PNEUMATIC ACTUATORS

SIRCA INTERNATIONAL S.p.a.

NEW Silver
Hard Anodized finish

Double Acting

Article no.	TYPE	Price £	Price €
80000007	AP00	£92.80	€95.70
80000010	AP1	£105.60	€108.90
80000012	AP2	£128.00	€132.00
80000075	AP3	£156.80	€161.70
80000014	AP3.5	£217.60	€224.40
80000018	AP4	£262.40	€270.60
80000070	AP4.5	£352.00	€363.00
80000019	AP5	£432.00	€445.50
80000020	AP5.5	£560.00	€577.50
80000079	AP6	£739.20	€762.30
80000021	AP8	£1,481.60	€1,527.90
80007277	AP10	£2,880.00	€2,970.00
AP12DA	AP12	OR	OR

Spring Return

Article no.	TYPE	Price £	Price €
80100010	AP1	£128.00	€132.00
80100012	AP2	£156.80	€161.70
80100075	AP3	£188.80	€194.70
80100014	AP3.5	£252.80	€260.70
80100018	AP4	£307.20	€316.80
80100070	AP4.5	£419.20	€432.30
80100019	AP5	£496.00	€511.50
80100020	AP5.5	£649.60	€669.90
80100079	AP6	£870.40	€897.60
80100021	AP8	£1,699.20	€1,752.30
80107277	AP10	£3,536.00	€3,646.50
AP12SR	AP12	OR	OR

Materials

Actuator Body	Extruded aluminium alloy
End cap	Pressure die casting aluminium alloy
Pinion	E.N.P. Carbon steel or 303 S.S.
Piston	Pressure die casting aluminium alloy
Guide	Acetyl resin
Springs	Epoxy coated spring steel
O-ring	NBR, FKM or Silicone
Screws and nuts	Stainless steel

Specifications

- **Pressure range**
  2 bar (29psi) to 8 bar (116 psi) double acting
  3 bar (44 psi) to 8 bar (116 psi) spring return max. working pressure 10 bar (145 psi).
- **Supply**
  Filtered dry or lubricated air
  For non corrosive gas, water or light hydraulic oil
- **Temperature range**
  STD -20°C (-4°F)a +80°C (175°F)
  on request +20°C (+68°F)a +150°C (302°F)
  on request -50°C (-58°F)a +100°C (302°F)
- **Rotation**
  counter-clockwise when Port 'A' is pressurized;
  clockwise when Port 'B' is pressurized and spring return actuators (see principle operation).
- **Stroke** – 90° with standard adjustment ±3° (AP Series) or bi-directional travel adjustment ±5° (APM Series)
- **Lubrication** – all moving parts are factory lubricated for cycle life of the actuator
- **Construction** – in accordance to "Equipment or Protective system intended for use in potentially atmosphere directive 94/9/CE". Suitable for indoor and outdoor installation.
- **Connections** – bottom drilling to match valve in accordance with ISO 5211/DIN 3337. Interface for solenoid valve, shaft top end and top drilling to assemble accessories are in accordance with VDI / VDE 3845, NAMUR.
- **Inspection** – each unit is hydraulically tested and certified and guaranteed for a minimum of 500,000 cycles.

Additional cost for actuators supplied fitted with:

Limit Switch Box page 28

Article no.		Price £	Price €
SWBOX	IP67 Standard	£68.40	€82.10
SWBOXP	Proximity Switches	£265.60	€318.70
SWBOXIS	Intrinsically Safe Box	£265.60	€318.70
SWBOXEX	Explosion Proof	£288.00	€345.60

Namur Pilot Soleniod Valve page 29

Article no.		Price £	Price €
55100229*	Suffix * with A - 220V AC B - 110V AC D - 24V DC	£105.20	€131.50

Intrinsically Safe & Explosion Proof also available

PD100 Smart Valve Positioner

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Article no.	Price £	Price €
420100	£1,942.90	€2,236.70

- 4-20mA input signal &Auto calibration
- Local user interface & LCD display
- Optional features available

IP67 Inductive Proximity Switch

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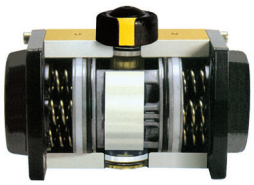
Article no.	Price £	Price €
IPSFIT	£283.50	€340.10

- inductive sensor included (555602)
- target puck included (555422)

Optional 2mtr cable with M12 connector		
ECV001	£17.70	€21.20

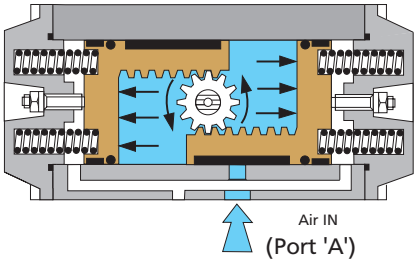
ACTUATORS SPRING RETURN (SR)



Principle of Operation

Pressure applied to Port 'A' will cause the inner chambers to be pressurised, forcing the pistons outward to compress the springs.
The pinion is rotated anti-clockwise. Upon release of pressure through Port 'A' the springs will exert pressure to close the pistons and rotate the pinion clockwise rapidly.
This action will often be used to close a 90° turn valve in shutdown mode.

