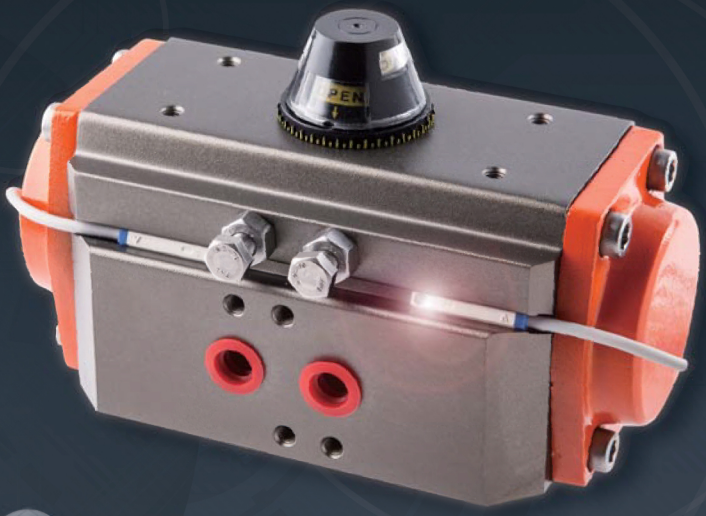
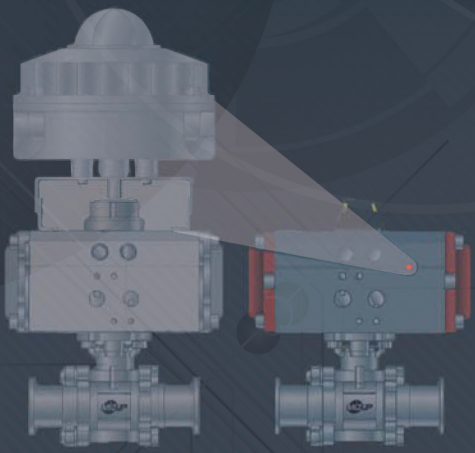
2018





AT SERIES
PNEUMATIC ACTUATOR

Operating Conditions

1. Pressure Ranges
2 bar (29 pis) to 8 bar (113 pis) double action
3 bar (44 pis) to 8 bar (113 pis) spring return

2. Temperature Ranges
Std. (NBR O-rings) : -20°C(-4°F) to + 80°C(+176°F)
Lower (HNBR O-rings) : -40°C(-40°F)to + 80°C(+176°F)
Higher(Viton O-rings) : -15°C(- 5°F) to +150°C(+300°F)

3. Wide Range Available Ranges
The actuator's torques from 9.2(81.5 in.lb) Nm to 3510 Nm(31098.6 in.lb) at 6 bar(87psi)air supply

4. Operating Media
Filtered dry or lubricated air from non-corrosive gas, water or light hydraulic oil The max. particle size must not exceed 30 microns

5. Stroke Adjustment
0° and 90° with standard adjustment ±7°

6. Connections
Bottom drilling complies with ISO5211/DIN3337 to match valve .Interface for solenoid valve, shaft top end and top drilling for assembling accessories are in accordance with VDI/VDE-3845 NAMUR standard

7. Inspection
Every actuator is hydraulically tested, certified and guaranteed for a minimum of 1,000,000 cycles

Pneumatic Actuator – Features

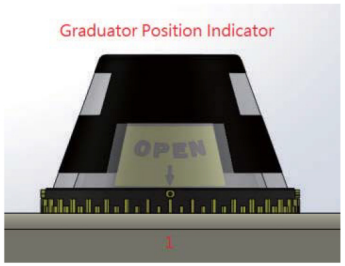
1. Indicator
A graduated position indicator with NAMUR mounting is standard on all pneumatic actuators for

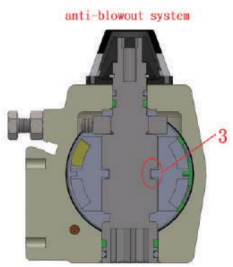
2. Pinion
The hardened alloy steel pinion is precision ground and Nickel plated in order to reduce friction, provide maximum wear resistance

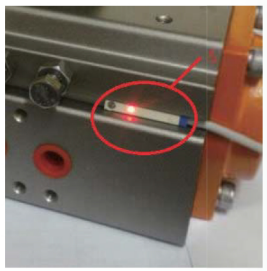
3. Pistons
Piston provided with anti-blowout flat key

