ZERTIFIKAT ◆ CERTIFICATE ◆ 認証書 ◆ СЕРТИФИКАТ ◆ CERTIFICADO ◆ CERTIFICAT

CERTIFICATE

(Certificate of conformity with technical requirements in:)

API STANDARD 6FA FIFTH EDITION, MAY 2020

Certificate No.: 315825

Ref. Test report No.: 315826

Name and postal address of manufacturer: Antiwear (Suzhou) Industrial Intelligent Technology Co., Ltd.
No.988, Yuexiu Road, Fenhu Economic Development Zone, PC: 215200, Suzhou City, Jiangsu Province, P. R. China

We hereby certify that the fire test on below valves have been conducted at the laboratory designated by manufacturer and witnessed by TÜV inspector according to requirements of API STANDARD 6FA FIFTH EDITION, MAY 2020 manufacturer's special requirements, the testing results of valves meet the requirements of API STANDARD 6FA FIFTH EDITION, MAY 2020

1. Description of Test Valve :

Type of Test Valve	MSB-T2-900-2-RF-NN Ball Valve
Description of Valve	Ball Valve
Valve Size (NPS)	2"
Pressure Rating (Class)	Class 900
Valve Body Material	ASTM A351 CF8

2. Qualified Range of Valves :

Type	Ball Valves
Description of Valves	Ball Valves
Qualified Sizes (NPS) *(according to API 6FA Table 4)*	2",2 1/2",3",4"
Qualified Pressure Ratings (Class) *(according to API 6FA Table 6)*	900;1500
Qualified Marking *(according to API 6FA Para.4.5)*	Qualified valves shall be permanently marked: **6FA**
Remark: the technical data of test valve see back of this certificate appendix 1.	

This certificate is issued according to API STANDARD 6FA FIFTH EDITION, MAY 2020, based upon the result of testing report on above mentioned test valve. The additional valves qualification shall be limited on similar valves of same basic design as the test valve and same nonmetallic materi als as the test valve in the seat-to-closure member seal, seat-to-body seal, stem seal, and body joint and seal according to API STANDARD 6FA FIFTH EDITION, MAY 2020, Para.5.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch * Industry Service *

Shanghai, December 08, 2024
(Place, date)

Guilin Chen
TÜV SÜD Certification and Testing (China) Co., Ltd.
Floor 3-13, No.151, Heng Tong Road,
Shanghai, 200070, P. R. China

Appendix 1:

Certificate No.: 315825

Ref. Test report No.: 315826

Name and postal address of manufacturer: Antiwear (Suzhou) Industrial Intelligent Technology Co., Ltd.
No.988, Yuexiu Road, Fenhu Economic Development Zone, PC: 215200, Suzhou City, Jiangsu Province, P. R. China

Technical Data of Valve

1. Type of Test Valve: MSB-T2-900-2-RF-NN Ball Valve

2. Description of Test Valve: Ball Valve

3. Details of Valve:

Valves Size (NPS) / Material / Part Name	2"
Body	ASTM A351 CF8
Bonnet	ASTM A351 CF8
Bottom Cover	ASTM A182 F316L
Stem	630+G14
Lower Stem	630+G14
Ball	ASTM A182 F51+G06
Gasket	316L+ Flexible Graphite
Seal Ring	Flexible Graphite
Packing	Flexible Graphite
Seat	ASTM A182 F51+G05+G50
O-Ring	V0390N
Yoke	ASTM A351 CF8
Nut	ASTM A194 8
Bolt	ASTM A193 B8 CL2
Packing Box	ASTM A182 F316L
Design Assembly Drawing No.:	MSBBJ-2F9RF-C-ZJ-X6-D-155 Rev.A1

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch * Industry Service *

Shanghai, December 08, 2024
(Place, date)

Guilin Chen
TÜV SÜD Certification and Testing (China) Co., Ltd.
Floor 3-13, No.151, Heng Tong Road,
Shanghai, 200070, P. R. China

TÜV SÜD Certification and Testing (China) Co., Ltd.
Shanghai Branch
Floor 3-13, No.151, Heng Tong Road,
Shanghai, 200070, P. R. China

Tel.: +86(0) 21 6141 0123
Fax: +86(0) 21 6140 8600
Internet: www.tuvsud.cn

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Floor 3-13, No.151, Heng Tong Road, Shanghai, P. R. China
Tel.: +86(0) 21 6141 0123
Fax: +86(0) 21 6140 8600
Internet: www.tuvsud.cn

Test Report

(Fire test for valves according to API STANDARD 6FA FIFTH EDITION, MAY 2020)

Certificate No.: 315825
Test Report No.: 315826

Applicant / Manufacturer: Antiwear (Suzhou) Industrial Intelligent Technology Co., Ltd.
No.988, Yuexiu Road, Fenhu Economic Development Zone,
PC: 215200, Suzhou City, Jiangsu Province, P. R. China

