

Pneumatic actuator (A/R series)

Contents

A series
Part List

A series
Selection guide
Dimension

A series
Torque table

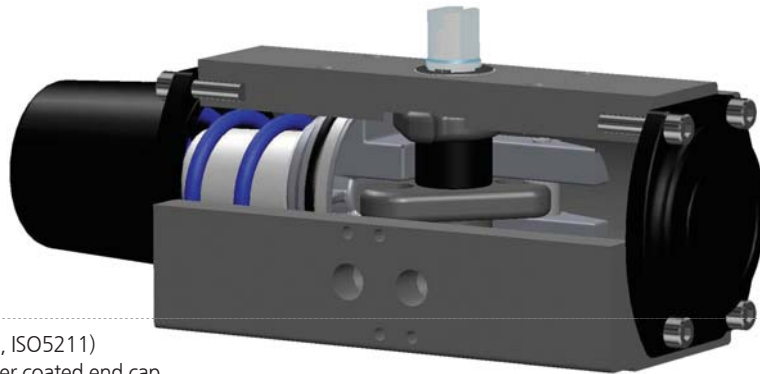
R series
Part list

R series
Selection guide
Dimension

R series
Torque table

Various option

Valve position
indicator

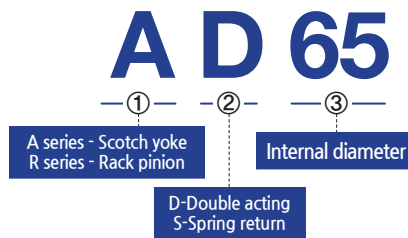


- International standard (DIN3337, NAMUR, ISO5211)
- Hard anodized aluminum body and powder coated end cap

- The working medium is compressed air, the maximum size of the foreign matter or dust from the filter can be supplied for demanding clean air, it is recommended that management does not exceed 40μ. (ISO 8573 Part 1, Class 5)
- It is good to be near or supply air, especially using a dehumidified air 41° F (5° C) so that the moisture contained in the air, if not less cooling in the supply line must be installed in a separate dehumidifier.

- Operating air pressure : 3~8Bar
- Recommended pressure : 4~6Bar
- Design pressure : 10Bar

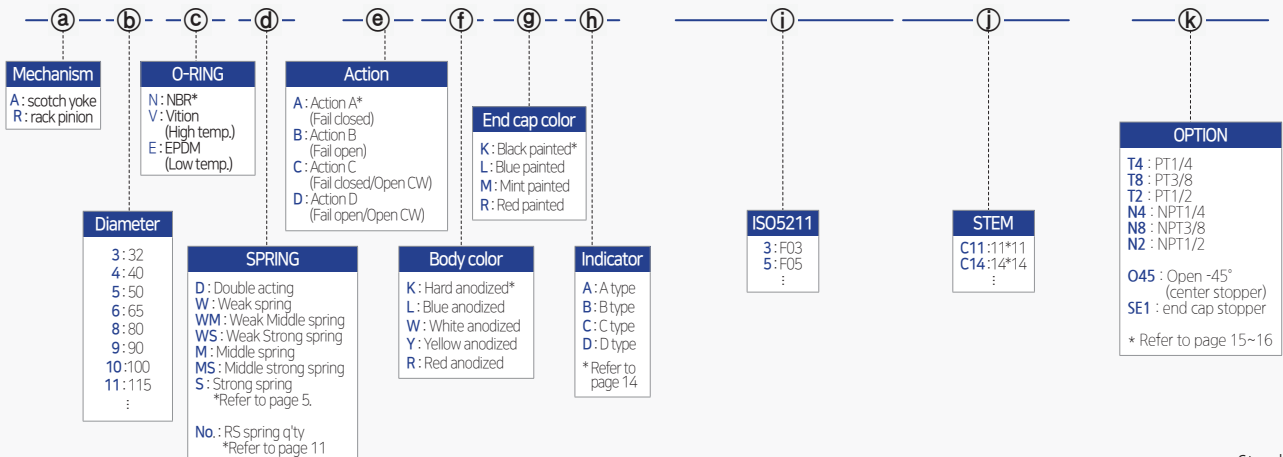
► Model range



AD	50/65/80/100/125/140/160/185/210/250/300
AS	50/65/80/100/125/140/160/185/210/250/300
RD	32/40/50/65/80/90/100/115/125/140/160/185/210
RS	40/50/65/80/90/100/115/125/140/160/185/210

► Model code

A6ND-AKKB-1012C27-OP



*Standard

- Data contained in the Catalog may be subject to change without advance notice for improvement of performance&safety of Product.
 - Contact us for the most recent product and technical information. Visit our website for more details: <http://www.kosaplus.com>