4. ReedSwitch
The reed switch can be used to provide position feedback function

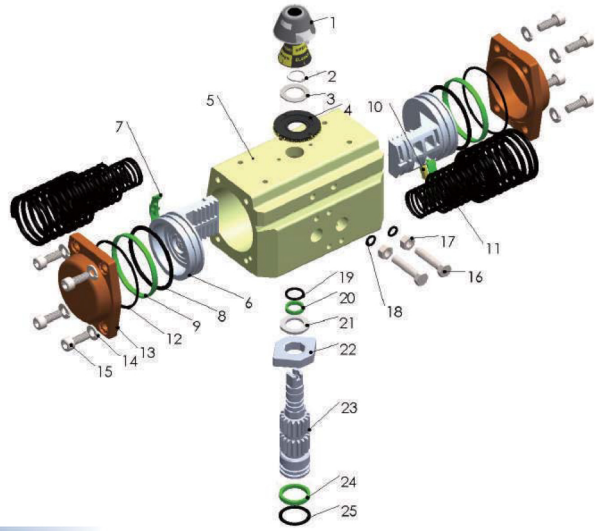
5. HighPerformanceSpring
The high tensile steel springs are coated with Epoxy coating for longservice







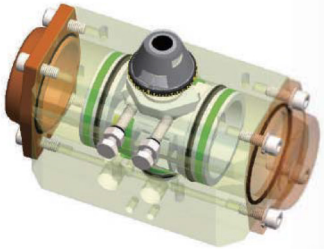
Parts List



Item	Description	Material	Protection	Q'ty	Option
1	Indicator	Plastic		1	
2	Spring Clip	Stainless Steel		1	
3	Thrust Washer	Stainless Steel		1	
4	Thrust Bearing	Nylon 66		1	
5	Actuator Body	Extruded Aluminum Alloy	Hard Anodized(over 30um)	1	Ceramic treatment
6	Piston	Die Cast Aluminum Alloy	Hard Anodized(over 30um)	2	
* 7	Piston Bearing	Nylon 66		2	
* 8	Piston Seal	NBR		2	Viton/HNBR
* 9	Piston Guide	Nylon 66		2	
10	Magnet	NdFeB Alloy		1	
11	Spring	Spring Steel SWP-B		0~6	
12	End Cap Seal	NBR		2	Viton/HNBR
13	End Cap	Die Cast Aluminum Alloy	Epoxy Coated(over 80um)	2	
14	End Cap Washer	Stainless Steel		8	
15	End Cap Bolt	Stainless Steel		8	
16	Stroke Bolt	Stainless Steel		2	
17	Stroke Bolt Nut	Stainless Steel		2	
18	Stroke Bolt O-ring	NBR		2	Viton/HNBR
* 19	O-ring(Top Pinion)	NBR		1	Viton/HNBR
* 20	Bearing(Top Pinion)	Nylon 66		1	
* 21	Thrust Bearing(Top Pinion)	Nylon 66		1	
22	Stroke Cam	Stainless Steel		1	
23	Pinion	Alloy Steel	Nickel Plated	1	
* 24	Bearing(Lower Pinion)	Nylon 66		1	
* 25	O-ring(Lower Pinion)	NBR		1	Viton/HNBR

* Repair Kit

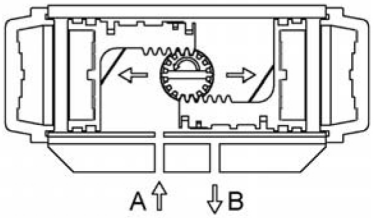
Double Action



Sizing example of ATD double action actuator

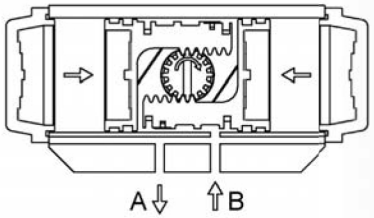
Valve torque 100 Nm plus 20% safety factor = 120 Nm ,
Minimum operation pressure 6 bar (87 psi)
By reading down the 6 bar column the figure below 120 Nm is 134. 9 Nm, The model number shown in the left column is therefore ATD092.

CCW-counter-clockwise



Air to port A forces the pistons outwards, casing the piston to turn counter-clockwise while air is being exhausted from port B.

