

Varnasan

CONTROL VALVE TECHNOLOGIES

VARNASAN PNEUMATIC ACTUATORS

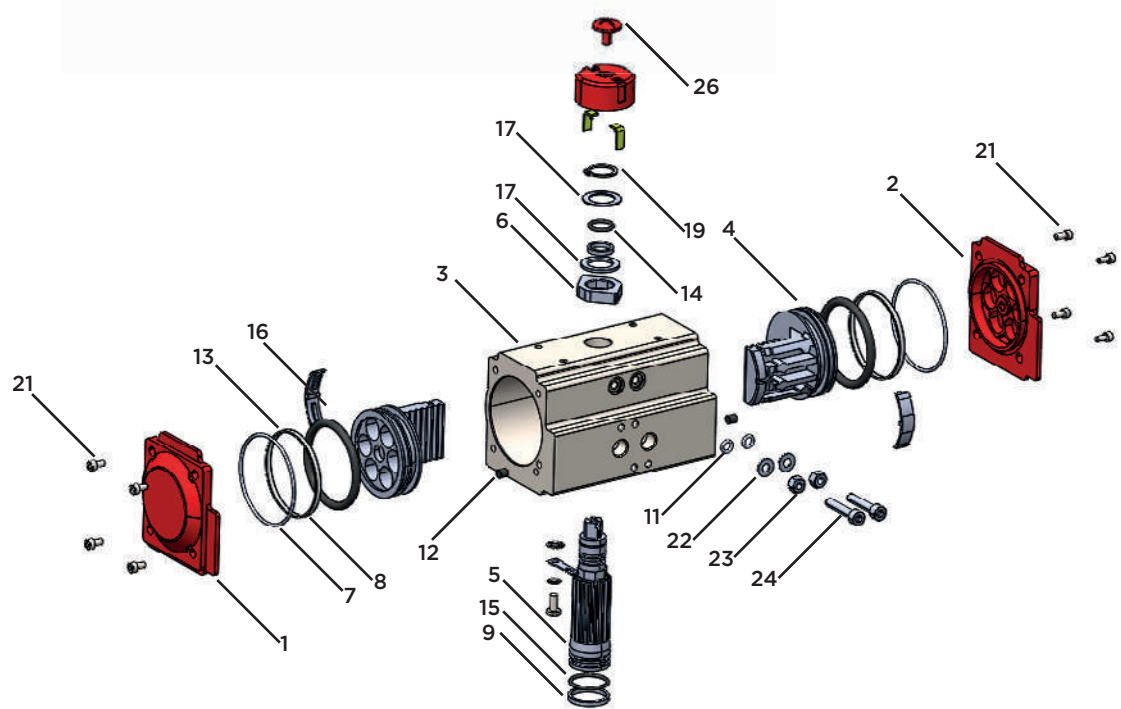


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COMPONENTS AND MATERIALS, CORROSION

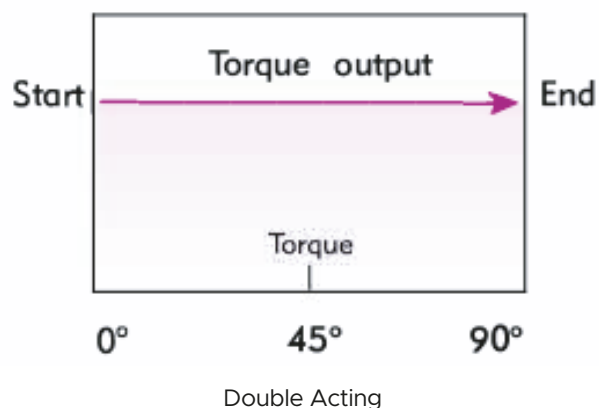
DOUBLE ACTING



	Protection category	
Parts	A	B
Cylinder	Hard anode oxidation	Teflon coating + Anode sclerosis
Cover	Polyester coated metal	Teflon coating
Output shaft	Carbon steel electroless nickel plating	Electroless nickel plating or stainless steel
Use Occasion	General situation	General occasions or low concentrations of acidic environment