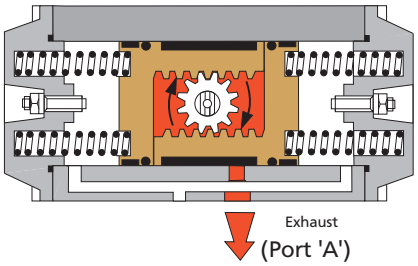
COUNTER CLOCKWISE OUTPUT ROTATION



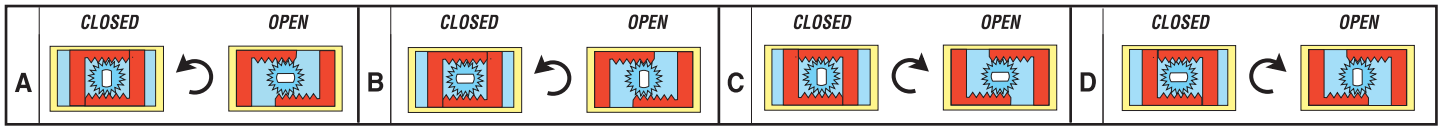
Selection of Single Acting Actuators

Determine the required valve torque (this should include 25% safety margin), and the minimum operating pressure available. Select from the “Spring Stroke / “0°” table a value that is not less than the required valve torque (including safety margin). Next refer to the pressure table and select under your minimum pressure and “90°” torque column a figure not less than that required (including safety margin).
Example: Valve torque 60 Nm plus 25% = 75 Nm. Checking the “Spring Stroke / “0°” column, it will be noted that the nearest value is 108 Nm.
By following the line across to the vertical 5 bar “90°” torque column, a figure of 109 Nm is shown therefore, the suitable actuator is the AP5SR5. In a normal valve shut-down situation the actuator would operate the valve to break out a less than 108 Nm. If the “90°” torque at operating pressure is too low, continue down the column until an acceptable value is found, compare with the corresponding “Spring Stroke / “0°” column to ensure that this also is adequate. This model may be used.

CLOCKWISE OUTPUT ROTATION



Mounting Variations



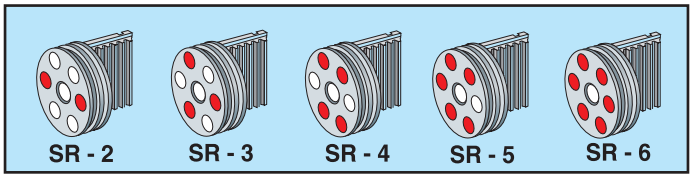
MOD. SR	AP1	AP2 / APM2		AP3 / APM3		AP3,5 / APM3,5		AP4 / APM4		AP4,5 / APM4,5		AP5 / APM5		AP5,5 / APM5,5		AP6 / APM6		AP8 / APM8		AP10 / APM10	
Kg.	1.12	1.56	1.67	3.10	3.18	4.30	4.40	6.20	6.25	9.67	9.76	12.62	12.90	17.09	18.01	23.86	24.60	44.82	45.93	101.00	102.30
lbs.	*2.46*	*3.43*	*3.67*	*6.82*	*7.00*	*9.46*	*9.68*	*13.64*	*13.75*	*21.27*	*21.47*	*27.76*	*28.38*	*37.60*	*39.62*	*52.49*	*54.12*	*98.60*	*101.05*	*222.20*	*225.06*

NOTE: The above mentioned values refer to the weight of pneumatic actuator with 6 (six) springs on each side of cap.

Opening / Closing Time (sec.) at 5.6 bar / 80 psi

MODEL	AP 1	AP 2	AP 3	AP 3.5	AP 4	AP 4.5	AP 5	AP 5.5	AP 6	AP 8	AP 10
	Less than	*Less than*	*Less than*	*Less than*	*Less than*	*Less than*	*Less than*	*Less than*			
DOUBLE ACTING	0,5 SEC	1 SEC	1 SEC	1 SEC	1 SEC	1 SEC	1.25 SECS	1.5 SECS	1.5 ÷ 2 SECS	3 ÷ 4 SECS	5 - 6 SECS
	Less than	*Less than*	*Less than*	*Less than*	*Less than*	*Less than*		*Less than*			
SPRING RETURN	0,5 SEC	1 SEC	1 SEC	1 SECS	1 SECS	1 SEC	1.5 ÷ 2 SECS	2 SECS	2 ÷ 3 SECS	4 ÷ 6 SECS	7 ÷ 8 SECS

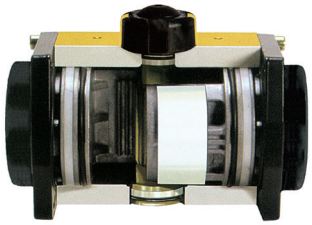
Right Arrangement of Springs



Torque Output Spring Return Actuators (SR)