Inspection body: TÜV SÜD Industrie Service GmbH
Floor 3-13, No.151, Heng Tong Road, Shanghai, P. R. China

Lab of test: Hefei General Machinery & Electrical Products Inspection Institute

Test Date: November 26, 2024

Description of valves: MSB-T2-900-2-RF-NN Ball Valve
Size: 2"
Pressure Rating: Class 900
Assembly Drawing No.: MSBBJ-2F9RF-C-ZJ-X6-D-155 Rev.A1

Test Witnessed By: Chen Guilin / TÜV SÜD Inspector

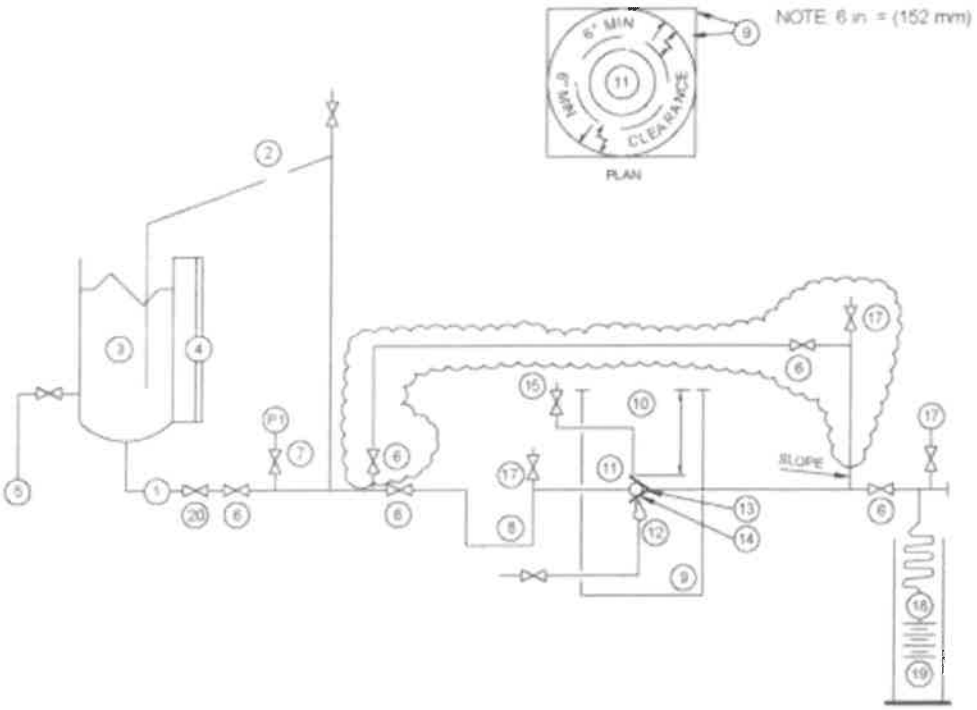
TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Floor 3-13, No.151, Heng Tong Road, Shanghai, P. R. China
Tel.: +86(0) 21 6141 0123
Fax: +86(0) 21 6140 8600
Internet: www.tuvsud.cn

Inspection and Tests

1. Conformity of Equipment

The test equipment was verified by TÜV SÜD inspector according to requirements of API STANDARD 6FA FIFTH EDITION, MAY 2020, Para 4.3 and found satisfactory. The detail arrangement of the fire-test equipment is shown below:

Figure 1 Typical Fire-Test System Using a Pump as the Pressure Source



Legend

1.Pressure source
2.Pressure regulator and relief
3.Vessel for water
4.Calibrated sigh gauge or equivalent
5.Water supply
6.Shutoff Valve
7.Pressure gauge
8.Piping arranged to provide vapor trap
9.Flame envelope for test –horizontal clearance between any part of the valve and the closure shell shall be 6 in. (152mm) above
10.Minimum height of flame envelope shall be 6 in.(152mm) above the top of the valve
11. Test valve mounted horizontally with stem in horizontal position
12. Fuel supply to burners
13. Calorimeter-1½ " in. cubes
14. Flame temperature thermocouple
15. Pressure gauge and relief valve see precautions
16. Shutoff valve
17. Vent valve
18. Condenser
19. Calibrated container.
20. Check valve
21. Bypass line(items within shaded area)

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Floor 3-13, No.151, Heng Tong Road, Shanghai, P. R. China
Tel.: +86(0) 21 6141 0123
Fax: +86(0) 21 6140 8600
Internet: www.tuvsud.cn

2. Calibration of measurement and test instrument

The measurement and test instrument have been properly calibrated such as pressure gauge, thermo-couples, etc.