Part Number	Each number	Part Name	Standard Materials	Selected materials
01	1	Left Cover	Aluminum Die Casting	Stainless steel
02	1	Right Cover	Aluminum Die Casting	Stainless steel
03	1	Body	Aluminum extrusion	Stainless steel
04	2	Piston	Aluminum Die Casting	-----
05	1	Output Shaft	Carbon Steel	Stainless steel
06	1	Cam adjustment	Stainless steel	-----
07	2	O-ring (cover)	NBR	Fluorine or silicone rubber
08	2	O-ring (Piston)	NBR	Fluorine or silicone rubber
09	1	O-ring (output shaft bottom)	NBR	Fluorine or silicone rubber
10	1	O-ring (output shaft at the top)	NBR	Fluorine or silicone rubber
11	2	O-ring (adjusting screw)	NBR	Fluorine or silicone rubber
12	2	Plug (Cylinder)	NBR	Fluorine or silicone rubber
13	2	Bearing (Piston)	(POM)	-----
14	1	Bearing (output shaft at the top)	(POM)	-----
15	1	Bearing (output shaft bottom)	(POM)	-----
16	1	Guide with Bearing (Piston back)	(POM)	-----
17	2	Thrust bearings (output shaft)	(POM)	-----
18	2	Gasket (output shaft)	Stainless steel	-----
19	1	Flexible file ring	Spring steel	-----
20	4	Cover bolt	Stainless steel	-----
21	4	Cover Gasket	Stainless steel	-----
22	2	Gasket	Stainless steel	-----
23	2	Nut	Stainless steel	-----
24	2	Adjustment bolt	Stainless steel	-----
25	1	Position indicator	(POM)	-----
26	1	Screw of indicator	(POM)	-----

Torque Diagram



Selection Of Double Action Actuators

The suggested safety factor for double acting actuators under normal working conditions is 20%-30%

Sample Selection of Double Action Actuators:

Safety Factor: 20%-30%.

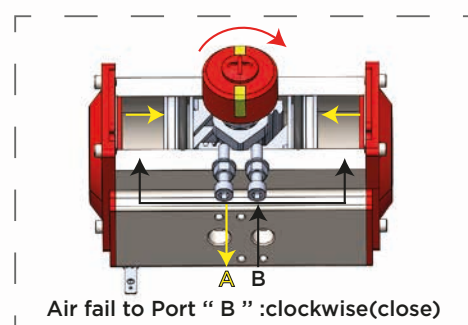
Valve Torque Value: 100 N.m

Add Safety Factor: $100 \times (1 + 30\%) = 130 \text{ N.m}$

Air Supply=5 Bar

Selection:

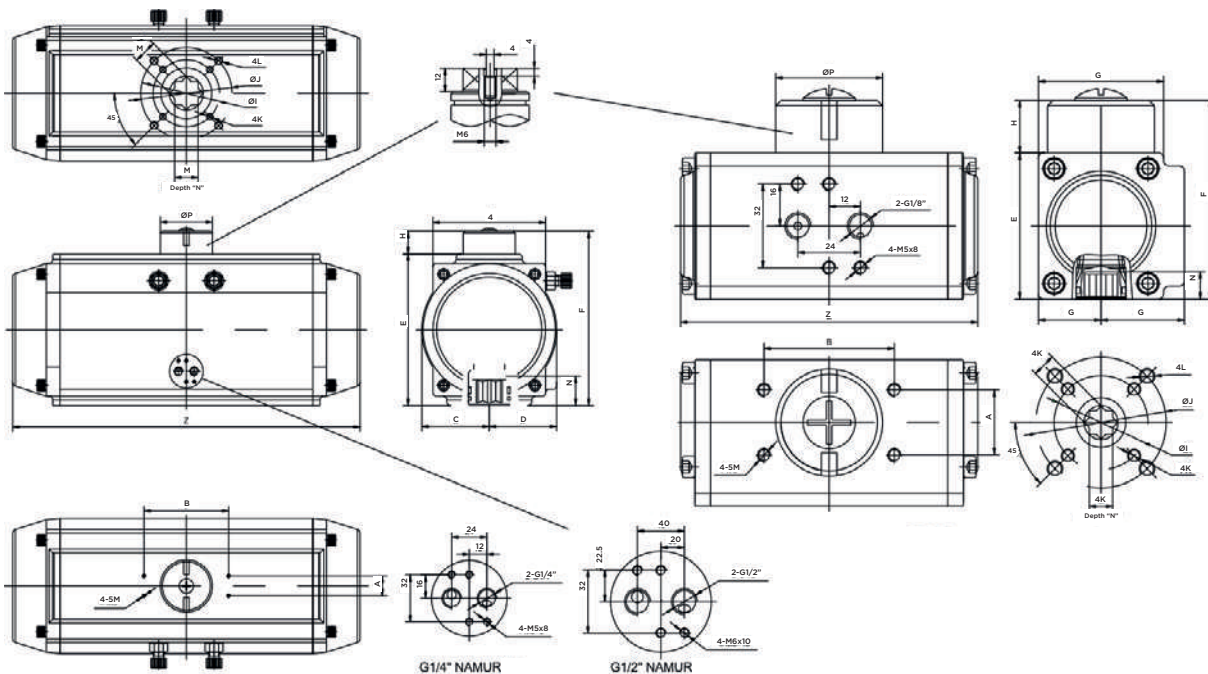
According to double acting torque table, we can choose the minimum model is VRA-RA105DA22070102