MODELLO *MODEL*	N° MOLLE PER TESTATA *N° OF SPRINGS FOR EACH SIDE OF CAP*	PRESSIONE DI ALIMENTAZIONE- *OPERATING PRESSURE* - bar / *p.s.i.*												*SPRING STROKE*	
		3 / 44		4 / 58		5 / 73		6 / 87		7 / 102		8 / 116			
		0°	*90°*	*0°*	*90°*	*0°*	*90°*	*0°*	*90°*	*0°*	*90°*	*0°*	*90°*	*90°*	*0°*
AP1SR	2	6.5	5.4	9.4	8.3	12.4	11.3	15.3	14.2	19.3	18.2	22.4	21.3	3.5	2.4
		58.0	*48.2*	*83.8*	*74.0*	*110.6*	*100.8*	*136.5*	*126.7*	*172.2*	*162.3*	*199.8*	*190.0*	*31.2*	*21.4*
	3	5.3	3.7	8.2	6.6	11.2	9.6	14.1	12.5	18.1	16.5	21.2	19.6	5.2	3.6
		47.3	*33.0*	*73.1*	*58.9*	*99.9*	*85.6*	*125.8*	*111.5*	*161.5*	*147.2*	*189.1*	*174.8*	*46.4*	*32.1*
	4	4.1	1.9	7	4.8	10	7.8	12.9	10.7	16.9	14.7	20	17.8	7.0	4.8
		36.6	*16.9*	*62.4*	*42.8*	*89.2*	*69.6*	*115.1*	*95.4*	*150.7*	*131.1*	*178.4*	*158.8*	*62.4*	*42.8*
	5	=	=	3.1	2.7	8.8	6.1	11.7	9.0	15.7	13.0	18.8	16.1	8.7	6
		=	=	*27.7*	*24.1*	*78.5*	*54.4*	*104.4*	*80.3*	*140.0*	*116.0*	*167.7*	*143.6*	*77.6*	*53.5*
	6	=	=	=	=	7.6	4.3	10.5	7.2	14.5	11.2	17.6	14.3	10.5	7.2
		=	=	=	=	*67.8*	*38.4*	*93.7*	*64.2*	*129.3*	*99.9*	*157.0*	*127.6*	*93.7*	*64.2*
AP2SR	2	10.3	8.5	15.0	13.2	19.7	17.9	24.4	22.6	29.1	27.3	33.8	32.0	5.6	3.8
		91.9	*75.8*	*133.8*	*117.7*	*175.7*	*159.7*	*217.6*	*201.6*	*259.6*	*243.5*	*301.5*	*285.4*	*50.0*	*33.9*
	3	8.4	5.7	13.1	10.4	17.8	15.1	22.5	19.8	27.2	24.5	31.9	29.2	8.4	5.7
		74.9	*50.8*	*116.9*	*92.8*	*158.8*	*134.7*	*200.7*	*176.6*	*242.6*	*218.5*	*284.5*	*260.5*	*74.9*	*50.8*
	4	=	=	11.2	7.6	15.9	12.3	20.6	17.0	25.3	21.7	30.0	26.4	11.2	7.6
		=	=	*99.9*	*67.8*	*141.8*	*109.7*	*183.8*	*151.6*	*225.7*	*193.6*	*267.6*	*235.5*	*99.9*	*67.8*
	5	=	=	=	=	14.0	9.5	18.7	14.2	23.4	18.9	28.1	23.6	14.0	9.5
		=	=	=	=	*124.9*	*84.7*	*166.8*	*126.7*	*208.7*	*168.6*	*250.7*	*210.5*	*124.9*	*84.7*
	6	=	=	=	=	12.1	6.7	16.8	11.4	21.5	16.1	26.2	20.8	16.8	11.4
		=	=	=	=	*107.9*	*59.8*	*149.9*	*101.7*	*191.8*	*143.6*	*233.7*	*185.5*	*149.9*	*101.7*
AP3SR	2	22.0	18.0	32.0	28.0	42.0	38.0	52.0	48.0	62.0	58.0	72.0	68.0	12.0	8.0
		196.2	*160.6*	*285.4*	*249.8*	*374.6*	*339.0*	*463.8*	*428.2*	*553.0*	*517.4*	*642.2*	*606.6*	*107.0*	*71.4*
	3	18.0	12.0	28.0	22.0	38.0	32.0	48.0	42.0	58.0	52.0	68.0	62.0	18.0	12.0
		160.6	*107.0*	*249.8*	*196.2*	*339.0*	*285.4*	*428.2*	*374.6*	*517.4*	*463.8*	*606.6*	*553.0*	*160.6*	*107.0*
	4	=	=	24.0	16.0	34.0	26.0	44.0	36.0	54.0	46.0	64.0	56.0	24.0	16.0
		=	=	*214.1*	*142.7*	*303.3*	*231.9*	*392.5*	*321.1*	*481.7*	*410.3*	*570.9*	*499.5*	*214.1*	*142.7*
	5	=	=	=	=	30.0	20.0	40.0	30.0	50.0	40.0	60.0	50.0	30.0	20.0
		=	=	=	=	*267.6*	*178.4*	*356.8*	*267.6*	*446*	*356.8*	*535.2*	*446*	*267.6*	*178.4*
	6	=	=	=	=	26.0	14.0	36.0	24.0	46.0	34.0	56.0	44.0	36.0	24.0
		=	=	=	=	*231.92*	*124.9*	*321.1*	*214.1*	*410.3*	*303.3*	*499.5*	*392.5*	*321.12*	*214.08*
AP3.5SR	2	41.5	30.0	58.5	47.0	75.5	64.0	92.5	81.0	109.5	98.0	126.5	115.0	21.0	9.5
		370.2	*267.6*	*521.8*	*419.2*	*673.5*	*570.9*	*825.1*	*722.5*	*976.7*	*874.2*	*1128.4*	*1025.8*	*187.3*	*84.7*
	3	32.0	20.0	49.0	37.0	66.0	54.0	83.0	71.0	100.0	88.0	117.0	105.0	31.0	19.0
		285.4	*178.4*	*437.1*	*330.0*	*588.7*	*481.7*	*740.4*	*633.3*	*892.0*	*785.0*	*1043.6*	*936.6*	*276.5*	*169.5*
	4	=	=	43.0	20.0	60.0	37.0	77.0	54.0	94.0	71.0	111.0	88.0	48.0	25.0
		=	=	*383.6*	*178.4*	*535.2*	*330.0*	*686.8*	*481.7*	*838.5*	*633.3*	*990.1*	*785.0*	*428.2*	*223.0*
	5	=	=	=	=	53.0	33.0	70.0	50.0	87.0	67.0	104.0	84.0	52.0	32.0
		=	=	=	=	*472.8*	*294.4*	*624.4*	*446.0*	*776.0*	*597.6*	*927.7*	*749.3*	*463.8*	*285.4*
