



# AIR TORQUE

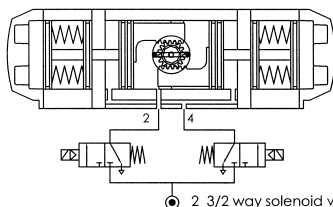
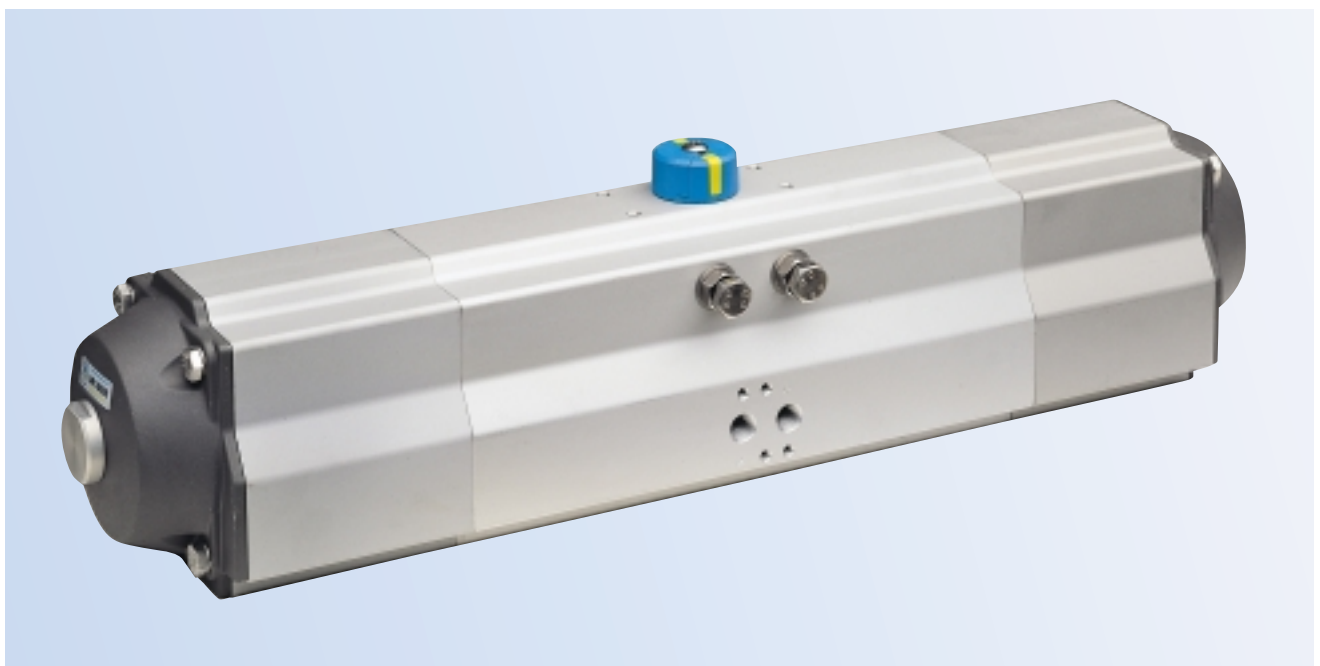
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## 180° SPRING RETURN ACTUATOR 4thG WITH 90° FAIL SAFETY POSITION

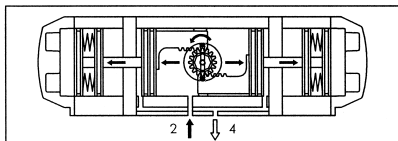
The 180° spring return actuator 4<sup>th</sup> Generation with 90° fail safety position is used for 0°-90°-180° operations where in case of air failure the actuator has to return to the 90° position. At both ends of the actuator a spring set is mounted and the compression on both sides of the springs is caused by the rotation from the 90° position. The fail-safe operation is achieved by the extension of the compressed springs that bring the actuator from 0° or 180° position to 90° position.

The external travel stop is available as a standard in fully open position (180°) and in fully close position (0°), and it is easily and precisely adjustable of +/- 4° in both directions.



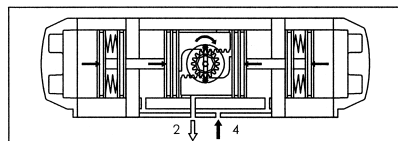
2 3/2 way solenoid valves

In order to control the operation of AIR TORQUE 180° with 90° Fail Safety Position a system of solenoid valves controlling a sequence of air supplies to the actuator is required as described besides: The actuator may be controlled by two 3/2 way solenoid valve or by one 5/3 way solenoid valve.