CW-clockwise



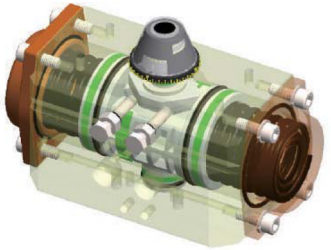
Air to port B forces the pistons inwards, casing the piston to turn clockwise while air is being exhausted from port A.

Torque Table of Double Action Actuator

1 Bar = 14.5 Psi 1 Nm = 8.86 Lb-in

Model	Air Supply Pressure (unit ： bar)					
	3.0	4.0	5.0	6.0	7.0	8.0
	Out Torque (Nm)					
ATD032	4.6	6.1	7.6	9.1	10.6	12.1
ATD045	9.0	11.9	14.9	17.9	20.9	23.9
ATD052	12.0	15.9	19.9	23.9	27.9	31.9
ATD063	21.1	28.1	35.2	42.2	49.2	56.3
ATD075	34.9	46.5	58.1	69.7	81.3	92.9
ATD083	45.8	61.0	76.3	91.5	106.8	122.0
ATD092	67.5	89.9	112.4	134.9	157.4	179.9
ATD105	98.4	131.2	164.0	196.8	229.6	262.4
ATD125	150.0	200.0	250.0	300.0	350.0	400.0
ATD140	256.2	341.6	427.0	512.4	597.8	683.2
ATD160	396.0	528.0	660.0	792.0	924.0	1056.0
ATD190	640.2	853.6	1067.0	1280.4	1493.8	1707.2
ATD210	798.0	1064.0	1330.0	1596.0	1862.0	2128.0
ATD240	1154.3	1539.0	1923.8	2308.5	2693.3	3078.0
ATD270	1755.0	2340.0	2925.0	3510.0	4095.0	4680.0

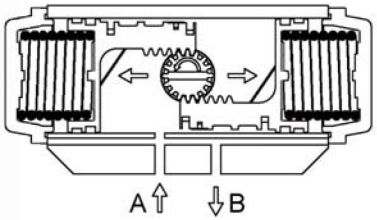
Spring Return



Sizing example of ATK spring return actuator

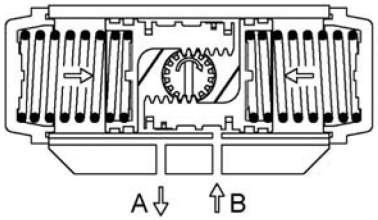
Spring to close when air fails (air to open)
Valve torque 60 Nm plus 20% safety factor = 72 Nm ,
Minimum operation pressure 6 bar (8 7 psi)
The spring return ATK actuator selected is ATK10512.
The ATK10512 has the output torque:
1.air torque0˚ =123.7Nm > 72Nm
2.air torque90˚ =83.9Nm > 72Nm
3.spring torque90˚ =112.9Nm > 72Nm
4.spring torque0˚ =73.19Nm > 72Nm

CCW-counter-clockwise

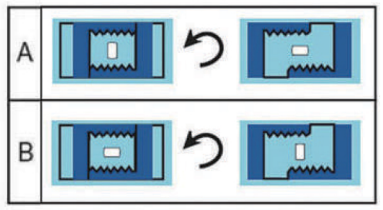
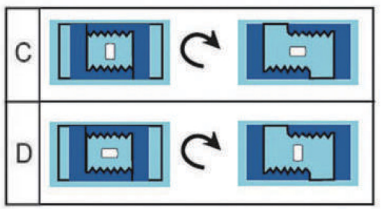
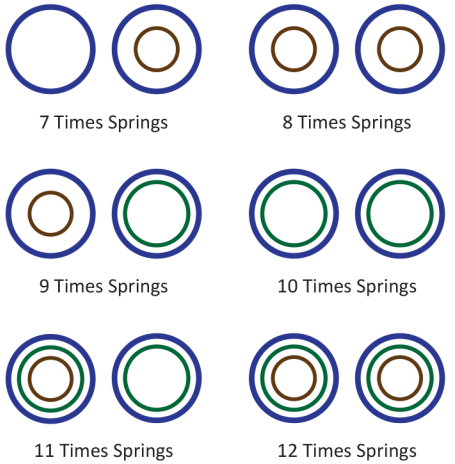


Air to port A forces the pistons outwards, casing the springs compress. The piston turns counter-clockwise while air is being exhausted from port B.