Contents

A series
Part List

A series
Selection guide
Dimension

A series
Torque table

R series
Part list

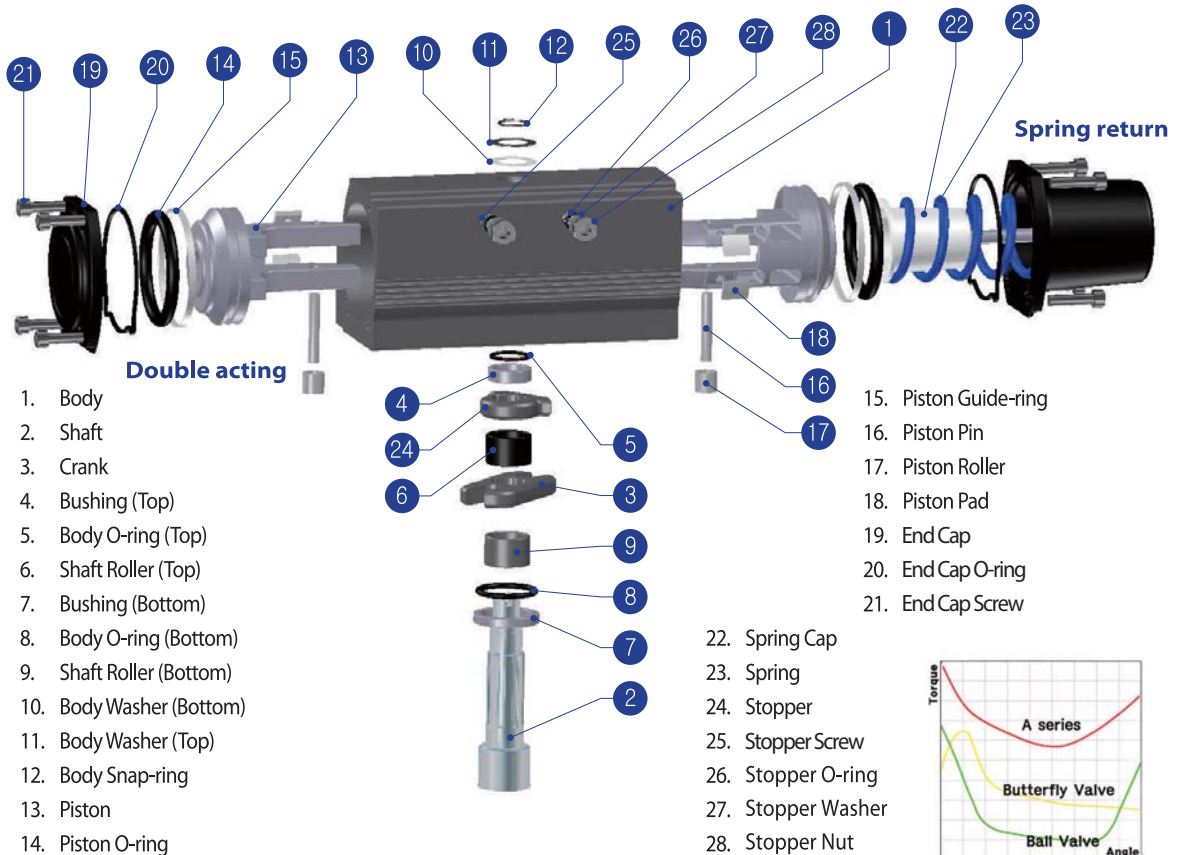
R series
Selection guide
Dimension

R series
Torque table

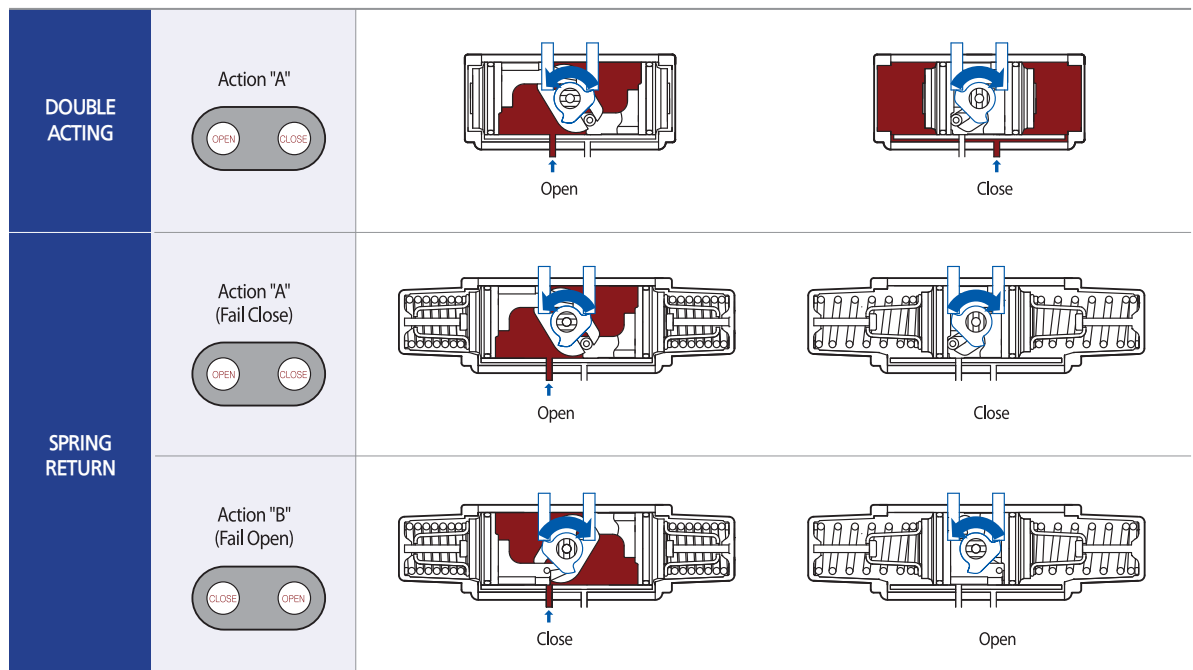
Various option

Valve position
indicator

Part list



Operating mechanism



▶ Selection guide

Contents

A series
Part list

A series
Selection guide
Dimension

A series
Torque table

R series
Part list

R series
Selection guide
Dimension

R series
Torque table

Various option

Valve position
indicator

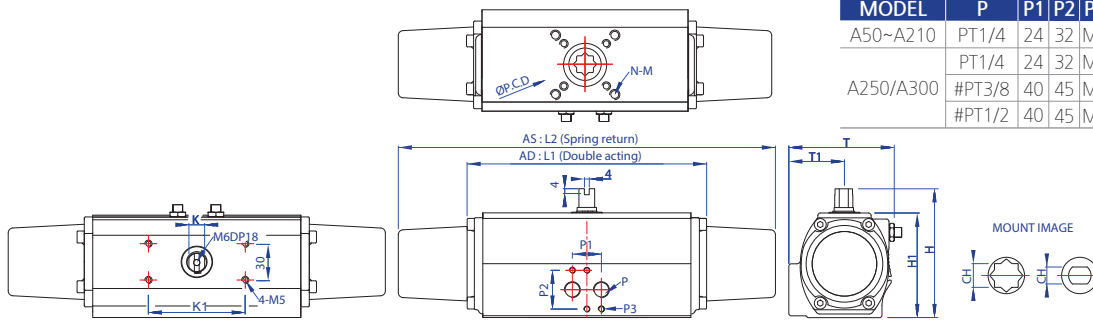
Valve Size		Double acting		Spring return	
		Ball valve	Butterfly valve	Ball valve	Butterfly valve
1/2"	15A	AD50		AS50	
3/4"	20A				
1"	25A				
1-1/4"	32A	AD65		AS65	
1-1/2"	40A				
2"	50A		AD50		AS50
2-1/2"	65A	AD80		AS80	
3"	80A				
4"	100A		AD65		AS100
5"	125A	AD100	AS125	AS140	AS80
6"	150A	AD125	AS140		
8"	200A	AD140	AS160		
10"	250A	AD160	AS185	AS210	AS100
12"	300A	AD185	AS210		
14"	350A	AD210	AS250		
16"	400A	AD250	AD140	AS300	AS160
18"	450A	AD300	AD160		AS185
20" ~ 22"	500A ~ 550A		AD185		AS210
24" ~ 32"	600A ~ 800A		AD210		AS250
34" ~ 40"	850A ~ 1000A		AD250		AS300
			AD300		

•Based on 10K/#150

•The above data is for reference only; the actual assembly may be different depending on valve material, pressure, structure, fluid and operational environment.

•The data is not legally effective and therefore should not be used as legal ground.

