ANIX®

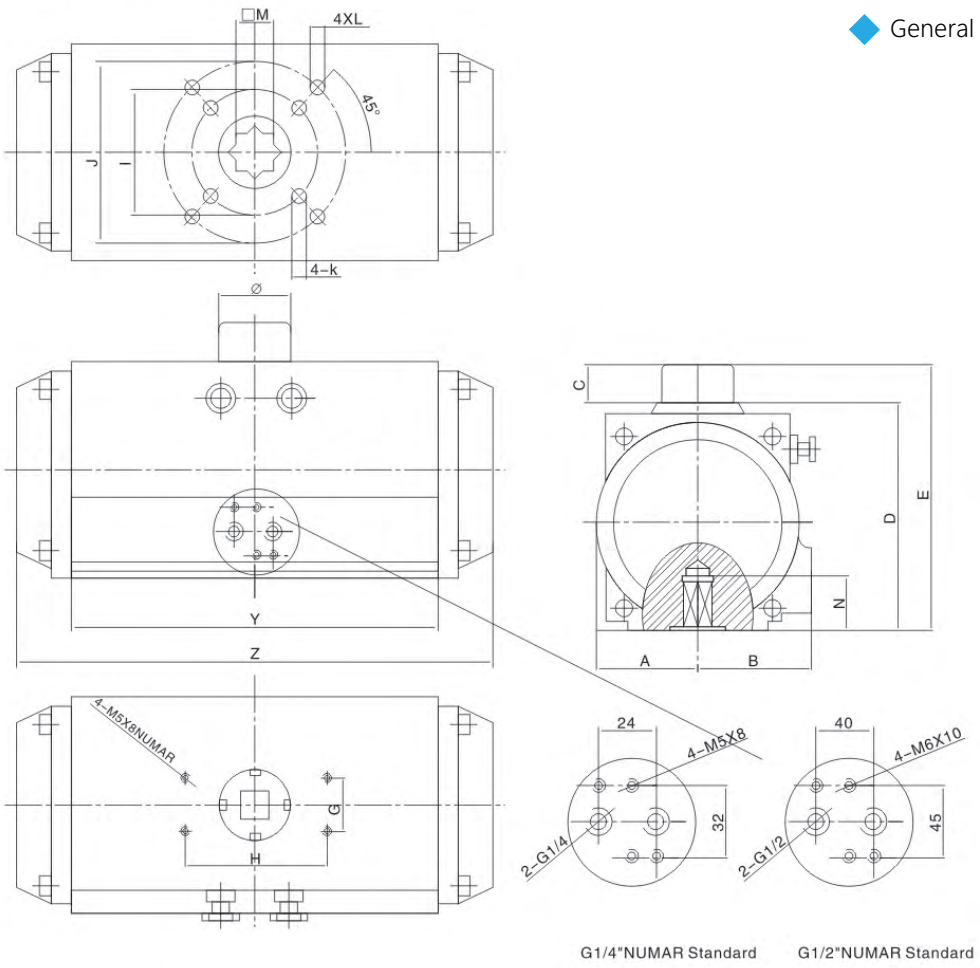
Pneumatic Actuators

ANIX VALVE USA

www.anixusa.com

- Products used in industries such as Oil & Gas, Petrochemical, Chemicals, Food & Beverage, Pulp & Paper, Marine, Water & Wastewater Treatment, Mining & Mineral Processing, Industrial Automation, Pharmaceuticals, Agriculture, Power Generation, Semiconductor, Manufacturing processes, and more.

General Drawing



Model	A	B	C	D	E	G	H	I	J	K	L	M	N	Z	Y	Φ	Air Supply
AN-052	1.2 in	1.6 in	0.8 in	2.8 in	3.6 in	1.2 in	3.1 in	F03	F05	M5 x 8	M6 x 10	11 x 11	0.6 in	5.7 in	4.1 in	Φ34	NAMUR G1/4"
AN-063	1.4 in	1.8 in	0.8 in	3.5 in	4.3 in	1.2 in	3.1 in	F05	F07	M6 x 10	M8 x 12	14 x 14	0.6 in	6.7 in	4.9 in	Φ34	NAMUR G1/4"
AN-075	1.7 in	2 in	0.8 in	3.9 in	4.7 in	1.2 in	3.1 in	F05	F07	M6 x 10	M8 x 12	14 x 14	0.6 in	7.9 in	4.8 in	Φ34	NAMUR G1/4"
AN-083	1.8 in	2.2 in	0.8 in	4.3 in	5.1 in	1.2 in	3.1 in	F05	F07	M6 x 10	M8 x 12	14 x 14	0.6 in	8.2 in	5.8 in	Φ34	NAMUR G1/4"
AN-092	2 in	2.3 in	0.8 in	4.6 in	5.4 in	1.2 in	3.1 in	F05	F07	M6 x 10	M8 x 12	17 x 17	0.7 in	9.5 in	6.6 in	Φ41	NAMUR G1/4"
AN-105	2.3 in	2.5 in	0.8 in	5.3 in	6.1 in	1.2 in	3.1 in	F07	F10	M8 x 12	M10 x 16	22 x 22	1 in	10.8 in	7.3 in	Φ41	NAMUR G1/4"
AN-125	2.7 in	2.8 in	1.2 in	6.2 in	7.4 in	1.2 in	3.1 in	F07	F10	M8 x 12	M10 x 16	22 x 22	1 in	13.1 in	8.2 in	Φ41	NAMUR G1/4"
AN-140	3 in	3 in	1.2 in	6.9 in	8 in	1.2 in	5.1 in	F10	F12	M10 x 16	M12 x 20	27 x 27	1.2 in	15.9 in	10.6	Φ41	NAMUR G1/4"
AN-160	3.4 in	3.4 in	1.2 in	7.8 in	9 in	1.2 in	5.1 in	F10	F12	M10 x 16	M12 x 20	27 x 27	1.2 in	18.5 in	12.1	Φ41	NAMUR G1/4"