CW-clockwise



Loss of air pressure through port A allows the stored energy in the springs to force the pistons inwards. The piston turns clockwise while air is being exhausted from port A.

Mounting Variations	Spring Arrangement
CCW-counter-clockwise  CW-clockwise 	

Torque Table

Model	Spring	Spring Torque		Air Supply Pressure (unit：bar)									
				3.0		4.0		5.0		6.0		7.0	
				Air Torque Output (Nm)									
		0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°
ATK045	5	3.2	4.3	5.8	4.7	8.8	7.7	11.7	10.6				
	6	3.8	5.1	5.1	3.8	8.1	6.8	11.1	9.8				
	7	4.4	6.0			7.5	6.0	10.5	8.9	13.5	11.9		
	8	5.1	6.8			6.9	5.1	9.8	8.1	12.8	11.1		
	9	5.7	7.7					9.2	7.2	12.2	10.2		
	10	6.4	8.5					8.6	6.4	11.6	9.4	14.5	12.3
ATK052	5	4.1	5.8	7.8	6.1	11.8	10.1	15.8	14.1				
	6	5.0	7.0	7.0	5.0	11.0	8.9	15.0	12.9				
	7	5.8	8.2			10.2	7.8	14.1	11.8	18.1	15.7		
	8	6.6	9.3			9.3	6.6	13.3	10.6	17.3	14.6		
	9	7.4	10.5					12.5	9.4	16.5	13.4		
	10	8.3	11.7					11.7	8.3	15.7	12.2	19.6	16.2
	11	9.1	12.8							14.8	11.1	18.8	15.1
	12	9.9	14.0							14.0	9.9	18.0	13.9
ATK063	5	7.2	10.5	13.9	10.6	21.0	17.7	28.0	24.7				
	6	8.6	12.6	12.5	8.6	19.5	15.6	26.6	22.6				
	7	10.0	14.6			18.1	13.5	25.1	20.5	32.2	27.6		
	8	11.5	16.7			16.7	11.4	23.7	18.4	30.7	25.5		
	9	12.9	18.8					22.3	16.3	29.3	23.4		
	10	14.3	20.9					20.8	14.3	27.9	21.3	34.9	28.3
	11	15.8	23.0							26.4	19.2	33.5	26.2
	12	17.2	25.1							25.0	17.1	32.0	24.1
ATK075	5	12.5	16.7	22.4	18.1	34.0	29.8	45.6	41.4				
	6	15.0	20.1	19.9	14.8	31.5	26.4	43.1	38.0				
	7	17.4	23.4			29.0	23.1	40.6	34.7	52.3	46.3		
	8	19.9	26.7			26.5	19.7	38.2	31.4	49.8	43.0		
	9	22.4	30.1					35.7	28.0	47.3	39.6		
	10	24.9	33.4					33.2	24.7	44.8	36.3	56.4	47.9
	11	27.4	36.8							42.3	32.9	53.9	44.6
	12	29.9	40.1							39.8	29.6	51.4	41.2

