

**FINAL ASSESSMENT REPORT OF AN EQUIPMENT FOLLOWING THE
EUROPEAN PRESSURE EQUIPMENT DIRECTIVE 97/23/EC
CATEGORY I MODULE A
Report No.: NTC20111113-PED**

1. Introduction

An application from **Shanghai Xunhe Electromechanical Co.,Ltd** to **NTC** for assess his series products **Valve Accessories (VS Series Pneumatic Actuator, VSF Series Pneumatic Actuator, Limit Switchbox, Solenoid Valve, E/P Positioner)** according to the European pressure equipment directive 97/23/EC.

General aspect of the products for assessing:



Pneumatic Actuator



VSF Series Scotch Yoke Type Pneumatic & Hydraulic Actuator



4V Solenoid Valve



VSL Valve Position Monitor(Limit Switchbox)



E/P Positioner

1.1 List of the type or models

Valve Accessories (VS Series Pneumatic Actuator, VSF Series Pneumatic Actuator, Limit Switchbox, Solenoid Valve, E/P Positioner) are involved in assessing:

Model VS Series Rack & Pinion Pneumatic Actuator:

VS-032DA/SR, VS-052DA/SR, VS-063/SR, VS-075DA/SR, VS-083DA/SR,
VS-092DA/SR, VS-105DA/SR, VS-125DA/SR, VS-140DA/SR, VS-160DA/SR,
VS-190DA/SR, VS-210DA/SR, VS-240DA/SR, VS-270DA/SR

VSF/VF Series Scotch Yoke Type Pneumatic & Hydraulic Actuator:

VS13DA/SR, VS17DA/SR, VS20DA/SR, VS25DA/SR, VS28DA/SR,
VS32DA/SR, VS35DA/SR, VS49DA/SR, VS60DA/SR, VS70DA/SR,
VSF14-200DA/SR*, VSF14-250DA/SR*, VSF14-300DA/SR*,
VSF16-250DA/SR*, VSF16-300DA/SR*, VSF16-350DA/SR*,
VSF25-350DA/SR*, VSF25-400DA/SR*, VSF25-450DA/SR*,
VSF30-450DA/SR*, VSF30-500DA/SR*, VSF30-550DA/SR*,
VSF35-550DA/SR*, VSF35-600DA/SR*, VSF35-700DA/SR*,
VSF40-600DA/SR*, VSF40-700DA/SR*, VSF40-800DA/SR*,
VSF48-800DA/SR*, VSF48-900DA/SR*, VSF48-1000DA/SR*,
VSF60-800DA/SR*, VSF60-900DA/SR*, VSF60-1000DA/SR*,
VSF60-1100DA/SR* *air supply(3~6bar)

Limit Switchbox:

VSL-100, VSL-200, VSL-300, VSL-400

E/P Positioner:

VS-1000L/ R

Solenoid Valve:

4V310-08B, 4V320-08B, 4V310-08E, 4V320-08E
4V410-08B, 4V420-08B, 4V410-08E, 4V420-08E

1.2 Technical documents

Below documents have been submitted to NTC for assess by the applicant:

1. Application
2. Note differences in CE certified equipment
3. Enterprise business license
4. Plate rubbing pieces
5. Quality Assurance System Chart
6. Material quality control procedures Map
7. Process quality control procedures Map
8. Inspection Quality Control System
9. Regulations and standards for pressure vessel manufacturing index directory
10. Pressure components, raw materials, inspected and the notice
11. Pressure Equipment Product Quality Certificate (inspection reports, etc.)
12. Electrical equipment assembly drawings and assembly plans
13. Specification manual

2. Assessment

2.1. the principle of operation

For double acting actuator

- CCW-counter-clockwise

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

- CW-clockwise

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

For single acting spring return actuator

- CCW-counter-clockwise

Air to port A forces the pistons outwards, causing the springs to compress. The pinion turns counter-clockwise while air is being exhausted through port B.

- CW-clockwise

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

2.2. Classification of the products

In No.13 technical document Specification manual said the pressure ranges stated as:

2 bar(29 psig) to 8 bar(116 psig) for double acting

3 bar(44 psig) to 8 bar(116 psig) for spring return

According to the European pressure equipment directive 97/23/EC article 3 1.1(a) first indent, the products belong to category I. the conformity assessment is module A.