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Operating conditions:

1. Operating media

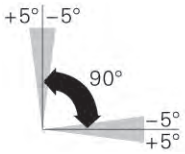
Dry or lubricated air, or non-corrosive gases
The maximum particle diameter must be less than 30m

2. Air supply pressure

The minimum supply pressure is 2 Bar
The maximum supply pressure is 8 Bar

3. Operating temperature

Standard -20ºC~+80ºC
Low temperature: -40ºC~+80ºC
High temperature: -20ºC~+160ºC



4. Travel adjustment

Has an ajustment range of ± 5º for the rotation at 0º and 90º

5. Application

Either indoor or outdoor

Air supply connection is designed in accordance with NAMUR standard for installing solenoid valves.

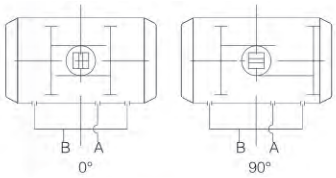
The NAMUR Standard drive pinion and the NAMUR Standard top mounting connection permit direct installation of accessories such as limit switch box and positioner

Bottom mounting connection is designed in accordance with ISO5211 and DIN 3337 standards for direct mounting with valve gear boxes or mounting brackets.

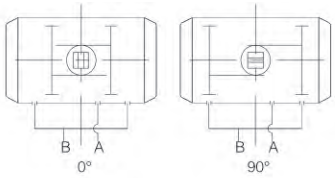
Working Principle:

Double acting

Counter Clockwise Rotation

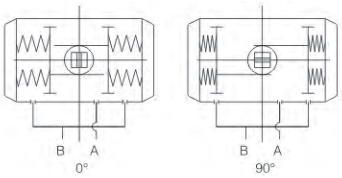


Clockwise Rotation

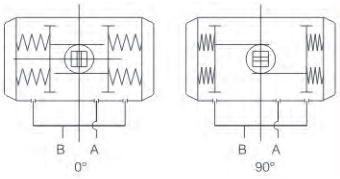


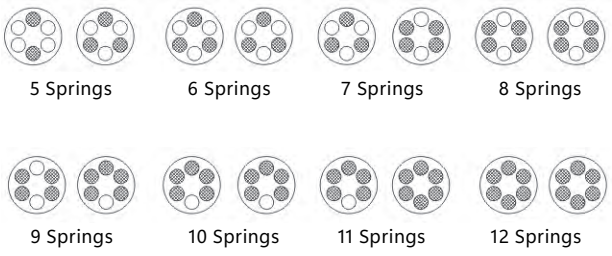
Spring return

Counter Clockwise Rotation



Clockwise Rotation





Double Acting Actuator Output Torque (Unit: in-lb)

Model	Input Air Supply Pressure (Unit:Bar)						
	2	3	4	5	6	7	8
AN-032D	27	42	55	69	83	97	111
AN-052D	75	112	150	187	226	263	301
AN-063D	133	199	266	332	397	464	529
AN-075D	185.87	281	376	469	562	657	752
AN-083D	287	431	575	720	862	1,006	1,152
AN-092D	412	619	823	1,031	1,239	1,441	1,646
AN-105D	613	921	1,228	1,535	1,840	2,149	2,456
AN-125D	955	1,435	1,912	2,394	2,867	3,347	3,821
AN-140D	1,643	2,455	3,276	4,088	4,903	5,725	6,588
AN-160D	2,492	3,738	4,986	6,228	7,472	8,727	9,970

Spring Return Actuator Output Torque (Unit: in-lb)

Output Torque of Air to Spring														Output Torque Spring	
Air Supply Pressure		40 PSI		55 PSI		70 PSI		85 PSI		100 PSI		115 PSI			
Model	Spring Qty	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End
AN-052S	10	/	/	81	55	118	92	156	130	193	167	231	205	96	70
AN-063S	10	/	/	145	89	211	155	277	221	343	288	409.8	354	176	120
AN-075S	10	/	/	258	164	368	274	477	383	587	493	697	602	273.5	180
AN-083S	10	/	/	312	194	455	337	600	481	743	625	887	768	381	263
AN-092S	10	/	/	438	288	644	494	850	700	1,057	914	1,262	1,112	536	386
AN-105S	10	/	/	531	409	839	715	1,145	1,023	1,452	1,329	1,757	1,635	820	696
AN-125S	10	/	/	1,231	761	1,780	1,303	2,323	1,850	2,862	2,390	3,408	2,930	1,416	938
AN-140S	10	/	/	1,692	912	2,514	1,726	3,325	2,594	4,155	3,363	4,965	4,178	2,363	1,575
AN-160S	10	/	/	2,578	1,436	3,825	2,683	5,075	3,921	6,313	5,169	7,559	6,417	3,549	2,407