Torque Table

Model	Spring	Spring Torque		Air Supply Pressure (unit：bar)									
				3.0		4.0		5.0		6.0		7.0	
				Air Torque Output (Nm)									
		0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°
ATK083	5	16.0	22.3	29.8	23.5	45.0	38.8	63.1	54.0				
	6	19.2	26.7	26.6	19.1	41.8	34.3	59.7	49.6				
	7	22.4	31.2			38.6	29.9	56.3	45.1	69.1	60.4		
	8	25.6	35.6			35.4	25.4	52.9	40.7	65.9	55.9		
	9	28.8	40.1					49.6	36.2	62.7	51.5		
	10	32.0	44.5					46.2	31.8	59.5	47.0	74.8	62.3
	11	35.2	49.0							56.3	42.6	71.6	57.8
	12	38.4	53.4							53.1	38.1	68.4	53.4
ATK092	5	22.7	33.7	44.7	33.7	67.2	56.2	95.3	78.7				
	6	27.3	40.5	40.2	27.0	62.7	49.5	90.3	72.0				
	7	31.8	47.2			58.1	42.7	85.4	65.2	103.1	87.7		
	8	36.3	53.9			53.6	36.0	80.5	58.5	98.6	81.0		
	9	40.9	60.7					75.5	51.7	94.0	74.2		
	10	45.4	67.4					70.6	45.0	89.5	67.5	112.0	90.0
	11	50.0	74.2							84.9	60.7	107.4	83.2
	12	54.5	80.9							80.4	54.0	102.9	76.5
ATK105	5	30.5	47.0	67.9	51.4	100.7	84.2	133.5	117.0				
	6	36.6	56.5	61.9	42.0	94.7	74.8	127.5	107.6				
	7	42.6	65.9			88.6	65.3	121.4	98.1	154.2	130.9		
	8	48.7	75.3			82.5	55.9	115.3	88.7	148.1	121.5		
	9	54.8	84.7					109.2	79.3	142.0	112.1		
	10	60.9	94.1					103.1	69.9	135.9	102.7	168.7	135.5
	11	67.0	103.5							129.8	93.3	162.6	126.1
	12	73.1	112.9							123.7	83.9	156.5	116.7
ATK125	5	47.8	73.3	102.2	76.8	152.2	126.8	202.2	176.8				
	6	57.4	87.9	92.7	62.1	142.7	112.1	192.7	162.1				
	7	66.9	102.6			133.1	97.5	183.1	147.5	233.1	197.5		
	8	76.5	117.2			123.5	82.8	173.5	132.8	223.5	182.8		
	9	86.0	131.9					164.0	118.2	214.0	168.2		
	10	95.6	146.5					154.4	103.5	204.4	153.5	254.4	203.5
	11	105.1	161.2							194.9	138.9	244.9	188.9
	12	114.7	175.8							185.3	124.2	235.3	174.2