2.3 Evaluation of the technical files

For module A, below technical files are needed for assessment:

— a general description of the pressure equipment,

Which can be find at the technical document Operation and maintenance Manual.

— conceptual design and manufacturing drawings and diagrams of components, sub-assemblies, circuits, etc.,

Which can be find at the technical document Electrical equipment assembly drawings and assembly plans.

— descriptions and explanations necessary for an understanding of the said drawings and diagrams and the operation of the pressure equipment,

Which can be find at the technical document Operation and maintenance manual, Electrical equipment assembly drawings and assembly plans and Electrical operating instructions.

— a list of the standards referred to in Article 5, applied in full or in part, and a description of the solutions adopted to meet the essential requirements of the Directive where the standards referred to in Article 5 have not been applied,

Blow standards stated at the technical document Regulations and standards for manufacturing.

ISO 9001:2008 Quality management systems -- Requirements

ISO5211:2001 Industrial Valves - Part-Turn Actuator Attachments

VDI/VDE 3845:2004 Industrial process control valves - Interfaces between valves, actuators and auxiliary equipment

ASTM A351/A351M:2010

Standard Specification for Castings, Austenitic, for Pressure-Containing Parts

3 Conclusion

According to the European pressure equipment directive 97/23/EC article 3 1.1(a) first indent, and the conformity assessment module A, based on the all technical documents that submitted by the applicant, we declares that:

the products **Valve Accessories (VS Series Pneumatic Actuator, VSF Series Pneumatic Actuator, Limit Switchbox, Solenoid Valve, E/P Positioner)** meet the requirements of the European pressure equipment directive 97/23/EC.

All technical documents will be archived at NTC dossier.

A certificate will be issued by NTC for the applicant: **Shanghai Xunhe Electromechanical Co., Ltd.**

Prepared by: 

Approve by: 

Date: Oct. 14, 2011

.....
Appendix 1: Pneumatic Actuator-Dimension Table (VS Series)

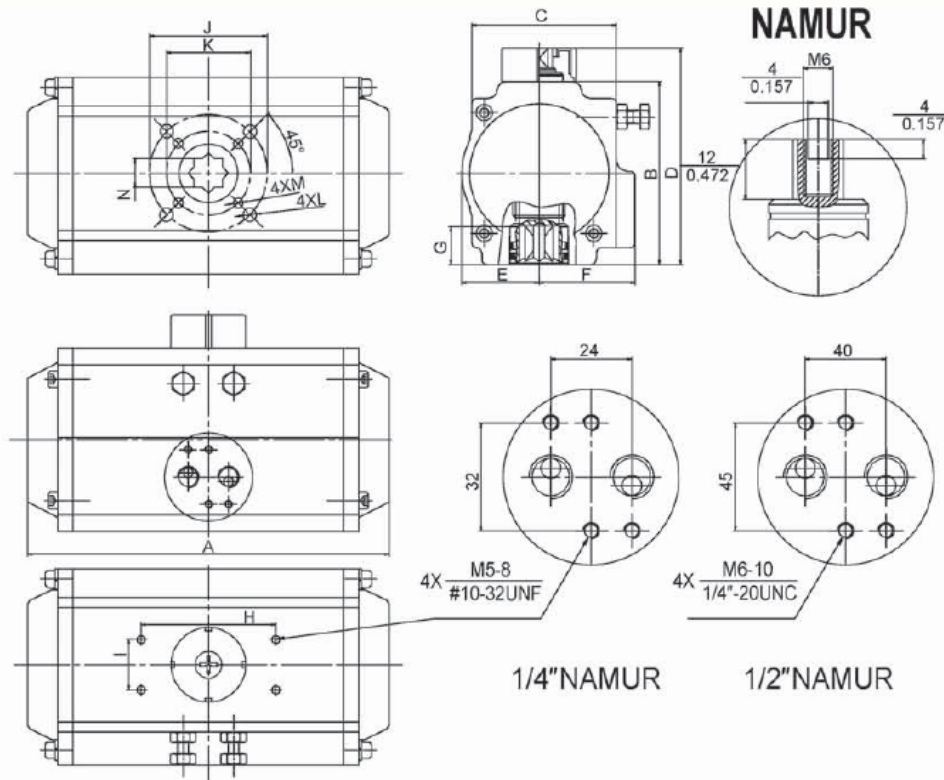
Appendix 2: Pneumatic Actuator-Dimension Table (VSF Series)