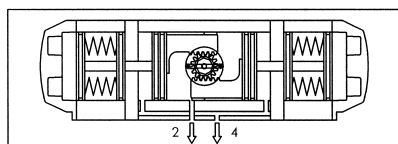
### From 90° to 180°

When compressed air is supplied at the Port 2, air forces the pistons apart and compresses the springs from their inside ends to the end side. A counterclockwise rotation is obtained.



### From 90° to 0°

When compressed air is supplied at the Port 4, air forces the pistons together and compresses the springs from their outside ends to the center. A clockwise rotation is obtained.



### Air fail operations

**From 180° position:** on loss of air pressure (air or electric failure) at Port 2 allows the springs to force the pistons together (until 90° position) with the exhaust air exiting at Port 2, a clockwise rotation is achieved.

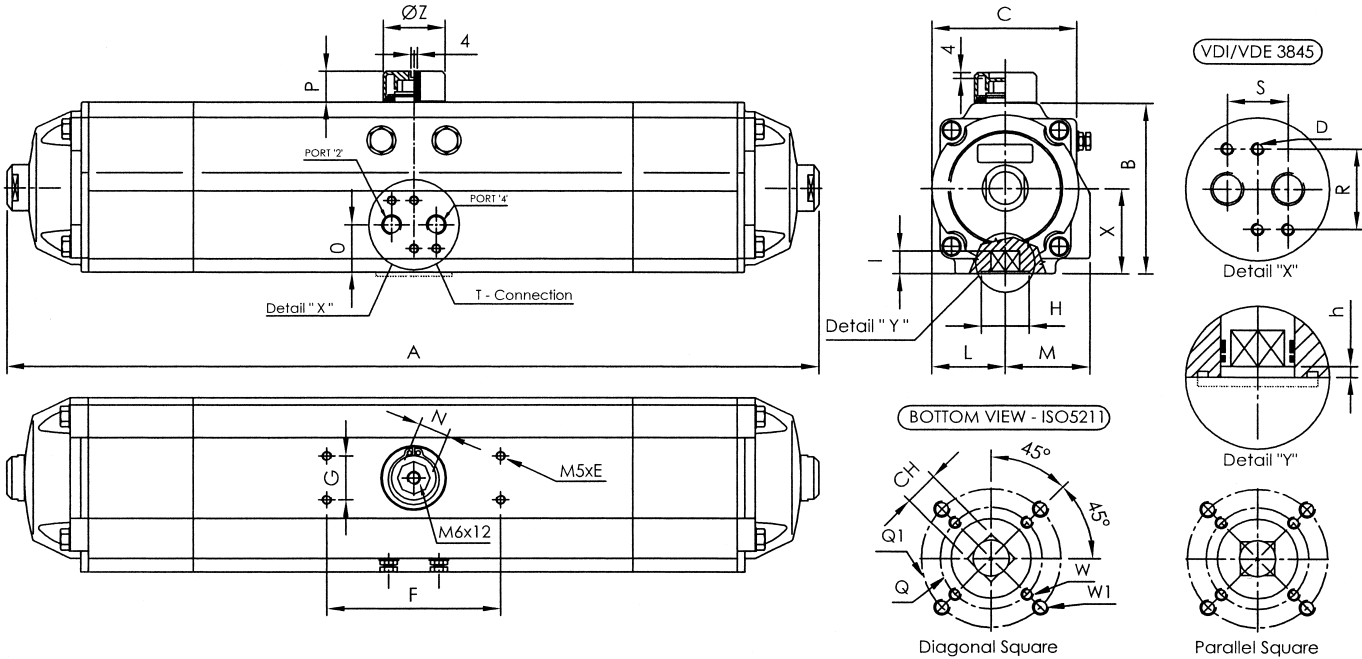
**From 0° position:** on loss of air pressure (air or electric failure) at Port 4 allows the springs to force the pistons toward the actuator (until 90° position) with the exhaust air exiting at Port 4, a counterclockwise rotation is achieved.

When ordering 180° Spring Return Actuator with 90° Fail Safety Position, add "FM" (Ex. FM AT 308 S11 A F07 17) to the standard 180° rotation Spring Return actuator code.