	6	=	=	=	=	47.0	22.0	64.0	39.0	81.0	56.0	106.4	73.0	63.0	38.0
		=	=	=	=	*419.2*	*196.2*	*570.9*	*347.9*	*722.5*	*499.5*	*949.1*	*651.2*	*562.0*	*339.0*
AP4SR	2	52.7	42.4	76.7	66.4	100.7	90.4	123.7	113.4	149.7	139.4	173.7	175.2	28.6	18.3
		470.1	*378.2*	*684.2*	*592.3*	*898.2*	*806.4*	*1103.4*	*1011.5*	*1335.3*	*1243.4*	*1549.4*	*1562.8*	*255.1*	*163.2*
	3	43.0	28.0	67.0	52.0	91.0	76.0	114.0	99.0	140.0	125.0	164.0	153.6	43.0	28.0
		383.6	*249.8*	*597.6*	*463.8*	*811.7*	*677.9*	*1016.9*	*883.1*	*1248.8*	*1115.0*	*1462.9*	*1370.1*	*383.6*	*249.8*
	4	=	=	58.0	38.0	82.0	62.0	105.0	85.0	131.0	111.0	155.0	132.0	57.0	37.0
		=	=	*517.4*	*339.0*	*731.4*	*553.0*	*936.6*	*758.2*	*1168.5*	*990.1*	*1382.6*	*1177.4*	*508.4*	*330.0*
	5	=	=	=	=	73.0	47.0	96.0	70.0	122.0	96.0	146.0	110.4	72.0	46.0
		=	=	=	=	*651.2*	*419.2*	*856.3*	*624.4*	*1088.2*	*856.3*	*1302.3*	*984.8*	*642.2*	*410.3*
	6	=	=	=	=	64.0	33.0	87.0	56.0	113.0	82.0	137.0	88.8	86.0	55.0
		=	=	=	=	*570.9*	*294.4*	*776.0*	*499.5*	*1008.0*	*731.4*	*1222.0*	*792.1*	*767.1*	*490.6*
AP4.5SR	2	96.8	77.5	140.4	121.1	184.0	164.7	227.6	208.3	271.2	251.9	314.8	295.5	53.3	34.0
		863.4	*691.3*	*1252.4*	*1080.2*	*1641.3*	*1469.1*	*2030.2*	*1858.0*	*2419.1*	*2246.9*	*2808.0*	*2635.9*	*475.4*	*303.2*
	3	79.8	50.9	123.4	94.5	167.0	138.1	210.6	181.7	254.2	225.3	297.8	268.9	79.9	51.0
		711.8	*454.0*	*1100.7*	*842.9*	*1489.6*	*1231.9*	*1878.6*	*1620.8*	*2267.5*	*2009.7*	*2656.4*	*2398.6*	*712.7*	*454.9*
	4	62.8	24.2	106.4	67.8	150.0	111.4	193.6	155.0	237.2	198.6	280.8	242.2	106.6	68.0
		560.2	*215.9*	*949.1*	*604.8*	*1338.0*	*993.7*	*1726.9*	*1382.6*	*2115.8*	*1771.5*	*2504.7*	*2160.4*	*950.9*	*606.6*
	5	=	=	89.4	41.1	133.0	84.7	176.6	128.3	220.2	171.9	263.8	215.5	133.3	85.0
		=	=	*797.4*	*366.6*	*1186.4*	*755.5*	*1575.3*	*1144.4*	*1964.2*	*1533.3*	*2353.1*	*1922.3*	*1189.0*	*758.2*
	6	=	=	72.4	14.4	116.0	58.0	159.6	101.6	203.2	145.2	246.8	188.8	160.0	102.0
		=	=	*645.8*	*128.4*	*1034.7*	*517.4*	*1423.6*	*906.3*	*1812.5*	*1295.2*	*2201.5*	*1684.1*	*1427.2*	*909.8*
AP5SR	2	123.7	99.4	178.7	154.4	234.7	210.4	289.7	265.4	345.2	320.9	400.7	376.4	67.6	43.3
		1103.4	*886.6*	*1594.0*	*1377.2*	*2093.5*	*1876.8*	*2584.1*	*2367.4*	*3079.2*	*2862.4*	*3574.2*	*3357.5*	*603.0*	*386.2*
	3	103.0	66.0	158.0	121.0	214.0	177.0	269.0	232.0	324.5	287.5	380.0	343.0	101.0	64.0
		918.8	*588.7*	*1409.4*	*1079.3*	*1908.9*	*1578.8*	*2399.5*	*2069.4*	*2894.5*	*2564.5*	*3389.6*	*3059.6*	*900.9*	*570.9*
	4	=	=	136.0	87.0	192.0	143.0	247.0	198.0	302.5	253.5	358.0	309.0	135.0	86.0
		=	=	*1213.1*	*776.0*	*1712.6*	*1275.6*	*2203.2*	*1766.2*	*2698.3*	*2261.2*	*3193.4*	*2756.3*	*1204.2*	*767.1*
	5	=	=	=	=	170.0	109.0	225.0	164.0	280.5	219.5	336.0	275.0	169.0	108.0
		=	=	=	=	*1516.4*	*972.3*	*2007.0*	*1462.9*	*2502.1*	*1957.9*	*2997.1*	*2453.0*	*1507.5*	*963.4*
	6	=	=	=	=	148.0	75.0	203.0	130.0	258.5	185.5	314.0	241.0	203.0	130.0
		=	=	=	=	*1320.2*	*669.0*	*1810.8*	*1159.6*	*2305.8*	*1654.7*	*2800.9*	*2149.7*	*1810.8*	*1159.6*
AP5.5SR	2	176.2	132.8	258.7	215.3	337.5	294.1	416.4	373.0	495.2	451.8	574.0	530.6	100.0	56.6
		1571.7	*1184.6*	*2307.6*	*1920.5*	*3010.5*	*2623.4*	*3714.3*	*3327.2*	*4417.2*	*4030.1*	*5120.1*	*4733.0*	*892.0*	*504.9*
	3	147.9	82.8	230.4	165.3	309.2	244.1	388.1	323.0	466.9	401.8	545.7	480.6	150.0	84.9
		1319.3	*738.6*	*2055.2*	*1474.5*	*2758.1*	*2177.4*	*3461.9*	*2881.2*	*4164.7*	*3584.1*	*4867.6*	*4287.0*	*1338.0*	*757.3*
	4	119.5	32.8	202.0	115.3	280.8	194.1	359.7	273.0	438.5	351.8	517.3	430.6	200.0	113.3