▶ Dimension table



MODEL	P	P1	P2	P3
A50~A210	PT1/4	24	32	M5
	PT1/4	24	32	M5
A250/A300	#PT3/8	40	45	M6
	#PT1/2	40	45	M6

※Unit:mm

MODEL	K1	ISO	P.C.D (∅)	N-G (depth)	K	AD L1	AS L2	T	T1	H	H1	CH	Stem depth	AD WG(Kg)	AS WG(Kg)
A50	80	F03/F05/F07	36/50/70	4-M5/M6/M8 (10/12/12.5)	9	162	257	75	40	90	70	11*11	13	1.4	1.6
												#14*14	14		
												#9.7*∅15	14		
A65	80	F05/F07	50/70	4-M6/M8 (14/14)	13	202	314	89	46	107	87	14*14	17	2.3	3.0
												#11*11	13		
												#11.7*∅17	17		
												#9.7*∅15	14		
A80	80	F07	70	4-M8(15)	13	253	421	101	49.5	126	106	17*17	19	3.9	5.3
												#14.7*∅19	20		
A100	80	F07/F10	70/102	4-M8/M10 (16/19)	19	311	500	129	61.5	148	128	22*22	26	6.7	9.5
A125	80	F07/F10	70/102	4-M8/M10 (16/19)	19	390	606	151	71.5	174	154	22*22	26	11.3	17.6
A140	80	F10/F12	102/125	4-M10/M12 (18/26)	24	431	682	164	77	192	172	27*27	30	16.4	23.9
												#22*22			
A160	80	F14	140	4-M16(25)	24	506	781	188	89	216	196	36*36	38	23.7	36.6
		#F10/F12	#102/125	4-M10/M12 (18/26)								#27*27			
A185	80/130	F14	140	4-M16(26)	24	581	894	217	102	244	224	36*36	38	34.8	56.9
A210	130	F16	165	4-M20(30)	36	605	982	231	115	284	254	46*46	60	45.5	77.2
		#F14	140	4-M16(26)								#36*36			
A250	130	F16	165	4-M20(30)	36	755	1108	301	152	335	305	46*46	60	65.8	119.6
A300*	130	F16/F25	165/254	4-M20(30) /8-M16(23)	36	889	1345	372	170	408	378	55*55	60	165.0	275.5

*The material of A300 body&end caps is a ductile cast iron.