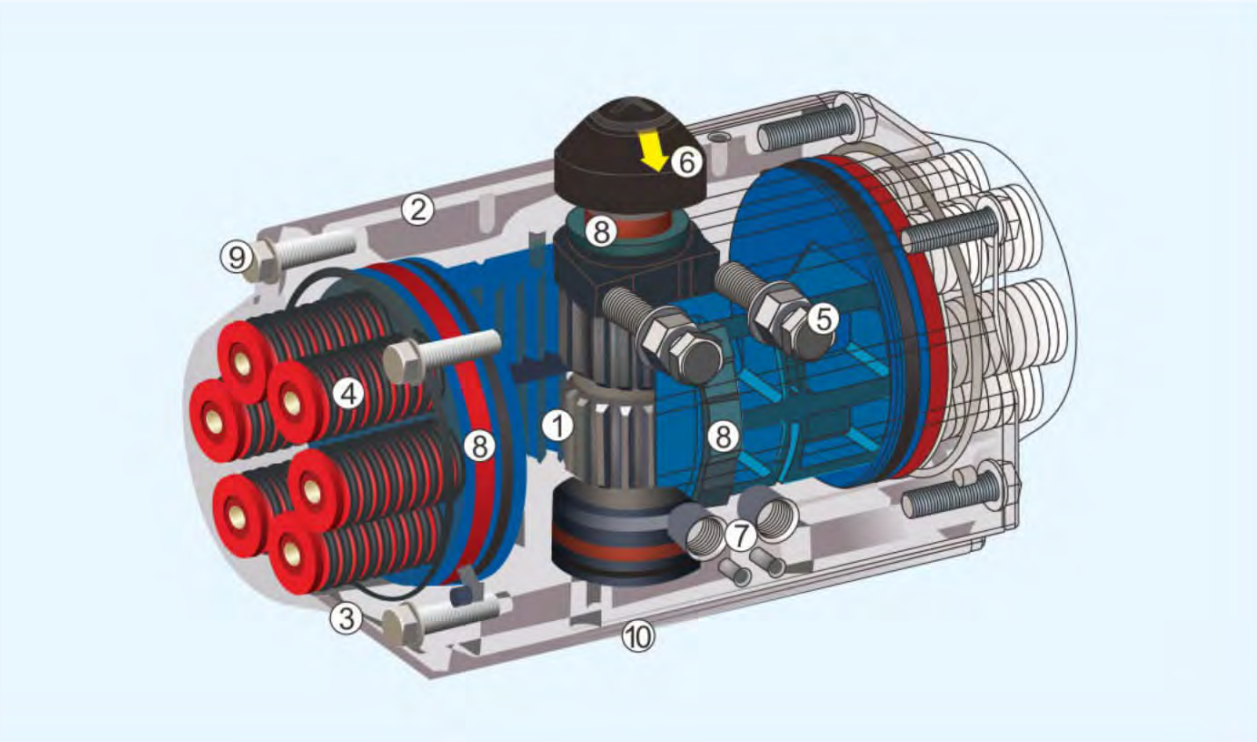
Double Acting Actuator Output Torque (Unit:Nm)

Model	Input Air Supply Pressure (Unit:Bar)						
	2	3	4	5	6	7	8
AN-032D	3.1	4.7	6.2	7.8	9.4	11	12.5
AN-052D	8.5	12.7	17	21.2	25.5	29.7	34
AN-063D	15	22.5	30	37.5	44.9	52.4	59.7
AN-075D	21	31.8	42.4	53	63.6	74.2	84.8
AN-083D	32.5	48.7	65	81.2	97.4	113.7	130
AN-092D	46.5	69.8	93	116.3	140	162.9	186
AN-105D	69.3	104	138.5	173.2	207.8	242.5	277
AN-125D	108	162	216	270	324	378	432
AN-140D	184.7	277	369.5	461.8	554	646.5	739
AN-160D	281.5	422	563	704	844	985	1126

Spring Return Actuator Output Torque (Unit:Nm)

Output Torque of Air to Spring														Output Torque Spring	
Air Supply Pressure		3Bar		4Bar		5Bar		6Bar		7Bar		8Bar			
Model	Spring Qty	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End	0° Start	90° End
AN-052S	10	/	/	9.1	6.2	13.3	10.4	17.6	14.7	21.8	18.9	26.1	23.2	10.8	7.9
AN-063S	10	/	/	16.4	10.0	23.8	17.5	31.3	25.0	38.8	32.5	46.3	40.0	19.9	13.6
AN-075S	10	/	/	29.2	18.5	41.6	30.9	53.9	43.3	66.3	55.7	78.7	68.0	30.9	20.3
AN-083S	10	/	/	35.2	21.9	51.5	38.1	67.7	54.4	83.9	70.6	100.2	86.8	43.0	29.7
AN-092S	10	/	/	49.5	32.5	72.8	55.8	96.0	79.0	119.3	102.3	142.6	125.6	60.6	43.6
AN-105S	10	/	/	59.9	46.2	94.6	80.8	129.2	115.5	163.9	150.1	198.5	184.7	92.3	78.6
AN-125S	10	/	/	139	86	201	147	262	209	323	270	385	331	160	106
AN-140S	10	/	/	191	103	284	195	376	288	469	380	561	472	267	178
AN-160S	10	/	/	291	162	432	303	573	443	713	584	854	725	401	272

The new ANIX pneumatic rack and pinion actuators have been innovatively designed using CAD, Dinema, and Mastercam 3D modeling software. They incorporate the latest technology from both domestic and international sources. The design is sleek, compact, and modern. We use advanced materials and processes to ensure reliability in both quality and performance. With a variety of standard options available, these products are versatile and cost-effective, meeting the latest international technical specifications as well as current and future needs.