		1065.9	*292.6*	*1801.8*	*1028.5*	*2504.7*	*1731.4*	*3208.5*	*2435.2*	*3911.4*	*3138.1*	*4614.3*	*3841.0*	*1784.0*	*1010.6*
	5	=	=	173.7	65.3	252.5	144.1	331.4	223.0	410.2	301.8	489.0	380.6	250.0	141.6
		=	=	*1549.4*	*582.5*	*2252.3*	*1285.4*	*2956.1*	*1989.2*	*3659.0*	*2692.1*	*4361.9*	*3395.0*	*2230.0*	*1263.0*
	6	=	=	145.3	15.3	224.1	94.1	303.0	173.0	381.8	251.8	460.6	330.6	300.0	170.0
		=	=	*1296.1*	*136.5*	*1999*	*839.4*	*2702.8*	*1543.2*	*3405.7*	*2246.1*	*4108.6*	*2949.0*	*2676.0*	*1516.4*
AP6SR	2	257.0	200.0	371.0	314.0	484.0	427.0	597.0	540.0	711.5	654.5	825.0	768.0	140.0	83.0
		2292.4	*1784.0*	*3309.3*	*2800.9*	*4317.3*	*3808.8*	*5325.2*	*4816.8*	*6346.6*	*5838.1*	*7359.0*	*6850.6*	*1248.8*	*740.4*
	3	215.0	130.0	329.0	244.0	442.0	357.0	555.0	470.0	669.5	584.5	783.0	698.0	210.0	125.0
		1917.8	*1159.6*	*2934.7*	*2176.5*	*3942.6*	*3184.4*	*4950.6*	*4192.4*	*5971.9*	*5213.7*	*6984.4*	*6226.2*	*1873.2*	*1115.0*
	4	=	=	287.0	174.0	400.0	287.0	513.0	400.0	627.5	514.5	741.0	628.0	280.0	167.0
		=	=	*2560.0*	*1552.1*	*3568.0*	*2560.0*	*4576.0*	*3568.0*	*5597.3*	*4589.3*	*6609.7*	*5601.8*	*2497.6*	*1489.6*
	5	=	=	=	=	358.0	217.0	471.0	330.0	585.5	4445	699.0	558.0	350.0	209.0
		=	=	=	=	*3193.4*	*1935.6*	*4201.3*	*2943.6*	*5222.7*	*3964.9*	*6235.1*	*4977.4*	*3122.0*	*1864.3*
	6	=	=	=	=	316.0	147.0	429.0	260.0	543.5	374.5	657.0	488.0	420.0	251.0
		=	=	=	=	*2818.7*	*1311.2*	*3826.7*	*2319.2*	*4848.0*	*3340.5*	*5860.4*	*4353.0*	*3746.4*	*2238.9*
AP8SR	2	478.0	386.0	691.0	599.0	904.0	812.0	1116.0	1024.0	1331.0	1239.0	1704.0	1452.0	252.0	160.0
		4263.8	*3443.1*	*6163.7*	*5343.1*	*8063.7*	*7243.0*	*9954.7*	*9134.1*	*11872.5*	*11051.9*	*15199.7*	*12951.8*	*2247.8*	*1427.2*
	3	398.0	260.0	611.0	473.0	824.0	686.0	1036.0	898.0	1251.0	1113.0	1464.0	1326.0	378.0	240.0
		3550.2	*2319.2*	*5450.1*	*4219.2*	*7350.1*	*6119.1*	*9241.1*	*8010.2*	*11158.9*	*9928.0*	*13058.9*	*11827.9*	*3371.8*	*2140.8*
	4	=	=	531.0	347.0	744.0	560.0	956.0	772.0	1171.0	987.0	1384.0	1200.0	504.0	320.0
		=	=	*4736.5*	*3095.2*	*6636.5*	*4995.2*	*8527.5*	*6886.2*	*10445.3*	*8804.0*	*12345.3*	*10704.0*	*4495.7*	*2854.4*
	5	=	=	=	=	664.0	434.0	876.0	646.0	1091.0	861.0	1304.0	1074.0	630.0	400.0
		=	=	=	=	*5922.9*	*3871.3*	*7813.9*	*5762.3*	*9731.7*	*7680.1*	*11631.7*	*9580.1*	*5619.6*	*3568.0*
	6	=	=	=	=	584.0	308.0	796.0	520.0	1011.0	735.0	1224.0	948.0	756.0	480.0
		=	=	=	=	*5209.3*	*2747.4*	*7100.3*	*4638.4*	*9018.1*	*6556.2*	*10918.1*	*8456.2*	*6743.5*	*4281.6*
AP10SR	2	1181.0	957.0	1720.0	1496.0	2259.0	2032.0	2798.0	2574.0	3337.0	3113.0	3876.0	3652.0	660.0	436.0
		10534.5	*8536.4*	*15342.4*	*13344.3*	*20150.3*	*18125.4*	*24958.2*	*22960.1*	*29766.0*	*27768.0*	*34573.9*	*32575.8*	*5887.2*	*3889.1*
	3	963.0	628.0	1502.0	1167.0	2041.0	1706.0	2580.0	2245.0	3119.0	2748.0	3658.0	3323.0	989.0	654.0
		8590.0	*5061.8*	*13397.8*	*10409.6*	*18205.7*	*15217.5*	*23013.6*	*20025.4*	*27821.5*	*24833.3*	*32629.4*	*29641.2*	*8821.9*	*5833.7*
	4	=	=	1284.0	837.0	1823.0	1376.0	2362.0	1915.0	2901.0	2454.0	3440.0	2993.0	1319.0	872.0
		=	=	*11453.3*	*7466.0*	*1621.2*	*12273.9*	*21069.0*	*17081.8*	*25876.9*	*21889.7*	*30684.8*	*26697.6*	*11765.5*	*7778.2*
	5	=	=	=	=	1605.0	1046.0	2144.0	1585.0	2683.0	2124.0	3222.0	2663.0	1649.0	1090.0
		=	=	=	=	*14316.6*	*9330.0*	*19124.5*	*14138.2*	*23932.4*	*18946.1*	*28740.2*	*23754.0*	*14709.1*	*9722.8*
	6	=	=	=	=	=	=	1909.0	1254.0	2448.0	1793.0	2987.0	2332.0	1980.0	1325.0
		=	=	=	=	=	=	*17028.3*	*11185.7*	*21856.2*	*15993.6*	*26644.0*	*20801.4*	*17661.6*	*11819.0*