#Option

Contents

▶ AD series Torque table

※Unit : Nm

Model	Angle	Supply air (Air to)													
		3Bar		4Bar		4.5Bar		5Bar		6Bar		7Bar		8Bar	
		Close	Open	Close	Open	Close	Open	Close	Open	Close	Open	Close	Open	Close	Open
AD50	0°	25.8	24.0	35.6	32.4	39.4	36.2	44.9	39.9	53.4	47.3	64.0	54.5	71.1	60.4
	45°	13.9	13.6	18.5	17.9	21.1	20.3	23.2	21.9	28.2	27.3	33.6	31.9	37.9	36.0
	90°	22.9	24.9	31.3	33.8	35.5	38.6	39.2	43.6	47.7	50.3	55.4	62.6	61.4	68.4
AD65	0°	60.2	54.6	81.7	70.3	93.6	78.1	105.0	83.8	123.5	105.8	142.9	119.1	164.1	135.8
	45°	31.6	30.1	42.2	40.0	47.4	44.4	52.8	51.1	63.5	59.9	74.2	70.6	85.1	79.8
	90°	52.9	52.0	69.2	70.7	77.4	78.1	84.9	87.0	108.5	102.3	125.2	120.0	142.9	138.5
AD80	0°	120.0	100.5	160.5	135.8	182.6	152.6	203.7	169.3	244.3	206.4	288.4	239.0	333.4	264.6
	45°	65.3	51.2	85.6	71.4	95.3	82.0	105.8	90.0	127.0	110.3	147.3	130.5	165.8	148.2
	90°	107.6	97.0	142.0	135.8	158.8	156.1	174.6	165.8	211.7	201.1	246.1	238.1	275.2	273.4
AD100	0°	201.1	185.2	268.1	241.7	305.2	280.5	345.7	311.3	321.0	381.0	495.7	433.9	558.3	483.3
	45°	116.4	109.4	154.4	148.2	176.4	167.6	196.7	185.2	235.5	224.9	271.7	269.9	305.2	314.9
	90°	187.9	173.8	251.4	234.6	281.4	266.4	310.5	295.5	373.1	362.5	440.1	428.7	493.9	485.1
AD125	0°	493.9	430.4	618.3	589.2	703.8	650.0	778.8	716.2	952.6	834.4	1,118.4	949.0	1,300.1	1,108.7
	45°	234.6	225.8	310.5	304.3	350.2	345.7	388.1	382.8	491.3	456.0	541.5	541.5	613.0	608.6
	90°	382.8	357.2	510.7	479.8	572.4	538.9	631.5	601.5	781.5	718.8	904.1	849.4	1,001.1	965.8
AD140	0°	800.0	649.2	1,030.2	833.5	1,179.2	932.3	1,266.6	1,016.9	1,584.1	1,178.4	1,796.6	1,338.0	1,987.1	1,494.1
	45°	339.6	311.3	448.1	414.5	506.3	467.5	553.9	520.4	669.4	624.5	774.4	727.7	872.3	821.1
	90°	516.9	531.0	680.0	715.3	786.7	796.4	862.6	912.0	1,025.8	1,064.6	1,223.3	1,261.3	1,338.9	1,412.1
AD160	0°	1,094.6	912.0	1,487.1	1,173.9	1,698.7	1,316.8	1,932.5	1,447.4	2,294.1	1,724.3	2,758.9	2,142.4	3,261.6	2,424.6
	45°	486.0	480.7	654.4	637.7	735.6	718.8	821.1	799.1	977.3	994.0	1,149.2	1,138.7	1,285.1	1,281.5
	90°	765.6	1,098.1	1,009.0	1,195.1	1,140.4	1,284.2	1,263.9	1,412.1	1,496.8	1,688.1	1,837.2	1,936.9	2,033.9	2,232.3
AD185	0°	1,566.4	1,268.3	2,082.4	1,620.2	2,313.5	1,794.9	2,404.3	1,964.2	2,942.4	2,310.8	3,532.4	2,672.5	4,029.9	2,988.2
	45°	753.2	733.8	1,009.9	976.4	1,136.0	1,089.3	1,260.4	1,218.0	1,507.3	1,472.9	1,755.2	1,736.7	2,028.6	1,984.5
	90°	1,204.8	1,145.7	1,581.4	1,536.4	1,771.1	1,749.0	2,057.7	1,854.8	2,347.9	2,257.0	2,774.8	2,654.8	3,141.7	3,159.3
AD210	0°	2,090.3	1,781.6	2,831.2	2,266.7	3,219.3	2,540.2	3,625.0	2,804.8	4,462.9	3,272.2	5,300.8	3,748.5	6,209.3	4,233.6
	45°	970.2	1,093.7	1,296.5	1,420.0	1,464.1	1,578.8	1,631.7	1,746.4	1,966.9	2,072.7	2,310.8	2,416.7	2,663.6	2,760.7
	90°	1,508.2	1,816.9	2,019.8	2,425.5	1,993.3	2,716.6	2,504.9	2,998.8	2,998.8	3,625.0	3,501.5	4,268.9	3,977.8	4,868.6
AD250	0°	3,783.8	2,866.5	5,124.4	3,686.8	5,821.2	4,101.3	6,650.3	4,533.5	8,237.9	5,344.9	9,613.8	6,121.1	10,001.9	6,809.0
	45°	1,764.0	1,852.2	2,390.2	2,399.0	2,663.6	2,698.9	2,963.5	3,025.3	3,572.1	3,598.6	4,233.6	4,224.8	4,798.1	4,877.5
	90°	2,919.4	3,342.8	3,827.9	4,639.3	4,295.3	5,230.3	4,771.6	5,856.5	5,715.4	6,782.6	6,588.5	7,179.5	7,470.5	7,320.6
AD300	0°	5,450.8	4,965.7	7,426.4	6,421.0	8,334.9	7,108.9	9,322.7	7,788.1	11,421.9	9,181.6	13,256.5	10,407.6	15,311.5	11,642.4
	45°	3,087.0	3,475.1	4,145.4	4,621.7	4,683.4	5,186.2	5,221.4	5,759.5	6,271.0	6,853.1	7,329.4	7,973.3	8,370.2	9,067.0
	90°	4,939.2	5,680.1	6,500.3	7,611.7	7,294.1	8,643.6	8,070.3	9,569.7	9,596.2	11,836.4	11,122.0	12,744.9	12,595.0	13,124.2