Double Acting Actuator Output Torque(Nm)

Model	Unit : Bar)								
	3bar	3.5bar	4bar	4.5bar	5bar	5.5bar	6bar	6.5bar	7bar
VRA-RA040DA09036050	5.7	6.7	7.6	8.6	9.5	10.5	11.4	13.3	15.2
VRA-RA052DA11036050	12.0	14.0	16.0	18.0	20.0	22.0	24.0	28.0	32.0
VRA-RA063DA14050070	21.0	24.5	28.0	31.5	35.0	38.5	42.0	49.0	56.0
VRA-RA075DA14050070	30.0	35.0	40.0	45.0	50.0	55.0	60.0	70.0	80.0
VRA-RA083DA17050070	45.7	53.3	61.0	68.6	76.2	83.8	91.4	106.7	121.9
VRA-RA092DA17050070	67.4	78.7	89.9	101.2	112.4	123.6	134.9	157.4	179.8
VRA-RA105DA22070102	97.6	113.9	130.2	146.4	162.7	179.0	195.2	227.8	260.3
VRA-RA125DA22070102	152.2	177.6	203.0	228.3	253.7	279.1	304.4	355.2	405.9
VRA-RA140DA27102125	260.3	303.7	347.0	390.4	433.8	477.2	520.6	607.3	694.1
VRA-RA160DA27102125	396.6	462.7	528.8	594.9	661.0	727.1	793.2	925.4	1057.6
VRA-RA190DA36000140	639.3	745.9	852.4	959.0	1065.5	1172.1	1278.6	1491.7	1704.8
VRA-RA210DA36000140	781.0	911.2	1041.4	1171.5	1301.7	1431.9	1562.0	1822.4	2082.7
VRA-RA240DA46000165	1147.6	1338.8	1530.1	1721.3	1912.6	2103.9	2295.1	2677.6	3060.2
VRA-RA270DA46000165	1742.9	2033.4	2323.8	2614.3	2904.8	3195.3	3485.8	4066.7	4647.7
VRA-RA300DA46165215	2390.8	2789.3	3187.8	3586.2	3984.7	4383.2	4781.6	5578.6	6375.5

Dimensional Drawing



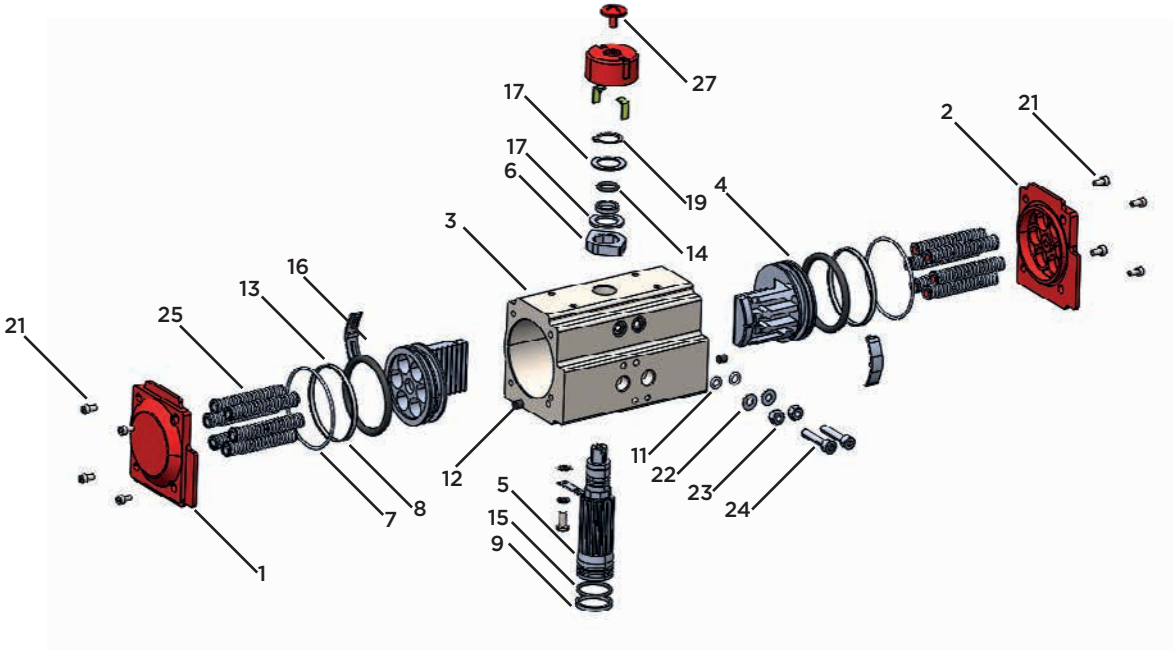
Unit (mm)