Appendix 3: Components list , Specification and Dimensions (VSL Series)

Appendix 4: Specification and dimension of 4V Solenoid Valve

Appendix 5: Specification and dimension of Electro-Pneumatic Positioner VS-1000R

Appendix 1: Pneumatic Actuator-Dimension Table (VS Series)



Dimension Table 尺寸表

Unit: **mm**
inch

Model	A	B	C	D	E	F	G	H	I	N	A120°	A180°	J	K	L	M	Air Connection
VS-032	110	45	45	65	22.5	22.5	12	50	25	9	—	—	F03	—	M5x7.5	—	1/8"
	4.33	1.77	1.77	2.56	0.89	0.89	0.47	1.97	0.98	0.35	—	—	F03	—	#10-24UNF	—	
VS-052	153	72	65	92	30	41.5	14	80	30	11	182	225	F05	F03	M6x10	M5x7.5	1/8" or 1/4"(std.)
	6.03	2.83	2.56	3.62	1.18	1.63	0.55	3.15	1.18	0.43	7.16	8.86	F05	F03	1/4"-20UNC	#10-32UNF	
VS-063	174	88	72	108	36	47	18	80	30	14	216	265	F07	F05	M8x13	M6x10	1/8" or 1/4"(std.)
	6.86	3.46	2.83	4.25	1.42	1.85	0.71	3.15	1.18	0.55	8.50	10.47	F07	F05	5/16"-20UNC	1/4"-20UNC	
VS-075	196	100	81	120	42	53	20	80	30	14	232	282	F07	F05	M8x13	M6x10	1/8" or 1/4"(std.)
	7.72	3.94	3.19	4.72	1.65	2.09	0.79	3.15	1.18	0.55	9.13	11.10	F07	F05	5/16"-20UNC	1/4"-20UNC	
VS-083	208	109	92	129	46	57	21	80	30	17	245	304	F07	F05	M8x13	M6x10	1/8" or 1/4"(std.)
	8.20	4.29	3.62	5.08	1.81	2.24	0.83	3.15	1.18	0.67	9.65	12.0	F07	F05	5/16"-20UNC	1/4"-20UNC	
VS-092	249	117	98	137	50	58.5	22	80	30	17	303	386	F07	F05	M8x13	M6x10	1/8" or 1/4"(std.)
	9.81	4.61	3.86	5.39	1.97	2.30	0.87	3.15	1.18	0.67	12.0	15.2	F07	F05	5/16"-20UNC	1/4"-20UNC	
VS-105	278	133	110	153	58	62	26	80	30	22	330	414	F10	F07	M10x16	M8x13	1/4"
	10.95	5.24	4.33	6.02	2.28	2.44	1.02	3.15	1.18	0.87	13.0	16.3	F10	F07	3/8"-20UNC	5/16"-20UNC	
VS-125	326	155	125.5	175	67.5	75	27.5	80	30	22	392	497	F10	F07	M10x16	M8x13	1/4"
	12.84	6.10	4.94	6.89	2.66	2.95	1.08	3.15	1.18	0.87	15.4	19.6	F10	F07	3/8"-20UNC	5/16"-20UNC	
VS-140	396	173	137.5	193	75	77	32	80	30	27	475	601	F12	F10	M12x20	M10x16	1/4"
	15.60	6.81	5.41	7.60	2.95	3.03	1.26	3.15	1.18	1.06	18.7	23.7	F12	F10	1/2"-20UNC	3/8"-20UNC	
VS-160	457	198	158	218	87	87	34	80	30	27	553	700	F12	F10	M12x20	M10x16	1/4"
	18.01	7.80	6.22	8.58	3.43	3.43	1.34	3.15	1.18	1.06	21.8	27.6	F12	F10	1/2"-20UNC	3/8"-20UNC	
VS-190	538	232	189	262	103	103	40	130	30	36	623	790	F14	---	M16x24	---	1/4"
	21.18	9.13	7.44	10.3	4.06	4.06	1.57	3.15	1.18	1.42	24.5	31.1	F14	---	5/8"-20UNC	---	
VS-210	568	257	210	287	113	113	40	130	30	36	662	851	F14	---	M16x24	---	1/4"
	22.36	10.12	8.27	11.30	4.45	4.45	1.57	5.12	1.18	1.42	26.1	33.5	F14	---	5/8"-20UNC	---	
VS-240	660	291	245	321	130	130	50	130	30	46	828	1000	F16	---	M20x26	---	1/4" or 3/8"(std.)
	26.0	11.46	9.65	12.64	5.12	5.12	1.97	5.12	1.18	1.81	32.6	39.4	F16	---	3/4"-20UNC	---	
VS-270	740	330	273	360	147	147	50	130	30	46	867	1119	F16	---	M20x26	---	1/4" or 1/2"(std.)
	29.13	13.0	10.75	14.17	5.79	5.79	1.97	5.12	1.18	1.81	34.1	44.1	F16	---	3/4"-20UNC	---	
VS-300	798	354	290	384	90	173	50	130	30	46	—	—	F16	---	M20x26	---	1/2"(std)
	31.42	15.12	11.42	16.3	3.54	6.81	1.97	5.12	1.18	1.81	—	—	F16	---	3/4"-20UNC	---	