NOTE: The output torque of selected actuator mentioned in the table are suitable also for APM series and the value should never be less the required valve torque.

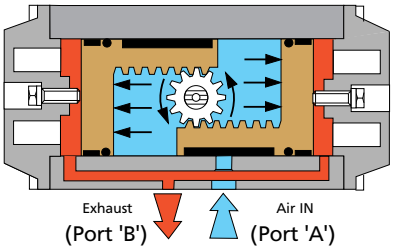


ACTUATORS DOUBLE ACTING (DA)

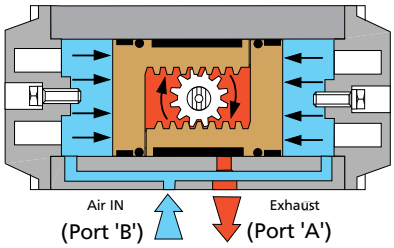
Principle of Operation

Counter clockwise output operation is achieved by inserting pressure into Port 'A', to force the pistons apart thus rotating the actuator pinion counter clockwise. During the operation, air from the outer chambers is exhausted through Port 'B'. Clockwise output operation is achieved by reverse of the above and inserting pressure into Port 'B'.

COUNTER CLOCKWISE OUTPUT ROTATION



CLOCKWISE OUTPUT ROTATION



Data Required for Actuator Sizing

1 Valve torque (min. 25% safety recommended).
2 Double acting or spring return operation.
3 Minimum available operating pressure.

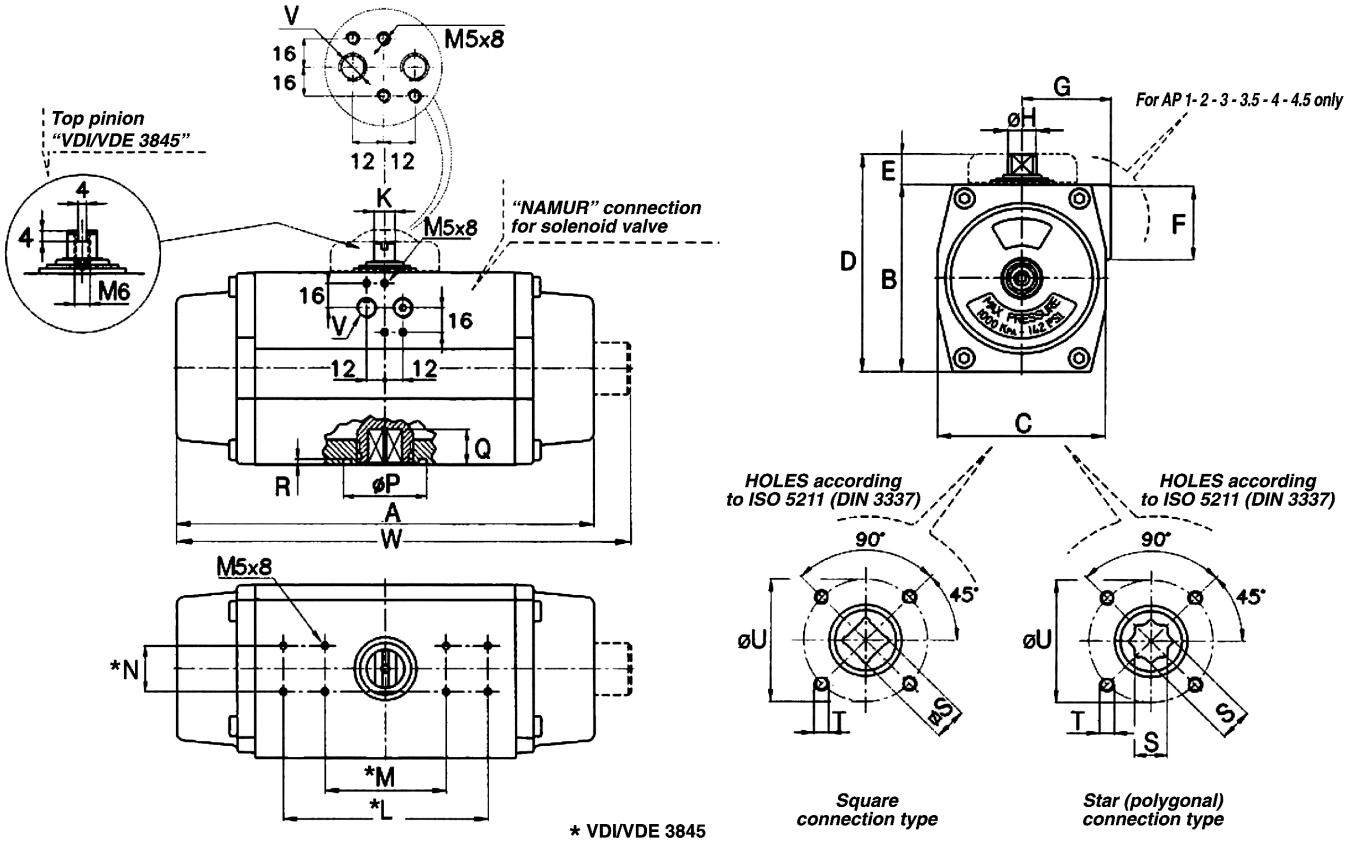
Selection of Double Acting Actuators (DA)