Dimension

Model	A	B	C	D	E	F	G	H	I	I-1	J	J-1	K	L	M	N	P	Z	Air
VRA-RA040DA09036050	25	50	24	32	56	76	48	20	36	F03	50	F05	M5×8	M6×10	9	10	42	114	1/8"
VRA-RA052DA11036050	30	80	30	42.5	72.4	92.4	50.5	20	36	F03	50	F05	M5×8	M6×10	11	14	42	150	1/4"
VRA-RA063DA14050070	30	80	36	47	88.5	108.5	69.5	20	50	F05	70	F07	M6×10	M8×13	14	18	42	171	1/4"
VRA-RA075DA14050070	30	80	42.5	53	100	120	78	20	50	F05	70	F07	M6×10	M8×13	14	18	42	186	1/4"
VRA-RA083DA17050070	30	80	46.5	57	109.5	129.5	86	20	50	F05	70	F07	M6×10	M8×13	17	21	42	206	1/4"
VRA-RA092DA17050070	30	80	50	58	117	137	90	20	50	F05	70	F07	M6×10	M8×13	17	21	42	265	1/4"
VRA-RA105DA22070102	30	80	57.5	64	135	155	104.5	20	70	F07	102	F10	M8×13	M10×16	22	26	42	272	1/4"
VRA-RA125DA22070102	30	80	67.5	74.5	157	187	120.5	30	70	F07	102	F10	M8×13	M10×16	22	26	62	304	1/4"
VRA-RA140DA27102125	30	80	75.5	75.5	174	204	125	30	102	F10	125	F12	M10×16	M12×20	27	32	62	395	1/4"
VRA-RA160DA27102125	30	130	87	87	198	228	143	30	102	F10	125	F12	M10×16	M12×20	27	32	62	462	1/4"
VRA-RA190DA36000140	30	130	103	103	232	262	172	30			140	F14		M16×25	36	40	80	552	1/4"
VRA-RA210DA36000140	30	130	113	113	257	287	194	30			140	F14		M16×25	36	40	80	552	1/4"
VRA-RA240DA46000165	30	130	130	130	292	322	230	30			165	F16		M20×30	46	50	90	628	1/4"
VRA-RA270DA46000165	30	130	147	147	331	361	252	30			165	F16		M20×30	46	50	90	750	1/2"
VRA-RA300DA46165215	30	130	161	168	354	384	290	30	165	F16	215	F20	M20×30	M20×30	46	50	90	780	1/2"