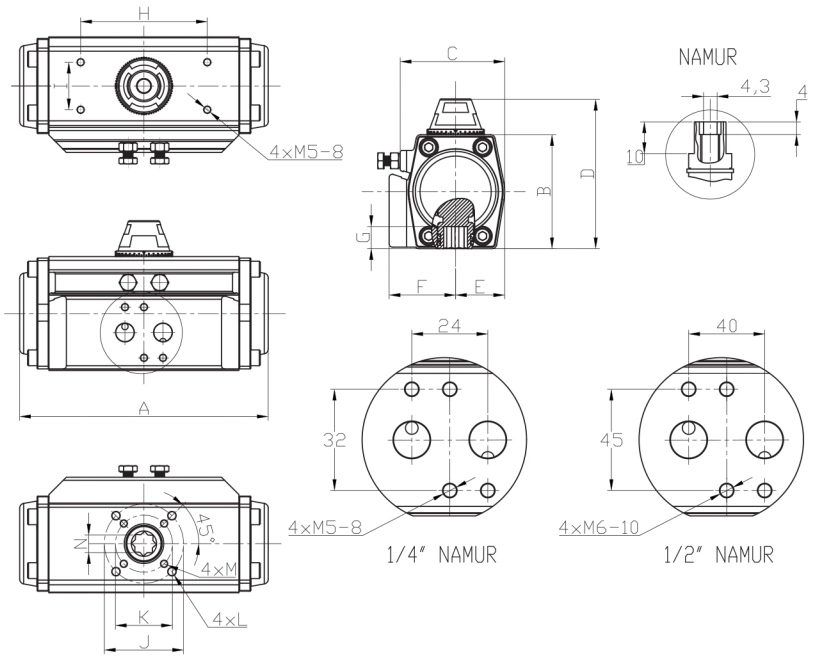
Torque Table

Model	Spring	Spring Torque		Air Supply Pressure (unit：bar)									
				3.0		4.0		5.0		6.0		7.0	
				Air Torque Output (Nm)									
		0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°
ATK140	5	79.6	119.9	176.6	136.3	262.0	221.7	347.4	307.1				
	6	95.5	143.9	160.7	112.3	246.1	197.7	331.5	283.1				
	7	111.4	167.9			230.2	173.7	315.6	259.1	401.0	344.5		
	8	127.3	191.9			214.3	149.7	299.7	235.1	385.1	320.5		
	9	143.3	215.9					283.8	211.2	369.2	296.6		
	10	164.2	239.8					262.8	187.2	353.2	272.6	438.6	358.0
	11	175.1	263.8							337.3	248.6	422.7	334.0
	12	191.0	287.8							321.4	224.6	406.8	310.0
ATK160	5	123.7	195.2	272.3	200.8	404.3	332.8	536.3	464.8				
	6	148.4	234.3	247.6	161.8	379.6	293.8	511.6	425.8				
	7	173.1	273.3			354.9	254.7	486.9	386.7	618.9	518.7		
	8	197.9	312.3			330.1	215.7	462.1	347.7	594.1	479.7		
	9	222.6	351.4					437.4	308.6	569.4	440.6		
	10	247.3	390.4					412.7	269.6	544.7	401.6	676.7	533.6
	11	272.1	429.5							519.9	362.5	651.9	494.5
	12	296.8	468.5							495.2	323.5	627.2	455.5
ATK190	5	189.6	320.0	450.6	320.2	664.0	533.6	877.4	747.0				
	6	227.5	384.0	412.7	256.2	626.1	469.6	839.5	683.0				
	7	265.4	448.0			588.2	405.6	801.6	619.0	1015.0	832.4		
	8	303.3	512.0			550.3	341.6	763.7	555.0	977.1	768.4		
	9	341.3	576.0					725.8	491.0	939.2	704.4		
	10	379.2	640.0					687.8	427.0	901.2	640.4	1114.6	853.8
	11	417.1	704.0							863.3	576.4	1076.7	789.8
	12	455.0	768.0							825.4	512.4	1038.8	725.8
ATK210	5	260.4	403.3	537.6	394.7	803.6	660.7	1069.6	926.7				
	6	312.5	484.0	485.5	314.0	751.5	580.0	1017.5	846.0				
	7	364.6	564.7			699.4	499.3	965.4	765.3	1231.4	1031.3		
	8	416.7	645.3			647.3	418.7	913.3	684.7	1179.3	950.7		
	9	468.8	726.0					861.3	604.0	1127.3	870.0		
	10	520.8	806.7					809.2	523.3	1075.2	789.3	1341.2	1055.3
	11	572.9	887.3							1023.1	708.7	1289.1	974.7
	12	625.0	968.0							971.0	628.0	1237.0	894.0

Torque Table

Model	Spring	Spring Torque		Air Supply Pressure (unit：bar)									
				3.0		4.0		5.0		6.0		7.0	
				Air Torque Output (Nm)									
		0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°	0 °	90°
ATK240	5	389.2	570.8	765.1	583.4	1149.8	968.2	1534.6	1352.9				
	6	467.0	685.0	687.3	469.3	1072.0	854.0	1456.8	1238.8				
	7	544.8	799.2			994.2	739.8	1378.9	1124.6	1763.7	1509.3		
	8	622.7	913.3			916.3	625.7	1301.1	1010.4	1685.8	1395.2		
	9	700.5	1027.5					1223.3	896.3	1608.0	1281.0		
	10	778.3	1141.7					1145.4	782.1	1530.2	1166.8	1914.9	1551.6
	11	856.2	1255.8							1452.3	1052.7	1837.1	1437.4
	12	934.0	1370.0							1374.5	938.5	1759.3	1323.3
ATK270	5	530.0	929.2	1225.0	825.8	1810.0	1410.8	2395.0	1995.8				
	6	636.0	1115.0	1119.0	640.0	1704.0	1225.0	2289.0	1810.0				
	7	742.0	1300.8			1598.0	1039.2	2183.0	1624.2	2768.0	2209.2		
	8	848.0	1486.7			1492.0	853.3	2077.0	1438.3	2662.0	2023.3		
	9	954.0	1672.5					1971.0	1252.5	2556.0	1837.5		
	10	1060.0	1858.3					1865.0	1066.7	2450.0	1651.7	3035.0	2236.7
	11	1166.0	2044.2							2344.0	1465.8	2929.0	2050.8
	12	1272.0	2230.0							2238.0	1280.0	2823.0	1865.0