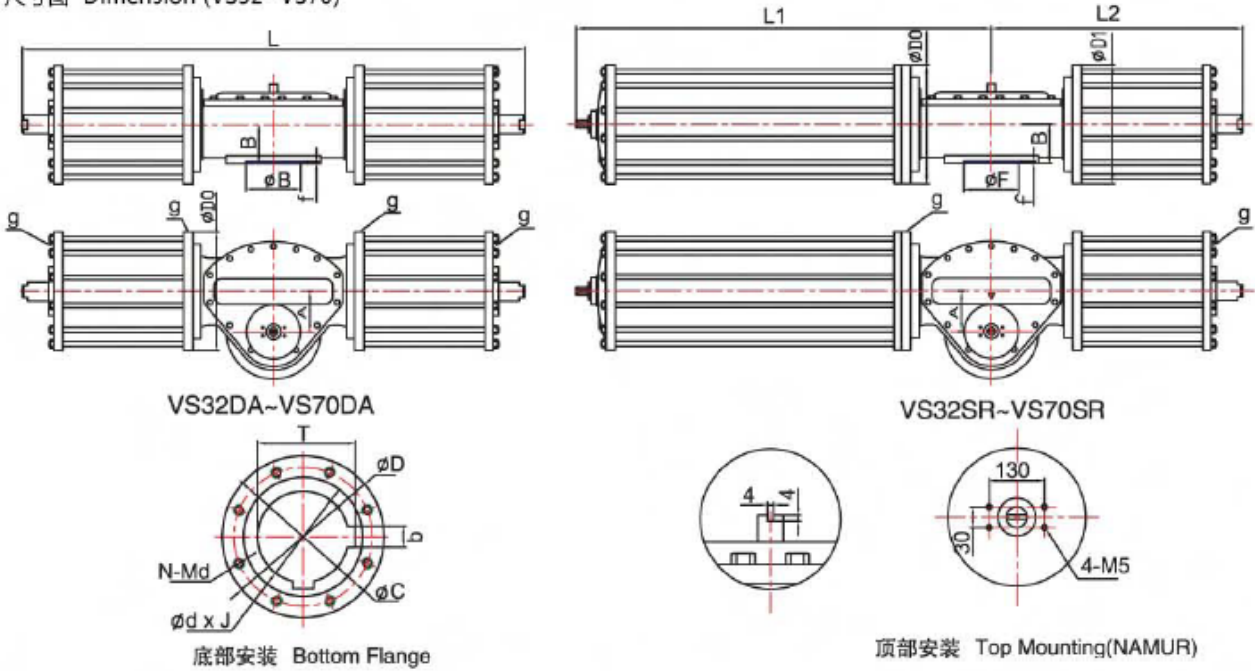
* A120 & A180 are separately represented 120° and 180° operation. (A120 及 A180 分别代表 120° 及 180° 角行程执行器长度)。
* Dimensions for reference only, subject to change. (上述尺寸仅供参考, 本公司保留改变权力)。

Appendix 2: Pneumatic Actuator-Dimension Table (VSF series)