※0°-Valve Closed / 90°-Valve open

▶ AS series Torque table

※Unit : Nm

Model	Spring type	Angle	Supply Air (Air to Open)							Spring to Close
			3Bar	4Bar	4.5Bar	5Bar	6Bar	7Bar	8Bar	
AS50	Weak	0°	15.9	24.4	27.2	31.0	40.8	52.2	56.5	10.1
		45°	7.9	12.5	14.8	17.1	21.8	27.0	31.5	6.7
		90°	10.1	19.3	22.9	27.0	36.6	44.9	54.0	13.0
	Middle*	0°	11.1	19.2	23.5	27.6	36.0	45.5	52.1	13.5
		45°	4.5	9.1	11.9	14.1	18.7	23.6	27.7	9.5
		90°	4.5	14.0	18.5	22.4	32.2	41.8	49.7	19.1
	Strong	0°	11.9	19.3	23.4	30.0	37.0	46.0	54.2	18.2
		45°	1.8	7.2	10.0	12.6	17.9	22.3	26.5	12.4
		90°	-	7.2	10.9	15.7	22.7	31.3	37.5	23.2
AS65	Weak	0°	34.6	52.8	60.2	71.0	88.1	106.1	124.8	23.9
		45°	15.8	28.0	33.6	38.5	49.8	59.6	69.5	15.4
		90°	20.7	39.3	48.8	57.9	76.0	91.0	110.8	27.9
	Middle*	0°	21.6	39.9	48.7	56.1	76.7	92.5	113.6	36.1
		45°	6.9	17.9	23.4	29.0	38.2	49.5	59.6	24.3
		90°	-	25.3	24.5	33.6	52.2	70.7	89.8	49.2
	Strong	0°	12.7	31.7	40.3	51.8	67.9	85.0	105.5	45.6
		45°	-	9.5	14.7	20.6	31.3	42.5	53.9	32.1
		90°	-	-	9.3	18.6	37.3	55.1	65.5	66.1
AS80	Weak	0°	84.7	122.9	142.4	161.1	198.3	234.6	270.9	42.8
		45°	40.0	61.4	72.6	82.9	103.3	123.8	145.2	25.8
		90°	41.0	75.4	95.9	111.7	147.1	186.2	229.0	48.4
	Middle*	0°	43.8	80.1	104.3	122.9	159.2	197.4	234.6	69.8
		45°	9.3	28.9	40.0	54.0	75.4	95.9	118.2	48.4
		90°	-	37.2	56.8	74.5	113.6	151.8	212.3	95.9
	Strong	0°	20.5	59.6	79.1	95.9	139.7	176.9	212.3	95.0
		45°	-	11.2	25.1	37.2	56.8	77.3	99.6	66.1
		90°	-	-	20.5	39.1	74.5	109.9	147.1	130.3
AS100	Weak	0°	115.4	180.6	229.0	255.1	310.0	373.3	425.5	80.1
		45°	46.6	93.1	111.7	128.5	172.2	217.9	265.3	60.5
		90°	64.2	130.3	162.9	195.5	260.7	325.9	389.2	121.0
	Middle*	0°	77.3	144.3	176.9	207.6	271.9	332.4	412.4	112.7
		45°	14.0	60.5	81.9	100.5	141.5	179.7	233.7	85.7
		90°	-	70.8	102.4	135.0	202.0	270.0	353.8	164.8
	Strong	0°	49.3	121.0	150.8	186.2	257.9	317.5	375.2	147.1
		45°	-	40.0	60.5	81.9	120.1	161.1	205.8	112.7
		90°	-	24.2	58.7	91.2	159.2	230.9	293.3	240.2
AS125	W	0°	337.0	467.4	540.0	599.6	729.0	864.0	959.9	84.7
		45°	170.4	254.2	296.1	338.0	423.6	498.1	573.5	57.7
		90°	255.1	382.6	440.4	509.3	635.9	773.7	904.9	116.4
	WM	0°	256.0	392.0	474.8	539.0	670.3	796.9	915.2	182.5
		45°	118.2	195.5	238.3	282.1	365.0	448.7	527.9	119.2
		90°	159.2	283.0	353.8	412.4	549.3	681.5	820.2	223.4
	WS	0°	203.9	342.6	409.6	477.6	630.3	748.5	865.8	235.5
		45°	78.2	160.1	201.1	244.9	323.1	409.6	487.8	150.9
		90°	92.2	223.4	291.4	351.0	485.1	619.1	758.8	278.4
	M	0°	181.5	334.2	403.1	471.1	603.3	735.5	861.2	267.2
		45°	66.1	147.1	189.9	234.6	313.7	402.2	475.7	173.2
		90°	50.3	179.7	243.9	312.8	445.9	580.0	704.8	329.6
	MS	0°	128.5	276.5	351.9	421.7	561.4	684.3	804.4	316.5
		45°	27.0	108.0	146.2	186.2	267.2	346.3	428.3	207.6
		90°	-	119.2	180.6	250.4	381.7	509.3	630.3	393.8
S*	0°	90.3	234.6	303.5	372.4	513.9	650.8	762.5	370.5	
	45°	-	85.7	128.5	169.4	255.1	337.0	417.1	233.7	
	90°	-	60.5	128.5	189.0	320.3	452.5	581.9	444.1	