1. The dual-piston rack and pinion with a symmetric structure provides fast, smooth action, high precision, and high output power. Reverse rotation can be achieved simply by changing the pistons' mounting position.

2. The cylinder block is made from extruded high-quality aluminum alloy, with a precisely machined inner hole and a hard-anodized outer surface (anodic oxidation under special conditions with a Teflon coating). This extends the lifecycle and reduces friction coefficient.

3. A uniform design is used for both double-acting and single-acting actuators, with identical cylinder bodies and end caps. This design allows for easy conversion between operation modes by simply adding or removing springs.

4. Modular preloaded safety spring cartridges allow for easy and safe installation or removal of springs, whether during mounting or in the field.

5. The two independent adjusting screws on the external side precisely control the valve's on/off position when installed with the actuator. For full stroke adjustment, longer adjusting screws can be installed on both ends.

6. The multi-positioner and visual indicator comply with standard VID/VIE 3845 and NAMUR, allowing for the installation and output of all accessories, such as limit switches, positioners, and position sensors.

7. The air port complies with NAMUR standards and can directly accommodate a NAMUR standard solenoid valve.

8. The compound bearing bush and piston guide ring at the back of the gear rack, along with the bearing on the output shaft, prevent metal-to-metal friction. Additionally, increased lubrication helps reduce friction and extend the lifespan of the components.

9. All fasteners are made from stainless steel, providing long-term corrosion resistance.

10. Fully compliant with the latest specifications of ISO 5211, DIN 3337 (F03-F25), and NAMUR, ensuring interchangeable and versatile installation.

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Multi-Functional NAMUR Interface

The multi-functional indicator in the fourth-generation actuator is a standard product that can be applied to the following occasions, as it is made of composite materials.

1. Location Indication

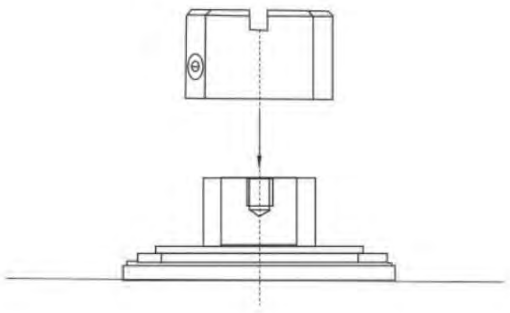
The position of the valve and actuator is indicated visually by a color insert and a NAMUR standard groove. The indicator is compatible with all output shafts and can be used for actuators with two rotation directions.

2. Output Accessories of Actuator

The NAMUR standard groove of the position indicator can directly engage with the output limit switch and locator.

3. Install Proximity Sensors Directly

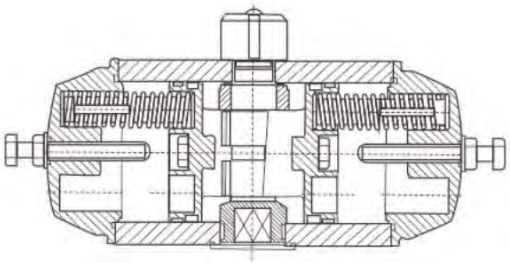
Indicator with metal insert can be mounted with numerous different proximity sensors conveniently and practically



Attachment installed without multi-functional indicator

According to the requirement, replace standard indicator by stainless steel cap with NAMUR standard trough in 4th generation actuator to carry out following functions:

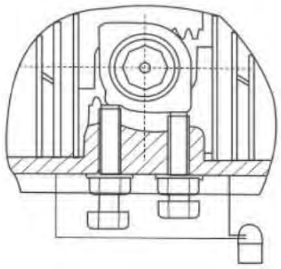
1.Attachment installation such as limit switch box and locator.
2.Indicating location of actuator by NUMAR standard trough.
3.Operable under high temperature.
4.Operate the actuator manually under emergency.



Required

Full stroke adjustment on 4th generation actuator

The stroke range is 0° to 90° plus or minus 4°. When a stroke less than 90° is required, such as 1°, 5°, 10°, 25°, 50° or 80°, you can add two special bolts adjustable or limitable at 0° to 90° at two end covers of actuator according to the requirement of customer. Full stroke adjustment is available in all 4th generation actuators.



Locking function in fully open and fully closed position

When it is required to lock at complete on (90°) or complete off (0°), the 4th generation actuator offers practical and affordable method. Special bolt and locking device in the actuator can lock the actuator at each location forever. Using padlock, to avoid any uneccessary operation.