尺寸表 Dimension Table of VS13~VS28

	unit:mm									
Model	VS13DA	VS13SR	VS17DA	VS17SR	VS20DA	VS20SR	VS25DA	VS25SR	VS28DA	VS28SR
A	49	49	60	60	98	98	110	110	120	120
m1	132	132	176	176	232	232	278	278	300	300
m2	68	68	95	95	115	115	150	150	170	170
L	574	810	755	988	1060	1415	1276	1686	1360	1840
L1	287	287	378	378	530	530	686	686	680	680
H1	85	85	105	105	130	130	169	169	165	165
H2	103	103	95	95	244	244	169	169	305	305
h	35	35	35	35	35	35	35	35	35	35
D	----	----	210	210	230	230	300	300	340	340
C	----	----	165	165	165	165	254	254	298	298
F	----	----	130	130	130	130	200	200	230	230
Φd0	----	----	50	50	64	64	75	75	85	85
b	----	----	14	14	18	18	20	20	22	22
Md	----	----	4-M20	4-M20	4-M20	4-M20	8-M20	8-M20	8-M20	8-M20
Φd	25	25	25	25	25	25	25	25	25	25
Air Inlet	1/4"	1/4"	3/8"	3/8"	3/8"	3/8"	1/2"	1/2"	1/2"	1/2"
t	----	----	53.8	53.8	68.4	68.4	79.7	79.7	90.4	90.4
Weight(Kg)	35.8	55.4	75	125	130	181	244	330	275	398

尺寸图 Dimension (VS32~VS70)



双作动 Double Acting Type

	unit:mm														
Type	L	ΦD0	A	B	C	D	ΦF	f	b	d	T	J	g	N-Md	Weight (Kg)
VS32DA	1566	392	135	158	298	350	230	6	25	90	95.4	140	1/2	8-M20	500
VS35DA	1850	440	150	145	300	350	240	6	28	100	106.4	140	1/2	8-M20	580
VS49DA	2150	562	180	160	350	400	280	6	32	120	127.4	165	3/4	12-M24	930
VS60DA	2610	700	220	197	450	500	360	6	36	140	148.4	180	3/4	12-M27	1570
VS70DA	2610	800	150	175	600	600	360	6	36	140	148.4	180	3/4	12-M27	2160

单作动 Spring Return Type

	unit:mm																		
Type	L1	L2	ΦD0	ΦD1	A	B	W	H	D	C	F	f	b	d	T	J	g	N-Md	Weight (Kg)
VS32SR	1405	783	392	392	135	158	380	145	350	298	230	6	25	90	95.4	140	1/2	8-M20	800
VS35SR	1590	925	440	440	150	145	380	145	350	300	240	6	28	100	106.4	140	1/2	8-M20	870
VS49SR	1780	965	440	562	150	145	380	145	350	300	240	6	28	100	106.4	140	3/4	12-M24	1100
VS60SR	1910	850	559	670	150	175	380	145	415	356	260	6	28	100	106.4	140	3/4	12-M27	1980
VS70SR	1910	850	559	770	150	175	380	145	415	356	260	6	32	120	127.4	140	3/4	12-M27	2770

Appendix 3: Components list , Specification and Dimensions (VSL series)

