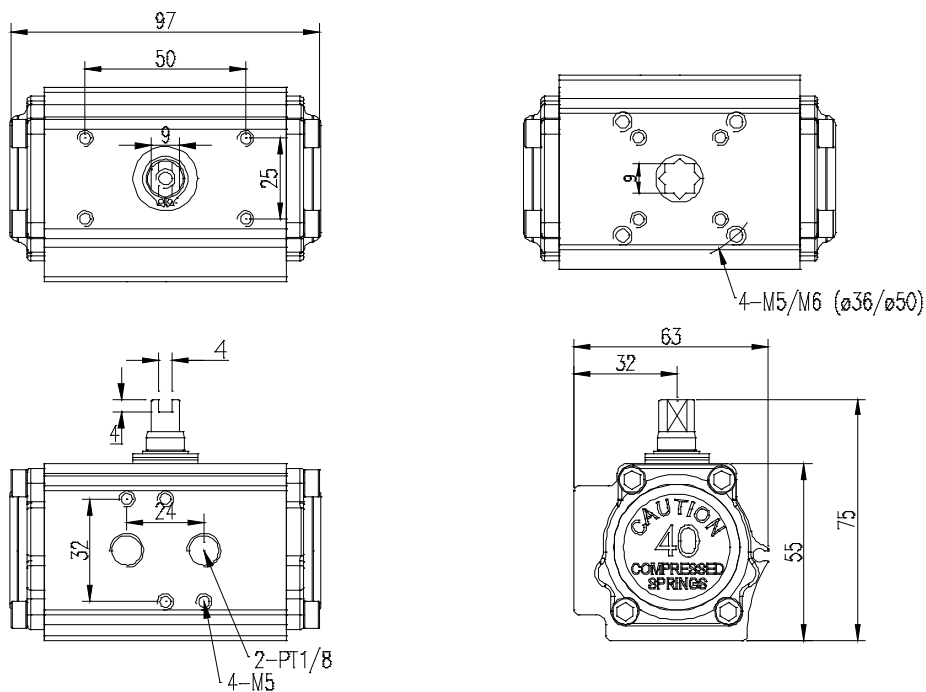
Air Volume :
0.1 Liter

APS40
SINGLE ACTING (bar, N-m)

PRESSURE	4.5		5.0		6.0	
	0	90	0	90	0	90
AIR	3.6	1.4	4.5	2.3	6.4	4.2
SPRING	6.4	4.2	6.4	4.2	6.4	4.2

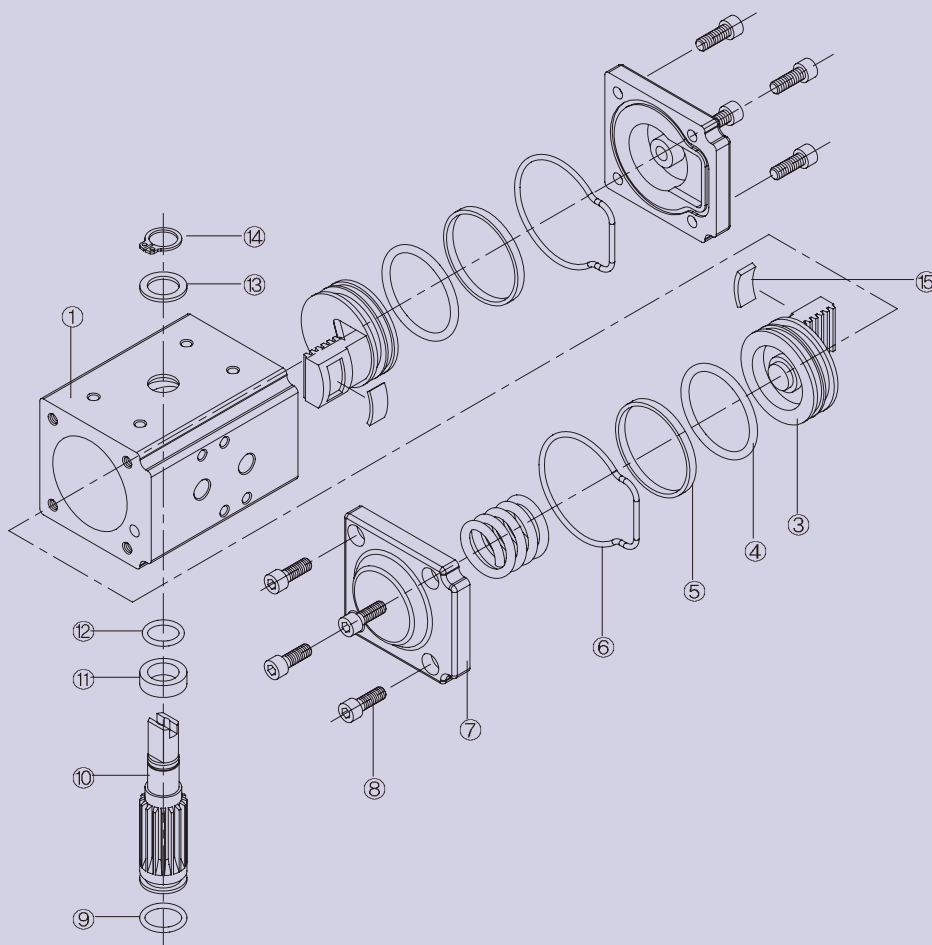
ASSEMBLY DRAWING & DIMENSIONS

DIMENSIONS



ASSEMBLY DRAWING

- ① Housing
- ② Piston
- ③ O-ring #1
- ④ Guide Ring
- ⑤ Seal Ring
- ⑥ Spring
- ⑦ Side Cover
- ⑧ Wrench Bolt
- ⑨ O-ring #2
- ⑩ Shaft
- ⑪ Stopper
- ⑫ O-ring #3
- ⑬ Plastic Washer
- ⑭ Snap Ring
- ⑮ Guide Plater





www.dongjooAP.com

APS65
Type Actuator
bar (143 PSI)
dongjoo

SYNCPA

D^{Ap} DongjooAp

941-1, Yongjeng-ri, Ganghwa-eup, Ganghwa-gun, Incheon, Korea
Tel : +82-32-934-0036 Fax : +82-32-934-0037
<http://www.dongjooAP.com> E-mail : dongjooAP@dongjooAP.com