COMPONENTS AND MATERIALS, CORROSION

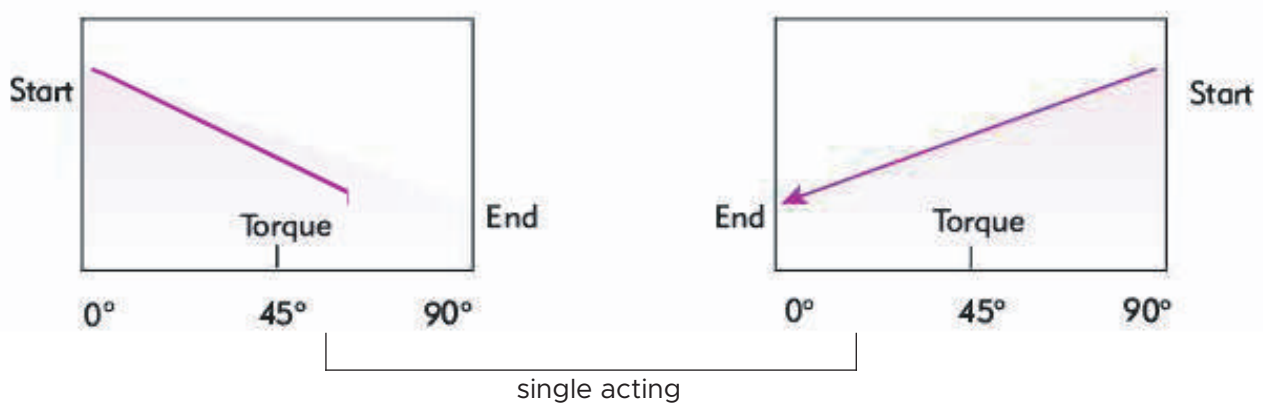
SINGLE ACTING



	Protection category	
Parts	A	B
Cylinder	Hard anode oxidation	Teflon coating + Anode sclerosis
Cover	Polyester coated metal	Teflon coating
Output shaft	Carbon steel electroless nickel plating	Electroless nickel plating or stainless steel
Use Occasion	General situation	General occasions or low concentrations of acidic environment

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18	2	Gasket (output shaft)	Stainless steel	-----
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20	4	Cover bolt	Stainless steel	-----
21	4	Cover Gasket	Stainless steel	-----
22	2	Gasket	Stainless steel	-----
23	2	Nut	Stainless steel	-----
24	2	Adjustment bolt	Stainless steel	-----
25	5-12	Spring Components	Alloy spring steel	-----
26	1	Position indicator	(POM)	-----
27	1	Screw of indicator	(POM)	-----

Torque Diagram



Selection Of Single Action Actuators

The suggested safety factor for single acting actuators under normal working conditions is 30%-50%

Sample Selection of Single Action Actuators:

Safety Factor: 30%-50%.

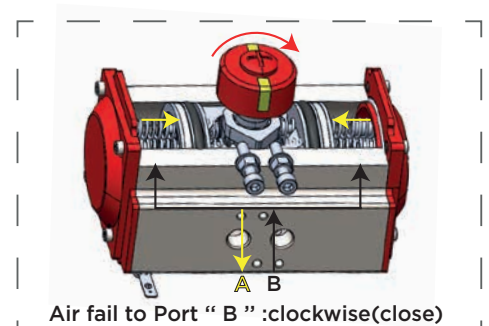
Valve Torque Value: 100 N.m

Add Safety Factor: $100 \times (1 + 30\%) = 130 \text{ N.m}$

Air Supply=5 Bar

Selection:

According to double acting torque table, we can choose the minimum model is VRA-RA140SR27102125 with 10 springs.



Operating type (Double acting and spring return)

NAMUR

Air supply connection is designed in accordance with NAMUR Standard to install solenoid valves.



NAMUR

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



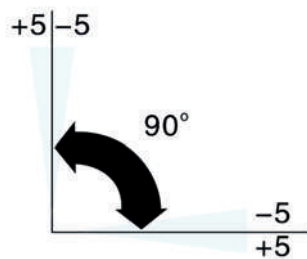
ISO5211, DIN3337

Bottom mounting connection is designed in accordance with ISO5211, DIN3337 standards for direct mounting with valve gear boxes or mounting brackets.



Operating Conditions:

1. 30 μ m
2. 2.5 , 8
3. -20°C ~ +80°C
-40°C ~ +80°C
-15°C ~ +150°C
4. 0°-90°
- 5.