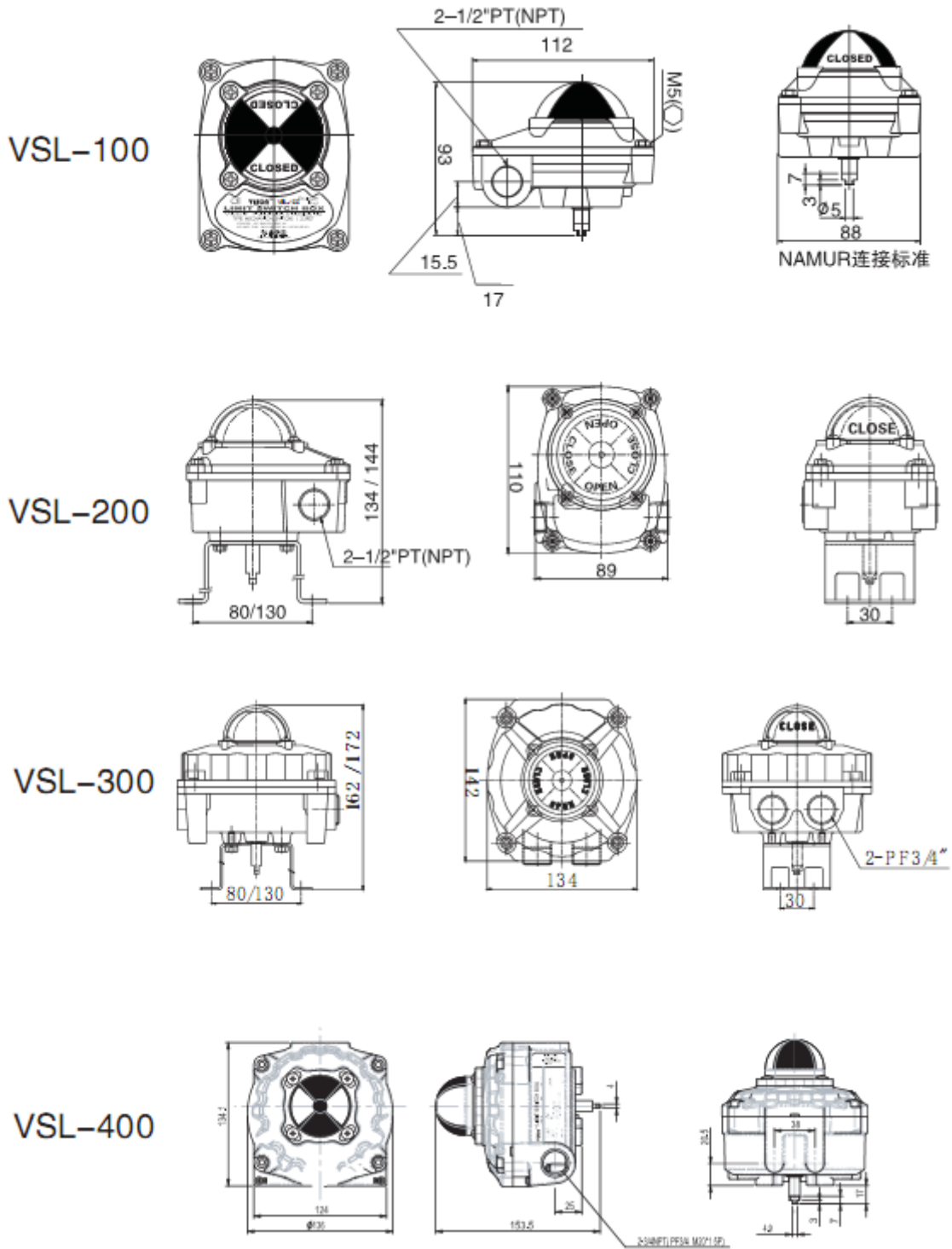
Components List

Housing	Low copper aluminum die-casting
Coating	Exposy-Ployster
Sealing	NBR O-rings on each interface (Dome indicator, Lower/Upper Housing, Shaft)
Cams	Poly-Carbonate
Bushings	Bronze
Shaft	AISI304 Stainless Steel
Earth Lug	Stainless Steel
Mounting Bracket	AISI304 Stainless Steel

Specification

Item/Type	VSL-100 /200S2	VSL-100 /200P	VSL-100 /200S4	VSL-300 /400S2	VSL-300 /400P	VSL-300 /200S4
Switch type	Mechinery x2	Sensor x2	Mechinery x2	Mechinery x2	Mechinery x2	Mechinery x4
Switch Class	AC:250V 3A, 125V 5A DC: 250V 0.2A 125V 0.4A, 30V 4A	12-24VDC	AC:125 or 250V 10A 480A 2A	AC:250V 3A,125V 5A DC: 250V 0.2A 125V0.4A, 30V 4A	12-24VDC	AC:125 or 250V 10A 480A 2A
Protection class	Weather proof, IP67			Weather proof, IP67		
Explosion-proof	-			Ex d II BT6, Ex d II CT6, Ex ia II CT6		
Ambient temp.	-20°C-60°C			-20°C-60°C		
Power interface	NPT1/2 (PT1/2, PF1/2, M20)			NPT3/4(PT3/4,PF3/4,M20)		
Wiring	8 Points			8 Points		
Mounting Bracket	aluminum die-casting			NAMUR VDI/VDE 3845, ISO 5211		
Weight	500g(1.1lb)			1.4kg (3.1lb)		