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### DIMENSIONS IN mm

ACTUATOR MODEL	A	B	C	D	E	F	G	H	I min.	L	M	N	O	P	Q	Q1	R	S	W	W1	T - ISO 228	ISO Flange*	CH*	h min.	X	Z	Approx. Weight (Kg)
FM AT050 S																											
FM AT100 S																											
FM AT200 S																											
FM AT300 S	605	127	111	M5x8	8	80	30	55	19	56	67	19	37,5	20	70	-	32	24	M8	-	1/4"	F07	17	1,5	63,5	40	14,4
FM AT400 S	780	157	136	M5x8	8	80	30	70	24	69,5	82	27	45	30	102	-	32	24	M10	-	1/4"	F10	22	1,5	78,5	56/65	27,5
FM AT500 S	993	196	169	M5x8	8	80	30	85	29	88	99	27	52	30	125	-	32	24	M12	-	1/4"	F12	27	1,5	98	65	50
FM AT600 S																											

\*Notes: Other connections available.

### METRIC TORQUE RATINGS

Supply Pressure:		SPRING RETURN TORQUE RATINGS IN Nm												Spring stroke													
Actuator Model	Spring Set*	2,5 Bar		3 Bar		3,5 Bar		4 Bar		4,2 Bar		4,5 Bar		5 Bar		5,5 Bar		6 Bar		7 Bar		8 Bar		0° and 180°	0° and 90°		
		90°	0° and 180°	90°	0° and 180°	90°	0° and 180°	90°	0° and 180°	90°	0° and 180°	90°	0° and 180°	90°	0° and 180°	90°	0° and 180°	90°	0° and 180°	90°	0° and 180°						
FM AT050	S 06																										
	S 08																										
	S 10																										
	S 12																										
FM AT100	S 06																										
	S 08																										
	S 10																										
	S 12																										
FM AT200	S 06																										
	S 08																										
	S 10																										
	S 12																										
FM AT300	S 06	36,1	19,2	<b>49,4</b>	<b>32,5</b>	62,7	45,8	76	59,1	81,3	64,4	89,3	72,4	103	85,7	116	99								<b>47,3</b>	<b>30,4</b>	
	S 08					52,5	30	<b>65,8</b>	<b>43,3</b>	<b>71,1</b>	<b>48,7</b>	79,1	56,6	92,4	69,9	106	83,2	119	96,5	146	123				<b>63</b>	<b>40,5</b>	
	S 10											69	40,9	<b>82,3</b>	<b>54,2</b>	95,6	67,5	109	80,8	135	107			162	134	<b>78,8</b>	<b>50,7</b>
	S 12															85,4	51,7	<b>98,7</b>	<b>65</b>	125	92			152	118	<b>94,5</b>	<b>60,8</b>
FM AT 400	S 06	75,5	39,6	<b>103,2</b>	<b>67,3</b>	131	95	159	123	170	134	186	150	214	178	242	206									<b>99</b>	<b>63</b>
	S 08					110	62	<b>137,6</b>	<b>89,7</b>	<b>149</b>	<b>101</b>	165	117	193	145	221	173	248	201	304	256					<b>132</b>	<b>84</b>
	S 10											144	84,5	<b>172</b>	<b>112</b>	200	140	227	168	283	223			338	278	<b>165</b>	<b>105</b>
	S 12															179	107	<b>206</b>	<b>135</b>	262	190			317	245	<b>198</b>	<b>126</b>
FM AT 500	S 06	149,0	84,3	<b>205,7</b>	<b>141,1</b>	262	198	319	255	342	277	376	311	433	368	489	425									<b>199</b>	<b>135</b>
	S 08					218	131	<b>274,3</b>	<b>188,1</b>	<b>297</b>	<b>211</b>	331	245	388	302	444	358	501	415	615	528					<b>266</b>	<b>180</b>
	S 10											286	178,4	<b>343</b>	<b>235</b>	400	292	456	349	570	462			683	575	<b>332</b>	<b>224</b>
	S 12															355	225	<b>411</b>	<b>282</b>	525	396			638	509	<b>399</b>	<b>269</b>
FM AT 600	S 06																										
	S 08																										
	S 10																										
	S 12																										
N° of Springs		The above value are the out-put torque that remain available to operate the valve when the port "2" is pressurized.																									
		Out-put torque available when air supply fails																									

\*Notes: It is possible to obtain different torque values by interpolation of spring number (ex. S07)