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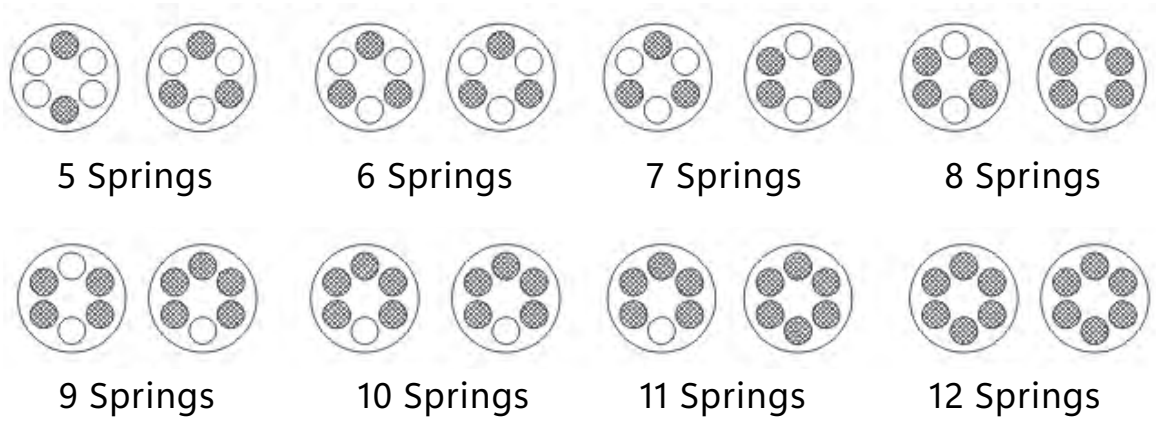


How to select the actuator

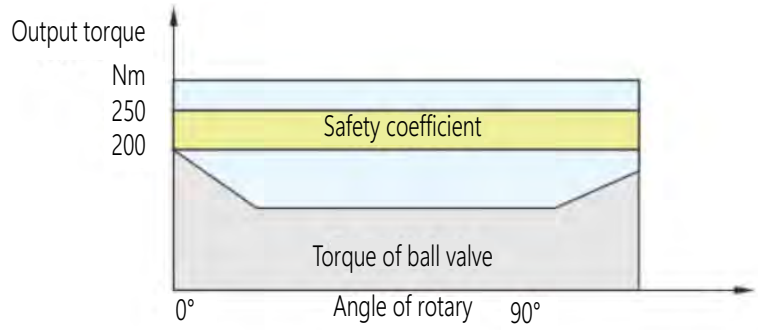
The purpose of this reference data is to assist in the correct selection of a pneumatic actuator. Before installing the actuator onto the valve, consider the following factors:
1. Valve running torque plus the safety coefficient recommended by the manufacturer under operating conditions.
2. Actuators air pressure
3. Type of actuator: D (double acting) or S (spring return), along with the output torque at specific air pressure.
4. Rotation of the actuator and its failure mode (fail-safe or fail-off).

Selection of Actuators

When selecting a pneumatic actuator, increase the safety coefficient for the torque of the chosen valve as follows:

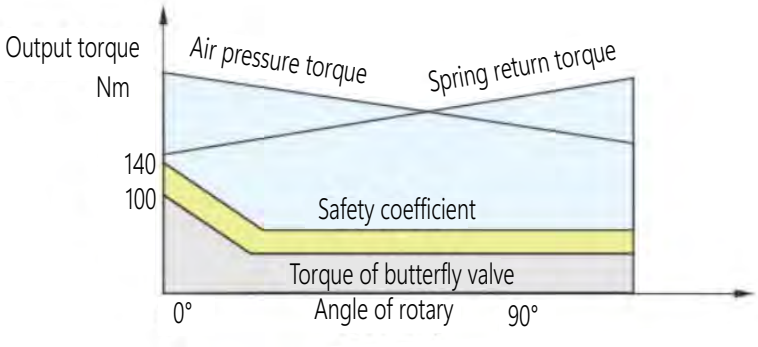
Add 25% safety coefficient for vapor or non-lubricating liquids
Add 25% safety coefficient for non-lubricating slurry liquids
Add 40% safety coefficient for non-lubricating dry gas
Add 60% safety coefficient for non-lubricating powders or particles transported by air
Add 20% safety coefficient for clean and low-friction lubricants

(The above recommendations are theoretical and for reference only.)



Example (Double Acting Actuator Selection)

When controlling a ball valve with a torque of 200NM and air pressure at 4.5 BAR, using a non-lubricated steam medium, a 25% safety coefficient should be added for safety. According to the torque chart for double acting actuators, check the row for 5 BAR air pressure. Then, move vertically down the row to find a torque value equal to or slightly higher than 200NM. The chart shows 277NM, so we select this value. Moving left along the same row, we find that the correct model is ACT125D.



Example (Single Acting Actuator Selection)

When controlling a butterfly valve with a torque of 100NM, air pressure at 4.5 BAR, and using non-lubricated dry gas, a 40% safety coefficient should be added for safety, bringing the required torque to 140NM. Checking the output torque chart for spring return actuators, we find a similar torque of 148NM. Moving left along the same line, the terminal torque for 4.5 BAR air pressure is 158NM. It's important to balance the air pressure torque and spring return torque. Finally, continuing left on the same line, we find the correct model is ACT145S with 9 springs.