Dimensions

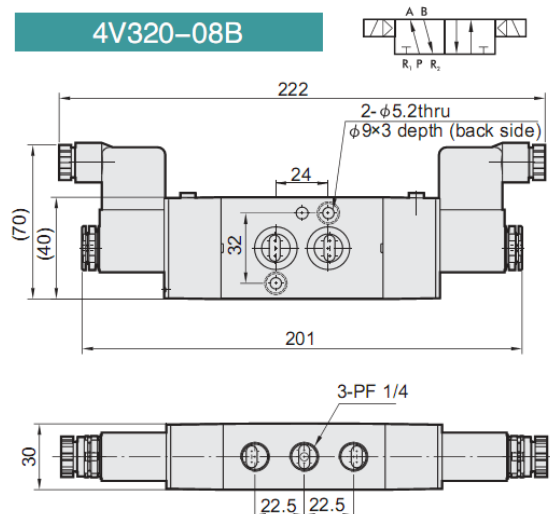
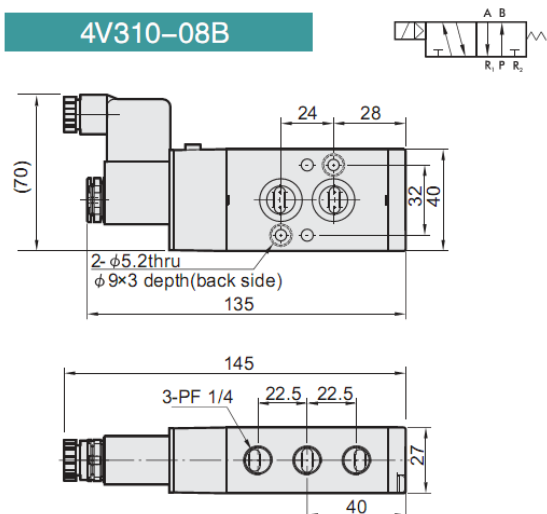


Appendix 4: Specification and dimension of 4V Solenoid Valve

Specification

Model	4V310/410	4V320/4V420
Medium	Air	
Valve Type	5 Port 2 Position	
Orifice Size	35mm ²	
Port Size	PF1/4"	
Lubrication	Not Required	
Pressure Range	0.15 ~ 0.8 Mpa	
Proof Pressure	12bar	
Temp. Range	-5 ~ 60°C (23 ~ 140°F)	
Voltage Range	-15% ~ 10%	
Power Consumption	AC=2.0~3.5VA, DC=2.5W	
Insulation Class	Class F	
Protection	IP65(DIN40050)	
Connector	Socket with Plug	
Max Frequency	5 cycle/second	
Specification of Explosion-Proof Type		
Explosion Proof	EExmII T4, T5	
Voltage Range	+10%	
Power Consumption	AC = 4.4W, DC = 5W	
Insulation Class	Class F	

Dimensions



Appendix 5: Specification and dimension of Electro-Pneumatic Positioner VS-1000R

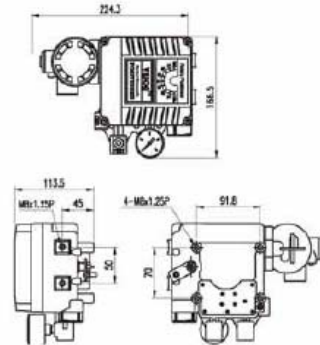
订购选型：角行程, VS-1000R ■ ■ ■ ■ ■ ■ ■

Model 型号	ActingType 作用型式	Ex-Proof 防爆等级	LeverType 反馈杆	OrificeType 节流孔	IndicatorType 指示器型式	Electric Connection 电气接口	AmbientTemp. 环境温度	Option 选用配件
VS-1000R	<input type="checkbox"/> 单作用 <input type="checkbox"/> 双作用	<input type="checkbox"/> ExdII BT6 <input type="checkbox"/> ExdII CT6 <input type="checkbox"/> ExialII CT6 <input type="checkbox"/> 防水型(IP66)	<input type="checkbox"/> M6x40L <input type="checkbox"/> M6x63L <input type="checkbox"/> M8x40L <input type="checkbox"/> M8x63L <input type="checkbox"/> Namur	<input type="checkbox"/> Φ1 <input type="checkbox"/> Φ2 <input type="checkbox"/> 无	<input type="checkbox"/> 平顶指示 <input type="checkbox"/> 圆顶指示	<input type="checkbox"/> PT <input type="checkbox"/> NPT <input type="checkbox"/> 其它	<input type="checkbox"/> -20~60℃ <input type="checkbox"/> -20~120℃ <input type="checkbox"/> -40~70℃	<input type="checkbox"/> 无 <input type="checkbox"/> +PTM (4-20mADC) <input type="checkbox"/> +LS(2xSPDT) <input type="checkbox"/> +AFR(内置空气过滤调压阀)