※0°-Valve Closed / 90°-Valve open

*Standard

Contents

A series
Part List

A series
Selection guide
Dimension

A series
Torque table

R series
Part list

R series
Selection guide
Dimension

R series
Torque table

Various option

Valve position
indicator

Contents

- A series Part List
- A series Selection guide Dimension
- A series Torque table
- R series Part list
- R series Selection guide Dimension
- R series Torque table
- Various option
- Valve position indicator

Model	Spring type	Angle	Supply air (Air to)							Spring to Close
			3Bar	4Bar	4.5Bar	5Bar	6Bar	7Bar	8Bar	
AS140	W	0°	463.6	661.0	756.0	850.0	1,043.7	1,209.4	1,379.7	146.2
		45°	233.7	337.0	392.9	445.9	555.8	661.0	766.2	92.2
		90°	361.2	553.9	660.1	759.7	951.5	1,144.2	1,340.6	176.9
	WM	0°	381.7	577.2	684.3	782.0	954.3	1,131.2	1,238.2	265.3
		45°	172.2	274.6	325.9	377.1	488.8	591.2	702.9	158.3
		90°	237.4	409.6	498.1	591.2	796.0	1,000.8	1,182.4	302.6
	WS	0°	280.2	473.9	589.3	684.3	869.6	1,052.0	1,205.6	329.6
		45°	110.8	223.4	275.6	330.5	434.8	553.9	648.0	206.7
		90°	119.2	322.1	416.2	514.8	719.7	926.3	1,120.0	393.8
	M	0°	260.7	442.2	544.6	623.8	800.7	982.2	1,168.4	400.3
		45°	107.1	214.1	265.3	316.5	423.6	526.0	637.7	228.1
		90°	79.1	274.6	372.4	470.2	670.3	879.8	1,098.6	446.9
	MS	0°	194.6	380.8	483.2	575.4	796.9	972.0	1,145.1	484.1
		45°	37.2	153.6	211.3	269.1	382.6	481.3	583.7	284.9
		90°	-	172.2	271.9	375.2	562.3	762.5	954.3	539.0
	S*	0°	125.7	311.9	405.0	497.2	693.6	861.2	1,042.7	558.6
		45°	-	116.4	162.9	218.8	325.9	432.9	544.6	325.9
		90°	-	79.1	172.2	265.3	456.2	651.7	842.6	623.8
AS160	W	0°	649.8	964.5	1,141.4	1,289.4	1,596.7	1,896.4	2,194.4	343.5
		45°	307.2	475.7	560.5	647.0	812.8	983.1	1,167.5	202.0
		90°	452.5	749.5	900.3	1,066.0	1,338.8	1,642.3	1,967.2	379.8
	WM	0°	601.4	915.2	1,055.8	1,202.9	1,576.2	1,864.8	2,090.1	422.7
		45°	284.0	450.6	534.4	621.0	784.8	952.4	1,120.0	244.9
		90°	391.0	683.4	848.1	1,002.7	1,336.0	1,589.2	1,830.3	463.6
	WS	0°	418.0	703.8	863.0	993.4	1,382.5	1,655.3	1,875.0	559.5
		45°	151.8	326.8	405.9	494.4	672.2	839.8	1,015.7	332.4
		90°	142.4	462.7	618.2	760.6	1,053.9	1,366.7	1,689.8	662.9
	M	0°	528.8	841.6	982.2	1,152.6	1,509.2	1,878.8	2,143.2	472.9
		45°	230.9	404.1	489.7	571.6	745.7	918.0	1,081.8	277.4
		90°	296.1	600.5	756.9	896.6	1,189.8	1,458.9	1,726.1	525.1
	MS	0°	355.6	656.4	824.9	978.5	1,323.9	1,631.1	1,862.9	654.5
		45°	109.9	283.0	366.8	459.0	629.4	805.3	969.2	388.2
		90°	133.1	365.9	490.6	632.1	955.2	1,258.7	1,525.0	767.1
	S*	0°	210.4	509.3	655.4	797.9	1,136.8	1,418.8	1,716.8	842.6
		45°	-	191.8	277.4	367.7	533.5	703.8	864.0	498.1
		90°	-	161.1	323.1	463.6	749.5	1,064.1	1,328.5	952.4
AS185	W	0°	951.5	1,317.4	1,511.0	1,713.0	2,105.9	2,395.5	2,794.9	386.4
		45°	484.1	745.7	872.3	1,002.7	1,289.4	1,549.2	1,818.2	260.7
		90°	656.4	1,064.1	1,273.6	1,458.9	1,820.1	2,220.4	2,676.6	492.5
	WM	0°	727.1	1,108.8	1,371.4	1,539.9	1,891.8	2,282.8	2,630.1	626.6
		45°	333.3	606.1	742.0	864.9	1,118.1	1,409.5	1,686.0	420.8
		90°	369.6	765.3	970.1	1,177.7	1,645.1	1,930.0	2,424.3	769.9
	WS	0°	506.5	895.6	1,113.5	1,337.8	1,718.6	2,081.7	2,518.4	911.4
		45°	171.3	444.1	584.7	713.1	978.5	1,231.7	1,501.7	567.0
		90°	18.6	485.1	703.8	899.3	1,318.3	1,679.5	2,100.3	1,074.4
	M	0°	468.3	886.3	1,130.2	1,313.6	1,689.8	2,098.5	2,370.3	902.1
		45°	177.8	442.2	566.0	693.6	951.5	1,215.9	1,490.5	592.1
		90°	-	468.3	671.3	877.0	1,287.6	1,689.8	2,079.9	1,157.2
	MS	0°	319.3	751.3	935.7	1,123.7	1,510.1	1,911.3	2,303.3	1,087.4
		45°	28.9	300.7	451.5	590.3	833.2	1,101.4	1,376.0	726.2
		90°	-	209.5	432.0	637.7	1,035.3	1,417.9	1,897.4	1,394.6
	S*	0°	138.7	606.1	817.4	1,010.1	1,446.8	1,819.2	2,194.4	1,336.9
		45°	-	156.4	289.5	417.1	674.0	990.6	1,215.9	869.6
		90°	-	-	169.4	382.6	795.7	1,242.0	1,652.5	1,654.4