1. Operating media
Dry or lubricated air, or the non-corrosive gases
The maximum particle diameter must less than 30 μ m
2. Air supply pressure
The minimum supply pressure is 2.5 Bar
The maximum supply pressure is 8 Bar
3. Operating temperature
Standard: -20°C ~ +80°C
Low temperature: +15°C ~ 150°C
4. Travel adjustment
Have adjustment range of $\pm 5^\circ$ for the rotation at 0° and 90°
5. Application
Either indoor outdoor

Air Consumption

Model	Maximum pressure	The angle of rotation	Temperature	1*the need to adjust the number of laps	Diameter	(L) Internal volume close Open		(A) On-off time close Open		(kgs/per)Weight A weight Spring weight	
VRA-RA052SR11036050	8 bar Lubrication or dry of compressed air 8bar	(0°-90°) ± 5° 0°-90° (0°-90°) ± 5° or full itinerary 0°-90°	ST O -20--+80°C HT O -15--+150°C LT O -40+80°C ST(normal) NBR O-ring -20--+80°C HT(High Temperature) Viton O-ring -15--+150°C LT(Low Temperature) Silicone O-ring -40+80°C	1/6	52	0.2	0.3	DA0.3 SR0.3	DA0.3 SR0.4	DA1.6 SR1.8	*** 0.02
VRA-RA063SR14050070				1/5	63	0.3	0.5	DA0.3 SR0.4	DA0.4 SR0.5	DA2.8 SR3.2	*** 0.03
VRA-RA075SR14050070				1/5	75	0.5	0.8	DA0.4 SR0.5	DA0.5 SR0.6	DA4.0 SR4.7	*** 0.06
VRA-RA083SR17050070				1/5	83	0.7	1.1	DA0.5 SR0.7	DA0.6 SR0.9	DA5.9 SR6.7	*** 0.07
VRA-RA092SR17050070				1/4	92	1.2	1.8	DA0.7 SR1.0	DA0.9 SR1.2	DA8.4 SR9.8	*** 0.10
VRA-RA105SR22070102				1/4	105	1.5	2.3	DA0.9 SR1.2	DA1.1 SR1.4	DA10.7 SR12.5	*** 0.13
VRA-RA125SR22070102				1/4	125	2.4	3.8	DA1.2 SR1.5	DA1.4 SR1.8	DA15.5 SR18.3	*** 0.25
VRA-RA140SR27102125				1/4	140	3.1	4.9	DA1.5 SR1.8	DA1.7 SR2.1	DA19.5 SR23.3	*** 0.36
VRA-RA160SR27102125				1/4	160	4.5	7.3	DA2.0 SR2.4	DA2.2 SR2.8	DA26.7 SR32.8	*** 0.5
VRA-RA190SR36000140				1/4	190	6.8	11.2	DA2.8 SR3.0	DA3.0 SR3.4	DA34.6 SR44.2	*** 0.5
VRA-RA210SR36000140				1/4	210	10	15.2	SR3.5 DA3.5	SR4.0 DA4.0	SR43.6 DA58.2	0.62 ***
VRA-RA240SR46000165				1/4	240	14.5	21.4	SR4.1 DA4.0	SR4.6 DA4.5	SR71.0 DA78.8	1.12 ***
VRA-RA270SR46000165				1/4	270	23.8	29.7	SR4.5 DA	SR5.0 DA	SR96.5	1.56
VRA-RA300SR46165215				1/4	300	35.1	46.3	DA SR	DA SR		

Air consumption rest with Supply. Air volume and Action cycle times,expressions

$L/Min = \text{Air volume}(\text{Air volume Opening} + \text{Air volume closing}) \times [(\text{Air Supply(Kpa)} + 101.3) \div 101.3] \times \text{Action cycle times(/min)}$

Common faults and inspection, troubleshooting

Failure phenomenon	Inspection Items	Solution
Pneumatic valve can not move	1, the electromagnetic valve is normal, coil is burned, Electromagnetic valve is stuck being stolen	Solenoid valve replacement, replacement coils, remove stolen property.
	2, a separate air supply pneumatic actuator test, check seals and Whether the cylinder is damaged.	Replace a bad ring and cylinder.
	3, there are impurities in the spool valve stuck.	Remove impurities, replace damaged parts.
	4, the handle in a manual motor location.	change the handle to pneumatic position
Slow motion, crawling	1, supply pressure is not enough.	The increase of gas supply pressure (0.4-0.7Mpa)
	2, pneumatic actuator output torque is too small.	Increase the pneumatic actuator Production.
	3, the valve spool or valve assembly too tight.	Re-assembly adjustments.
	4, air supply pipe plug, flow is too small.	Exclude plug, replace the filter cartridge.
Reply devices without signal	1, power line short circuit or open circuit.	Maintenance of power lines.
	2, reply within the cam position is not accurate.	Adjust the cam to the correct location
	3, micro switch damaged.	Replacement Micro Switch

Varnasan

CONTROL VALVE TECHNOLOGIES

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