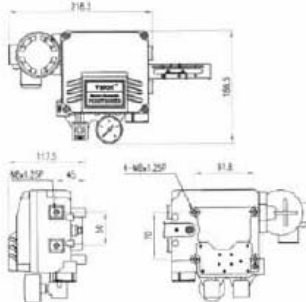
订购选型：直行程, VS-1000L ■ ■ ■ ■ ■ ■ ■

Model 型号	ActingType 作用型式	Ex-Proof 防爆等级	LeverType 反馈杆	OrificeType 节流孔	Electric Connection 电气接口	AmbientTemp. 环境温度	Option 选用配件
VS-1000L	<input type="checkbox"/> 单作用 <input type="checkbox"/> 双作用	<input type="checkbox"/> ExdII BT6 <input type="checkbox"/> ExdII CT6 <input type="checkbox"/> ExialII CT6 <input type="checkbox"/> 防水型(IP66)	<input type="checkbox"/> 10 ~ 40mm <input type="checkbox"/> 40 ~ 70mm <input type="checkbox"/> 70 ~ 100mm <input type="checkbox"/> 100 ~ 130mm <input type="checkbox"/> 130 ~ 150mm	<input type="checkbox"/> Φ1 <input type="checkbox"/> Φ2 <input type="checkbox"/> 无	<input type="checkbox"/> PT <input type="checkbox"/> NPT <input type="checkbox"/> 其它	<input type="checkbox"/> -20~60℃ <input type="checkbox"/> -20~120℃ <input type="checkbox"/> -40~70℃	<input type="checkbox"/> 无 <input type="checkbox"/> +PTM (4-20mADC) <input type="checkbox"/> +LS(2xSPDT) <input type="checkbox"/> +AFR(内置空气过滤调压阀)

角行程, VS-1000R



直行程, VS-1000L



Specification / 参数

Item/项目	Type/形式	Single Acting 单作用	Double Acting 双作用
Input Signal/输入信号		4-20mADC	
Impedance/阻抗		250±15 Ohm	
Supply Pressure/输入压力		1.4~7kg.f/cm ² (20~100psi)	
Stroke/行程范围		0 - 90°	
Air Connection/气源接口		1/4"PT(NPT)	
Gauge Connection /压力表接口		1/8"PT(NPT)	
Conduit/电源接口		1/2"PT(NPT,PF)	
Explosion Proof/防爆等级		ExdII BT6	
		ExdII CT6	
		ExialII CT6	
Protection/防护等级		IP66	
Ambient Temp/环境温度		-20 ~ 60°C (-4 ~ 158°F)	
Linearity/直线性		±1% F.S.	±2% F.S.
Hysteresis/滞后度		±1% F.S.	
Sensitivity/灵敏度		±0.2% F.S.	±0.5% F.S.
Repeatability/重复性		±0.5% F.S.	
Air Consumption/空气消耗量		3 LPM(Sup=1.4kg.f/cm ² ,20psi)	
Flow Capacity/流量		80 LPM(Sup=1.4kg.f/cm ² ,20psi)	
Material/材质		Aluminum, Die-Casting / 压铸铝	
Weight/重量		2.8kg(6.2lb)	

注意：请订购时注明气源接口和电气接口螺纹型式

The Electro-Pneumatic Positioner VS-1000 is used for operation of pneumatic rotary valve actuator by means of electrical controller or control systems with an analog output signal of DC 4 to 20mA or split ranges.

电-气阀门定位器VS-1000是一种从控制器或控制系统中接收4~20mA直流电流信号，并向角行程或者直行程气动执行机构输送空气来控制阀门位置的装置

- There is no resonance at 5 ~ 200Hz.(在5~200Hz范围内无共振现象。)
- The change of RA/DA acting is convenient. It is able to apply to single or double acting actuator.(正向和反向，单作用和双作用之间可方便转换。)
- It is possible to prevent the hunting with orifice to the small size actuator.(对于小型执行机构可通过缩小节流孔来防止振动。)
- It is economical due to less air consumption.(空气消耗量少，经济性好。)
- It is able to control the 1/2 split range with simple operation with replacement of parts.(不用更换零件就可以实现1/2范围内的分程控制。)