※0°-Valve Closed / 90°-Valve open

※Standard

Contents

A series
Part List

A series
Selection guide
Dimension

A series
Torque table

R series
Part list

R series
Selection guide
Dimension

R series
Torque table

Various option

Valve position
indicator

Model	Spring type	Angle	Air (to Open)							Spring to Close
			3Bar	4Bar	4.5Bar	5Bar	6Bar	7Bar	8Bar	
AS210	W	0°	1,443.1	1,955.1	2,290.3	2,495.1	3,025.8	3,556.4	4,124.3	335.2
		45°	837.9	1,191.7	1,359.3	1,536.2	1,889.9	2,253.0	2,597.5	214.1
		90°	1,182.4	1,713.0	2,001.7	2,318.2	2,895.4	3,472.6	4,105.7	400.3
	WM	0°	1,080.0	1,601.3	1,880.6	2,150.6	2,699.9	3,193.3	3,724.0	744.8
		45°	558.6	921.7	1,107.9	1,275.5	1,787.5	1,973.7	2,299.6	456.2
		90°	744.8	1,340.6	1,647.9	1,964.4	2,588.2	3,230.6	3,826.4	875.1
	WS	0°	986.9	1,564.1	1,834.1	2,066.8	2,644.0	3,212.0	3,742.6	977.6
		45°	437.6	800.7	977.6	1,154.4	1,489.6	1,852.7	2,206.5	540.0
		90°	465.5	1,005.5	1,377.9	1,666.5	2,271.6	2,942.0	3,519.2	1,042.7
	M	0°	623.8	1,173.1	1,405.8	1,666.5	2,187.9	2,718.5	3,193.3	1,182.4
		45°	288.6	670.3	865.8	1,033.4	1,405.8	1,787.5	2,197.2	698.3
		90°	167.6	791.4	1,098.6	1,387.2	2,048.2	2,662.7	3,314.4	1,331.3
	MS	0°	586.5	1,163.8	1,461.7	1,750.3	2,290.3	2,802.3	3,314.4	1,387.2
		45°	195.5	540.0	726.2	893.8	1,247.5	1,601.3	1,973.7	810.0
		90°	-	558.6	884.5	1,191.7	1,815.5	2,448.5	3,165.4	1,536.2
	S*	0°	297.9	837.9	1,117.2	1,387.2	1,973.7	2,495.1	2,979.2	1,601.3
		45°	-	400.3	586.5	763.4	1,154.4	1,526.8	1,899.2	958.9
		90°	-	270.0	567.9	847.2	1,452.4	2,076.1	2,662.7	1,778.2
AS250	W	0°	2,364.7	3,314.4	3,798.5	4,301.2	5,213.6	6,116.7	6,936.0	763.4
		45°	1,340.6	1,955.1	2,346.1	2,634.7	3,277.1	3,891.6	4,487.4	391.0
		90°	2,392.7	3,593.7	4,170.9	4,785.3	5,455.7	6,079.4	6,872.1	754.1
	WM	0°	1,787.5	2,755.8	3,258.5	3,733.3	4,673.6	5,576.7	6,451.8	1,461.7
		45°	1,024.1	1,629.3	1,936.5	2,253.0	2,876.8	3,509.9	4,133.6	763.4
		90°	1,601.3	2,746.5	3,351.6	3,910.2	5,101.9	6,312.2	7,587.7	1,387.2
	WS	0°	1,508.2	2,513.7	3,007.1	3,454.0	4,431.6	5,371.9	6,274.9	1,768.9