Dimension Table



Units : mm

Model	A	B	C	D	E	F	G	H	I	N	J	K	L	M	Air Connection
ATD032	110	45.5	48.5	68.6	22.8	25.8	11	50	25	9	F03		M5×7.5		G1/8"
ATD045	119	63	56	86	26.5	34	14	50	25	9	F04		M5×7.5		G1/4"
ATD052	157	72	66	95	31	42	14	80	30	11	F05	F03	M6×10	M5×7.5	G1/4"
ATD063	169	89	75.4	112	36.5	45.5	16	80	30	14	F07	F05	M8×13	M6×10	G1/4"
ATD075	192	100	81.5	123	42.5	51	16	80	30	14	F07	F05	M8×13	M6×10	G1/4"
ATD083	198	109	93	132	47	54	21	80	30	17	F07	F05	M8×13	M6×10	G1/4"
ATD092	233	117	99	139	51	58	21	80	30	17	F07	F05	M8×13	M6×10	G1/4"
ATD105	270.5	134	104	154	57.5	64	26	80	30	22	F10	F07	M10×16	M8×13	G1/4"
ATD125	304	157	120.5	187	67.5	74.5	26	80	30	22	F10	F07	M10×16	M8×13	G1/4"
ATD140	394	174	126	204	75	77	35	80	30	27	F12	F10	M12×20	M10×16	G1/4"
ATD160	459	199	142	229	87	87	35	80	30	27	F12	F10	M12×20	M10×16	G1/4"
ATD190	528	232	172	264	103	103	40	80	30	36	F14	F12	M16×25		G1/4"
ATD210	538	257	194	287	113	113	40	80	30	36	F14	F12	M16×25		G1/4"
ATD240	660	291	245	321	130	130	50	80	30	46	F16		M20×26		G3/8"
ATD270	740	330	273	360	147	147	50	80	30	46	F16		M20×26		G1/2"

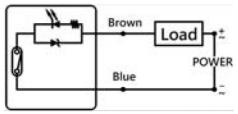
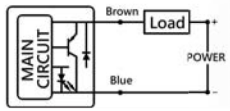
How to Order AT Series Actuator

Type	Model	Spring	Active	Seal
ATD	032	00	1(ATO)	0(NBR)
(Double Action Actuator)	045	(Double Action Actuator)	2(ATC)	1(Viton)
	052	06		2(HNBR)
ATK	063	07		
(Spring Return Actuator)	075	08		
	083	09		
	092	10		
	105	11		
	125	12		
	140			
	160			
	190			
	210			
	240			
	270			

Adapter

Item	Description	Specification
A-1	Star Reduction Adapter for Drive Shaft 	11mm(Star Outside)× 9mm(Square Inside)×12mm(height)
A-2		14mm(Star Outside)× 9mm(Square Inside)×16mm(height)
A-3		14mm(Star Outside)×11mm(Square Inside)×16mm(height)
A-4		17mm(Star Outside)×11mm(Square Inside)×19mm(height)
A-5		17mm(Star Outside)×14mm(Square Inside)×19mm(height)
A-6		19mm(Star Outside)×11mm(Square Inside)×21mm(height)
A-7		19mm(Star Outside)×14mm(Square Inside)×21mm(height)
A-8		19mm(Star Outside)×17mm(Square Inside)×21mm(height)
A-9		22mm(Star Outside)×14mm(Square Inside)×24mm(height)
A-10		22mm(Star Outside)×17mm(Square Inside)×24mm(height)
A-11		22mm(Star Outside)×19mm(Square Inside)×24mm(height)
A-12		27mm(Star Outside)×17mm(Square Inside)×29mm(height)
A-13		27mm(Star Outside)×19mm(Square Inside)×29mm(height)
A-14		27mm(Star Outside)×22mm(Square Inside)×29mm(height)
A-15		36mm(Star Outside)×19mm(Square Inside)×38mm(height)
A-16		36mm(Star Outside)×22mm(Square Inside)×38mm(height)
A-17		36mm(Star Outside)×27mm(Square Inside)×38mm(height)

Reed Switch

Type	AL-06R	AL-06D
Switching Logic	SPST Normally Open	Normally Open
Sensor Type	Reed Switch	2 Wire Solid State
Operating Voltage	5~120 VDC/AC	10~28 VDC
Switching Current	100mA Max.	50mA Max.
Switching Rating	10W(VA) Max.	1.4W Max.
Current Consumption	-	40μmA Max.@24V
Voltage Drop	2.5V Max.@100 mA DC	0.65V Max.@50 mA DC
Leakage Current	-	20 μ mA Max.@28V
Indicator	Red LED	Red LED
Cable	2.9 Ø 2C Grey Oil Resistant PVC	2.9 Ø 2C Black Oil Resistant PVC
Sensitivity	45~55 Gauss	45~800 Gauss
Switching Frequency	200Hz	1000Hz
Temperature Range	-10˚C ~ 70 ˚C	
Shock	30G	50G
Vibration	9G	
Enclosure Classification	IEC529 IP67 (NEMA6)	
Protection Circuit	-	Surge Suppression
Connect Diagram		

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