Determine the required valve torque, this should include 25% safety margin, and the minimum operating pressure available. Refer to the pressure/torque table and select the minimum pressure column applicable. Follow this column down until a value not less than that required is found. Next read across to the left hand column and read the model number to be ordered. EXAMPLE: Valve torque 80Nm plus 25% = 100 Nm. Minimum operating pressure 5 bar.

TORQUE OUTPUT DOUBLE ACTING ACTUATORS (DA) – OPERATING PRESSURE

Model	bar	2	3	4	5	6	7	8
	PSI	30	44	58	73	87	102	116
AP0 DA	Nm	2.4	3.5	4.8	6	7.3	8.5	9.7
	lbf.In	21.4	32.1	42.8	53.5	65.1	75.8	86.5
AP1 DA	Nm	5.9	8.9	11.8	14.8	17.7	21.7	24.8
	lbf.In	52.6	79.3	105.2	132	157.8	193.5	221.1
AP2 DA	Nm	9.4	14.1	18.8	23.5	28.2	32,9	37.6
	lbf.In	83.8	125.7	167.7	209.6	251.5	293.5	335.4
AP3 DA	Nm	20	30	40	50	60	70	80
	lbf.In	178.4	267.6	356.8	446	535.2	624.4	713.6
AP3.5 DA	Nm	34	51	68	85	102	119	136
	lbf.In	303.3	454.9	606.5	758.2	909	1061.5	1213.2
AP4 DA	Nm	48	71	95	119	142	168	192
	lbf.In	428.2	633.3	847.4	1061	1266.6	1498.5	1712.6
AP4.5 DA	Nm	87.2	130.8	174.4	218	261.6	305.2	348.8
	lbf.In	777.8	1166.7	1555.6	1944.5	2333.4	2722.3	3111.2
AP5 DA	Nm	111	167	222	278	333	388.5	444
	lbf.In	990.1	1489.6	1980.2	2479.7	2970.4	3465.4	3960.5
AP5.5 DA	Nm	157.6	236.4	315.3	394.1	473	551.8	630.6
	lbf.In	1405.7	2108.6	2812.4	3515.3	4219.1	4922	5624.9
AP6 DA	Nm	227	340	454	567	680	794.5	908
	lbf.In	2024.8	3032.8	4049.6	5057.6	6065.6	7087	8099.4
AP8 DA	Nm	426	638	851	1064	1276	1491	1704
	lbf.In	3800	5691	7591	9491	11382	13299	15200
AP10 DA	Nm	1078	1617	2156	2695	3234	3773	4312
	lbf.In	9651.8	14423.6	19231.5	24039.4	28847.3	33655.2	38463
AP12 DA	Nm	1880	2820	3760	4701	5641	6581	7522

DIMENSIONS – SR & DA



Air Consumption for Stroke (Free Air)

MODEL		AP1 DA/SR	AP2 DA/SR	AP3 DA/SR	AP3.5 DA/SR	AP4 DA/SR	AP4.5 DA/SR	AP5 DA/SR	AP5.5 DA/SR	AP6 DA/SR	AP8 DA/SR	AP10 DA/SR
Counter clockwise	Litres	0.08	0.12	0.24	0.48	0.68	1	1.4	1.6	3.2	5.3	14.2
	Cu.ft.	0.003	0.004	0.008	0.017	0.024	0.035	0.049	0.057	0.11	0.19	0.5
Clockwise (DA only)	Litres	0.10	0.16	0.44	0.56	0.96	1.6	2.16	2.56	4	8.6	16.5
	Cu.ft.	0.0035	0.006	0.016	0.020	0.034	0.057	0.076	0.09	0.14	0.30	0.58

Weights

MOD. DA	AP1	AP2	APM2	AP3	APM3	AP3.5	APM3.5	AP4	APM4	AP4.5	APM4.5	AP5	APM5	AP5.5	APM5.5	AP6	APM6	AP8	APM8	AP10	APM10
Kg.	1.00	1.42	1.44	2.54	2.62	3.68	3.78	5.10	5.15	8.24	8.33	10.10	10.38	13.94	14.86	19.66	20.40	36.60	37.70	77.00	78.30
lbs	2.20	3.12	3.17	5.59	5.76	8.10	8.32	11.22	11.33	18.13	18.33	22.22	22.84	30.67	32.69	43.25	44.88	80.52	82.94	169.40	172.26