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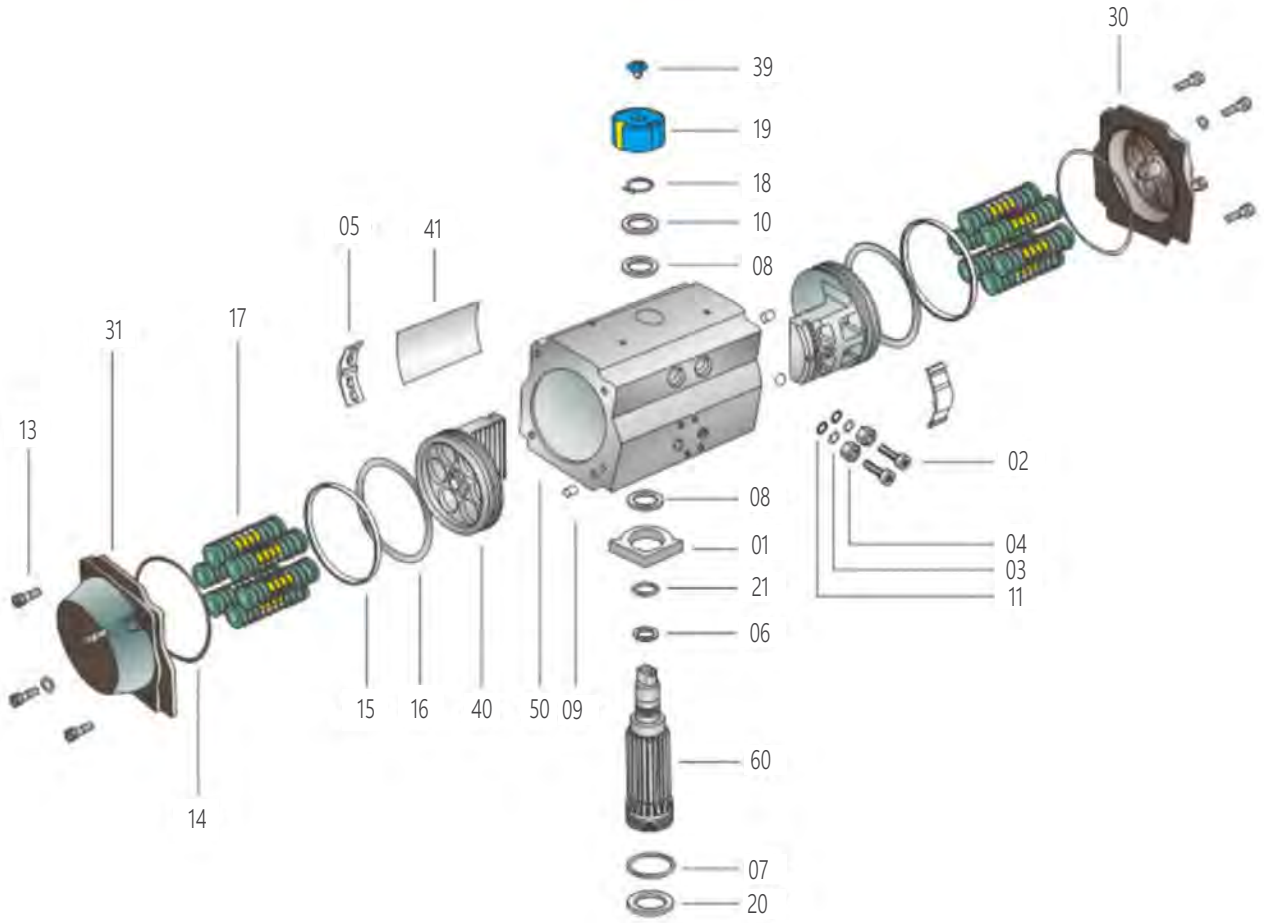
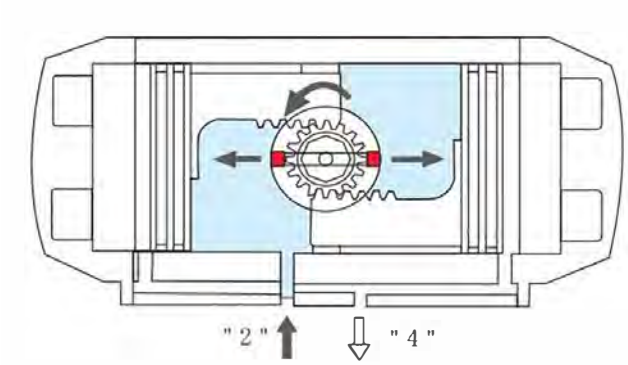


No	Qty	Name	Standard material	Corrosinon prevention grade	Optional material
01	1	Octi-Cam(Brake gear)	Stainless Steel	.....	.....
02	2	Stopper Bolt	Stainless Steel	.....	.....
03	2	Thrust Washer	Stainless Steel	.....	.....
04	2	Screw Cap	Stainless Steel	.....	.....
05	2	Bearing (Piston Back)	Composite Materials	.....	.....
06	1	Bearing (Gears Top)	Nylon46	.....	.....
07	1	Bearing (Gears Tooth)	Nylon46	.....	.....
08	2	Thrust Bearing (Gear)	Composite Materials	.....	.....
09	2	Plunger	NBR	.....	Viton/Silicone
10	1	Thrust Washer	Stainless Steel	.....	.....
11	2	O-Ring (Stopper Bolt)	NBR	.....	Viton/Silicone
13	8(C)	Cap Screw	Stainless Steel	.....	.....
14		O-Ring (End Cap)	NBR	.....	Viton/Silicone
15	2	Bearing (Piston Head)	Composite Materials	.....	.....
16		O-Ring (Piston)	NBR	.....	Viton/Silicone
17	5~12	Spring	Alloy Spring Steel	Epoxy Resin Coating	.....
18		Circlip (Gear)	Alloy Spring Steel	Nickel Plated	Stainless Steel
19	1	Position Indicator	Composite Materials	.....	.....
20		O-Ring (Gears Foot)	NBR	.....	Viton/Silicone
21	1	O-Ring (Gears Top)	NBR	.....	Viton/Silicone
30(D)		Right End Cap	Cast Aluminum Alloy	Alkyd coating	.....
31(D)	1	Left End Cap	Cast Aluminum Alloy	Alkyd coating	.....
39		Cap Screw	Stainless Steel	.....	.....
40	2	Piston	Cast Aluminum Alloy	Anodization	.....
41		Label of the Actuator	Polyester Aluminum	.....	.....
50	1	Cylinder Body	Cast Aluminum Alloy	Anode hardening	.....
60		Output Axis	Alloy Steel	Nickel plated	Stainless steel