		45°	791.4	1,433.7	1,750.3	2,048.2	2,662.7	3,286.4	3,891.6	940.3
		90°	1,033.4	2,169.2	2,709.2	3,267.8	4,403.6	5,595.3	6,805.6	1,796.8
	M	0°	1,508.2	2,616.1	3,165.4	3,668.1	4,627.1	5,539.5	6,405.3	1,908.6
		45°	716.9	1,368.6	1,675.8	1,973.7	2,588.2	3,230.6	3,817.1	1,042.7
		90°	800.7	1,983.0	2,578.9	3,156.1	4,366.4	5,586.0	6,740.4	2,020.3
	MS	0°	1,145.1	2,132.0	2,625.4	3,100.2	4,068.5	5,008.8	5,828.1	2,364.7
		45°	353.8	986.9	1,303.4	1,592.0	2,215.8	2,848.9	3,463.3	1,396.5
		90°	232.8	1,284.8	1,862.0	2,457.8	3,565.7	4,627.1	5,781.5	2,448.5
	S*	0°	958.9	2,011.0	2,485.8	2,988.5	3,789.2	4,701.6	4,617.8	2,653.4
		45°	270.0	893.8	1,201.0	1,508.2	2,132.0	2,755.8	3,416.8	1,536.2
		90°	46.6	1,033.4	1,601.3	2,253.0	3,295.7	4,506.0	5,567.4	3,035.1
AS300	W	0°	4,394.3	6,126.0	6,908.0	7,755.2	9,216.9	10,576.2	11,963.4	1,368.6
		45°	2,718.5	3,910.2	4,515.4	5,111.2	6,274.9	7,429.4	8,583.8	698.3
		90°	4,319.8	6,330.8	7,354.9	8,397.6	9,915.2	10,762.4	11,311.7	1,322.0
	WM	0°	3,444.7	5,111.2	5,874.6	6,638.0	8,192.8	9,663.8	10,985.8	2,457.8
		45°	2,011.0	3,230.6	3,733.3	4,375.7	5,539.5	6,731.1	7,839.0	1,359.3
		90°	2,709.2	4,664.3	5,697.7	6,721.8	8,825.9	10,436.5	10,855.5	2,644.0
	WS	0°	2,550.9	4,143.0	4,971.5	5,818.8	7,503.9	8,993.5	9,570.7	3,696.1
		45°	1,377.9	2,541.6	3,146.8	3,733.3	4,887.8	6,051.5	7,196.6	1,880.6
		90°	1,489.6	3,547.1	4,580.5	6,014.3	7,801.8	9,570.7	10,408.6	3,333.0
	M	0°	2,448.5	4,236.1	5,083.3	5,902.5	7,448.0	8,928.3	10,092.0	3,956.8
		45°	1,070.7	2,308.9	2,867.5	3,454.0	4,589.8	5,809.4	6,898.7	2,150.6
		90°	1,145.1	3,090.9	4,105.7	5,092.6	7,029.1	8,984.2	10,110.7	3,956.8
	MS	0°	1,964.4	3,565.7	4,338.5	5,213.6	6,814.9	8,379.0	9,701.0	4,729.5
		45°	651.7	1,834.1	2,346.1	3,007.1	4,254.7	5,353.3	6,451.8	2,476.5
		90°	409.6	2,383.4	3,137.5	4,236.1	6,535.6	8,146.3	9,989.6	4,552.6
	S*	0°	1,247.5	3,100.2	4,096.4	4,943.6	6,619.4	8,313.8	9,645.2	5,818.8
		45°	-	1,266.2	1,843.4	2,355.4	3,537.8	4,757.4	5,939.8	3,165.4
		90°	-	958.9	1,899.2	2,839.6	4,925.0	7,038.4	9,086.6	5,744.3

※0°-Valve Closed / 90°-Valve open

*Standard