Dimensions

MODELLO *MODEL*	U.M.	A	W*	B	C	D	E	F	G	H	K	L	M	N	P	Q	R	Ø S-S	T	U	V	ISO 5211 STD	ISO 5211 *SPECIAL*
AP1 DA/SR	mm	142	162	67	60	87	20	42	41	12	8	-	80	30	25	10	2	9/11**	M5/M6	36/50	1/8"	F03/F05	F04
	ins.	*5.59*	*6.38*	*2.64*	*2.36*	*3.43*	*0.79*	*1.65*	*1.61*	*0.47*	*0.31*	-	*3.15*	*1.18*	*0.98*	*0.39*	*0.08*	*0.35/0.43***		*1.42/1.97*			
AP2 DA/SR	mm	155	171	83	73	103	20	42	44.5	12	8	-	80	30	30/35	12	2	11/14**	M5/M6	42/50	1/4"	*** F04/F05	—
	ins.	*6.10*	*6.73*	*3.27*	*2.87*	*4.06*	*0.79*	*1.65*	*1.75*	*0.47*	*0.31*	-	*3.15*	*1.18*	*1.18/1.38*	*0.47*	*0.08*	*0.43/0.55***		*1.65/1.97*			
AP3 DA/SR	mm	213	240	100	85	120	20	50	49.5	14	10	-	80	30	35	16	3	14/17**	M6/M8	50/70	1/4"	F05/F07	—
	ins.	*8.33*	*9.45*	*3.94*	*3.35*	*4.72*	*0.79*	*1.97*	*1.95*	*0.55*	*0.39*	-	*3.15*	*1.18*	*1.38*	*0.63*	*0.12*	*0.43/0.67***		*1.97/2.76*			
AP3.5 DA/SR	mm	236	268	110	98	130	20	50	53	19	14	-	80	30	55	20	3.5	17/22**	M8	70	1/4"	F07	F05/F07
	ins.	*9.29*	*10.55*	*4.33*	*3.86*	*5.12*	*0.79*	*1.97*	*2.09*	*0.75*	*0.55*	-	*3.15*	*1.18*	*2.17*	*0.79*	*0.14*	*0.67/0.87***		*2.76*			
AP4 DA/SR	mm	276	304	125	110	145	20	50	58	19	14	-	80	30	55	20	3.5	17/22**	M8/M10	70/102	1/4"	F07/F10	—
	ins.	*10.87*	*11.97*	*4.92*	*4.33*	*5.71*	*0.79*	*1.97*	*2.28*	*0.75*	*0.55*	-	*3.15*	*1.18*	*2.17*	*0.79*	*0.14*	*0.67/0.87***		*2.76/4.02*			
AP4.5 DA/SR	mm	310	350	142	128	172	30	58	69	28	20	130	80	30	70	24	3.5	17**/22	M10	102	1/4"	F10	F07
	ins.	*12.20*	*13.78*	*5.59*	*5.04*	*6.77*	*1.18*	*2.28*	*2.72*	*1.10*	*0.79*	*5.12*	*3.15*	*1.18*	*2.76*	*0.94*	*0.14*	*0.67**/0.87*		*4.02*			
AP5 DA/SR	mm	366	405	155	140	185	30	-	-	28	20	130	80	30	70	24	3.5	17**/22	M10	102	1/4"	F10	F07/F12
	ins.	*14.41*	*15.94*	*6.10*	*5.51*	*7.28*	*1.18*	-	-	*1.10*	*0.79*	*5.12*	*3.15*	*1.18*	*2.76*	*0.94*	*0.14*	*0.67**/0.87*		*4.02*			
AP5.5 DA/SR	mm	388	442	176	160	206	30	-	-	36	28	130	80	30	85	29	3.5	22**/27	M12	125	1/4"	F12	F10
	ins.	*15.27*	*17.40*	*6.93*	*6.30*	*8.11*	*1.18*	-	-	*1.42*	*1.10*	*5.12*	*3.15*	*1.18*	*3.35*	*1.14*	*0.14*	*0.87**/1.06*		*4.92*			
AP6 DA/SR	mm	468	500	200	175	230	30	-	-	36	28	130	80	30	85	29	3.5	22**/27	M12	125	1/4"	F12	F10
	ins.	*18.42*	*19.68*	*7.87*	*6.89*	*9.06*	*1.18*	-	-	*1.42*	*1.10*	*5.12*	*3.15*	*1.18*	*3.35*	*1.14*	*0.14*	*0.87**/1.06*		*4.92*			
AP8 DA/SR	mm.	563	612	250	215	300	50	-	-	48	32	130	-	30	100	38	5	27**/36	M16	140	1/4"	F14	F12
	ins.	*22.16*	*24.09*	*9.84*	*8.46*	*11.81*	*1.97*	-	-	*1.89*	*1.26*	*5.12*	-	*1.18*	*3.94*	*1.50*	*0.20*	*1.06**/1.42*		*5.51*			
AP10 DA/SR	mm.	750	838	335	290	385	50	-	-	48	32	130	-	30	130	50	5	36**/46	M20	165	1/4"	F16	F14
	ins.	*29.53*	*32.99*	*13.19*	*11.42*	*15.16*	*1.97*	-	-	*1.89*	*1.26*	*5.12*	-	*1.18*	*5.12*	*1.97*	*0.20*	*1.42**/1.81*		*6.50*			

* Dimensions only for APM Series ** Dimensions on request *** To be chosen when ordering