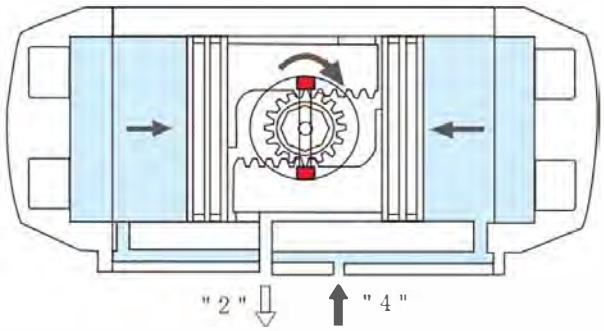
- The standard rotating direction is clockwise, and can be anticlockwise when the air arrive in port 2
  The rotating direction of the actuators marked LF is anticlockwise, and can be clockwise when the air arrive in port 2

Operating principle of double acting



CCW

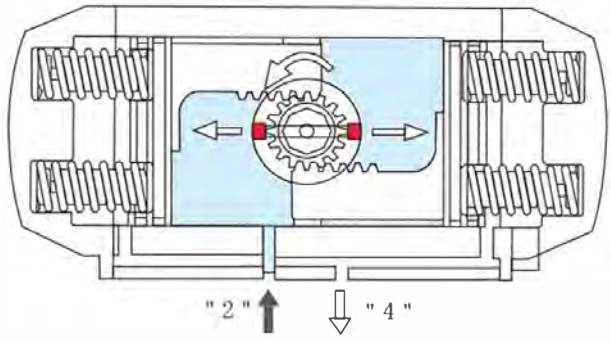
Air to port 2 forces the piston outwards to the two ends, causing the pinion to turn counterclockwise while the air is being exhausted from port 4



CW

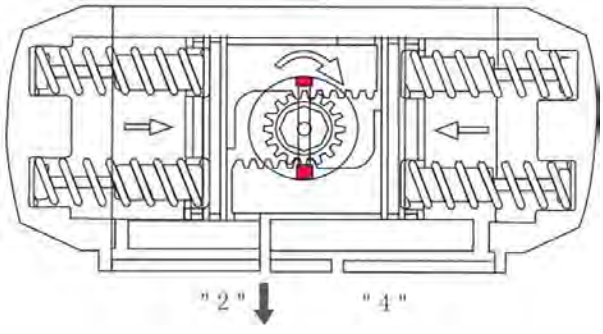
Air to port 4 forces the pistons inward to the middle, causing the pinion to turn clockwise while the air is being exhausted from port 2

Operating principle of single acting



CCW

Air to port 2 forces the pistons outwards to the two ends, causing the springs to compress, The pinion turns counter clockwise while air is being exhausted from port 4



CW

Air to port 2 forces the pistons inward to the middle, causing the pinion to turn clockwise while the air is being exhausted from port 2

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The APL-210N and APL-410N limit switches transmit the position signals of the valve and actuator to a remote control station and are designed for installation on top of the actuator. These switches comply with the VDI/VDE3845 standard and feature a field-visible position indicator and an adjustable cam. The adjustable cam is mounted using a spline and spring mechanism, allowing you to adjust its position by disengaging the cam from the spline. The enclosure includes removable screws and two cable inlet interfaces (G1/2"). The internal limit switch is pre-wired to the terminal block, which has 8 terminals available for connecting magnetic valves.

Main technical parameters

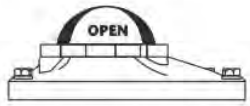
APL-210N	APL-410N
Shell protection (In67)	Explosion-proof (EXdIIBT4)
Mechanical microswith	
Voltage: max. AC 250V, AC or DC	
Current: 0.6A 125VDC, 0.3A 250VDC, 16A 1/2HP 125, 250 AC 16(3)A 250V-T105	
Electrical interface G1/2"	

Option: Send current output signal
proximity switch, resistive potentiometer output signal

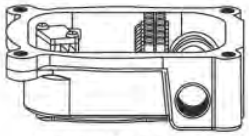
Operation instruction

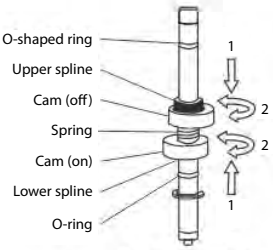
Adjust the switch location according to arrow instruction:

1. Push cam spring, and the cam seperate from spline engaging.
2. Rotate the cam casually to adjust to the needed location, after which loosen the cam. Make sure the cam has been pushed back to reset engaging by



Upper case (aluminum alloy)

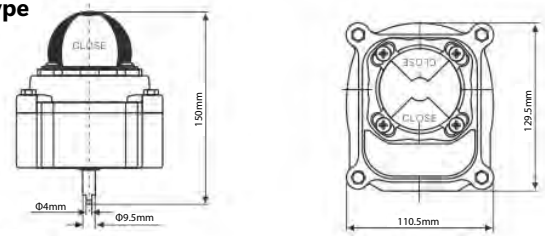




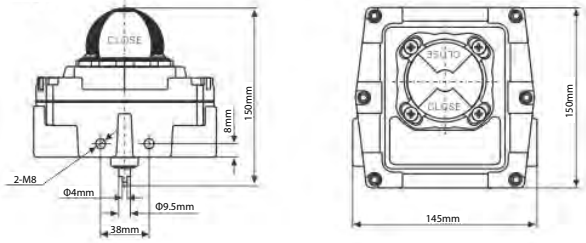
Shaft (stainless steel)

Dimension and connection size

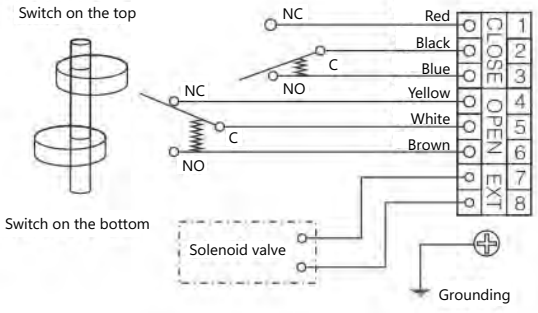
210N Type



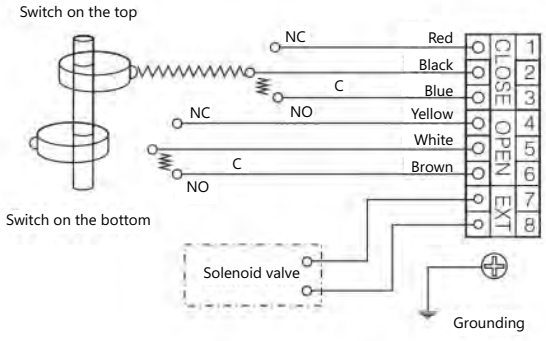
410N Type



Wiring



Mechanical Switch (2SPDT)



Proximity Switch (2 SPDT)

ANIX VALVE USA
10129 Stafford Centre Dr, Stafford, TX 77477
Phone: +1 (281) 835-4448
Email: sales@anixusa.com
Website: www.anixusa.com

Air Filter Regulator

Summary

The air units consist of an air regulator, filter, and lubricator. The air regulator ensures the gas supply pressure remains stable and constant, reducing the risk of damage to the valve or actuator caused by sudden pressure fluctuations. The filter purifies the gas supply by removing moisture from condensed air. The lubricator provides lubrication to movable components, including those that are difficult to reach. Together, these features significantly extend the machine's lifecycle.

Installation

1. Clean the adapter and joints before installation. Ensure no debris enters the gas circuit.
2. Verify that the gas flow direction matches the arrow and check the threads of the adapter and joint.
3. Install the filter, regulator (or filter regulator), and lubricator by aligning the convex part of the support with the machine's notch, then secure them using the stator and screws.
4. For the regulator and filter regulator installation, rotate the fixed collar to secure them to the designated stator.

Instruction

1. Drain water either by pressure or manually. When using the manual function, ensure the water is drained before the water level reaches the bottom of the filter element.
2. Pull up the rotation button before turning it, as the pressed rotation button is used for positioning. Turn clockwise to increase the outlet pressure. Adjust the pressure slowly and evenly to the desired level—do not adjust to the desired pressure in a single step.
3. Usage of the lubricator: The lubricator uses JISK2213 oil machines (ISO Vg 32 or equivalent oil). The oil level must not exceed 4/5 of the cup. The "0" marking represents the minimum oil level, while "9" represents the maximum. Do not rotate directly from "9" to "0"—always rotate clockwise.

Notice

1. Some components are made of PC materials, which cannot be used in or placed near by organic solvent. PC cup shall be washed in neutral cleaner
2. Don't make the pressure exceed the scope.
3. Change the filter element in time when the gas at outlet decreases significantly.

Technical parameter

Model		AC1500	AFC1500	AC2000	AFC2000
Working medium		Air			
Diameter of adaptor		1/8"		1/4"	
Precision of filter element		5μ			
Pressure scope		Drain manually:0~9.5Kgf/cm^2 drain by pressure:1.5~9.5Kgf/cm^2			
Max. Adjustable range		9.5Kgf/cm^2			
Ensured Pressure Resistance		15.0Kgf/cm^2			
Temperature scope		5~60℃			
Volume of filter cup		15CC			
Volume of oil cup		25CC			
Recommended lubricant		ISO Vg3 or equivalent oil			
Weight		0.49Kg	0.32Kg	0.49Kg	0.32Kg
Components	Filter	AF1500	AFR1500	AF2000	AFR2000
	Regulator	AR1500	AFR1500	AF2000	AFR2000
	Lubricator	AL1500	AI1500	AL2000	AL2000

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