3. Technical Data of Test Valve:

a) Description of test valve

Type of Test Valves	MSB-T2-900-2-RF-NN Ball Valve
Description of Valves	Ball Valve
Pressure Class	Class 900
Valve Size	2"
Flange Connection	ASME B16.5
Designed Standard	ASME B16.34

b)Details of technical data on test valve

Part Name	Materials
Body	ASTM A351 CF8
Bonnet	ASTM A351 CF8
Bottom Cover	ASTM A182 F316L
Stem	630+G14
Lower Stem	630+G14
Ball	ASTM A182 F51+G06
Gasket	316L+ Flexible Graphite
Seal Ring	Flexible Graphite
Packing	Flexible Graphite
Seat	ASTM A182 F51+G05+G50
O-Ring	V0390N
Yoke	ASTM A351 CF8
Nut	ASTM A194 8
Bolt	ASTM A193 B8 CL2
Packing Box	ASTM A182 F316L
Design Assembly Drawing No.:	MSBBJ-2F9RF-C-ZJ-X6-D-155 Rev.A1

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Floor 3-13, No.151, Heng Tong Road, Shanghai, P. R. China
Tel.: +86(0) 21 6141 0123
Fax: +86(0) 21 6140 8600
Internet: www.tuvsud.cn

4. Visual and dimensional Check on Valve Specimen:

The specimen valve was chosen at random by the manufacturer in its workshop and submitted to the laboratory. The visual and dimensional check was performed according to drawing No. MSBBJ-2F9RF-C-ZJ-X6-D-155 Rev.A1 and results found satisfactory. The mark was verified on valve as following:

Manufacturer` Brand	2"	900	CF8
	Size	Class	Material

5. Document Review:

The chemical and mechanical test report of castings was reviewed and found satisfactory. Also the inspection report of strength test, seal test and pneumatic test were reviewed and found satisfactory.

6. Preparation before testing:

6.1 The thermocouples and calorimeters were installed properly according to Figure 1,2,3,4 in API 6FA. Two thermocouples (part 14) are installed to measure flame temperature, one is located under valve body, another is located under valve stem, both within 1". Two calorimeters (part 13) are positioned to the same place as the thermocouples do.

6.2 The test system including test valve (part 11) was cleaned through by water before testing. All air was purged from test valve and testing system by water.

6.3 The test system was pressurized to 11.2 MPa (test pressure) after the test valve and system upstream of valve have been completely full of water and system downstream of the test valve have been completely empty of water. The system and test valve were carefully checked for leakage when the test pressure was held at 11.2 MPa. No leakage was found on system and test valve.

7. Fire Test:

7.1. Fire test with high pressure

The fire test was conducted according to API 6FA Section 4.4. The flame temperature reached 761℃ within 2 minutes after ignition. The test pressure and temperature were maintained during the fire test.

The temperature and pressure were recorded continuously by the operators. The system and test valve was cooled down below 100℃ within 5 minutes by natural after 30 minutes fire test. The loss of water weight in vessel was measured by weighing scale and water in calibrated container (part 19) were read and recorded.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch
Floor 3-13, No.151, Heng Tong Road, Shanghai, P. R. China
Tel.: +86(0) 21 6141 0123
Fax: +86(0) 21 6140 8600
Internet: www.tuvsud.cn

Test result of fire test with high pressure

Item	API 6FA Required Value	Actual Value
Test Pressure (MPa)	11.2 MPa	10.81 – 11.98 MPa
Test Temperature	761 - 980℃	816.6 – 881.5℃
Through-valve leakage according to API 6FA Para.4.4.2.2	≤ 400 ml / in. / min	23.5 ml / in. / min
Total weight of water through valve seat during cooling down period	0 ml	
Total time from fire test to cooling down	35 Minutes	
External Leakage according to API 6FA Para.4.4.2.2	≤ 100 ml / in. / min	5.5 ml / in. / min
Conclusion: the test result is satisfactory according to API 6FA.		

8. Operational Test:

The test valve was cooled below 100℃ within 5 minutes after complete the fire test. The operational test was conducted according to API 6FA Para. 4.4.4. Open the test valve against the high test pressure differential. The test valve was moved to a partly open position close to the shutoff valve. Vent the piping and test valve body cavity to remove air or steam.

Then measured and recorded external leakage for a period of five minutes after valve was in the open position at high test pressure. The test result was recorded on below:

Test result of operational test

Item	API 6FA Required Value	Actual Value
Test Pressure (MPa)	11.2 MPa	11.2 MPa
Test Time	5 minutes	
External Leakage according to API 6FA Para.4.4.4.2	≤ 200 ml / in. / min	178.0 ml / in. / min
Conclusion: the test result is satisfactory according to API 6FA.		

The undersigned, hereby declare that I have checked test valve and witnessed the fire test on the test valve according to API STANDARD 6FA FIFTH EDITION, MAY 2020. The test result is satisfactory.

TÜV SÜD Certification and Testing (China) Co., Ltd. Shanghai Branch

RONG Zhibin

Prepared by: Rong Zhibin

Date: December 08, 2024

Chen Guilin

Reviewed by: Chen Guilin

Date: December 08, 2024

Annexes:
1) Copy of Drawing No. MSBBJ-2F9RF-C-ZJ-X6-D-155 Rev.A1.
2) Copy of Test Record of Fire Test No. 2024FM1179.

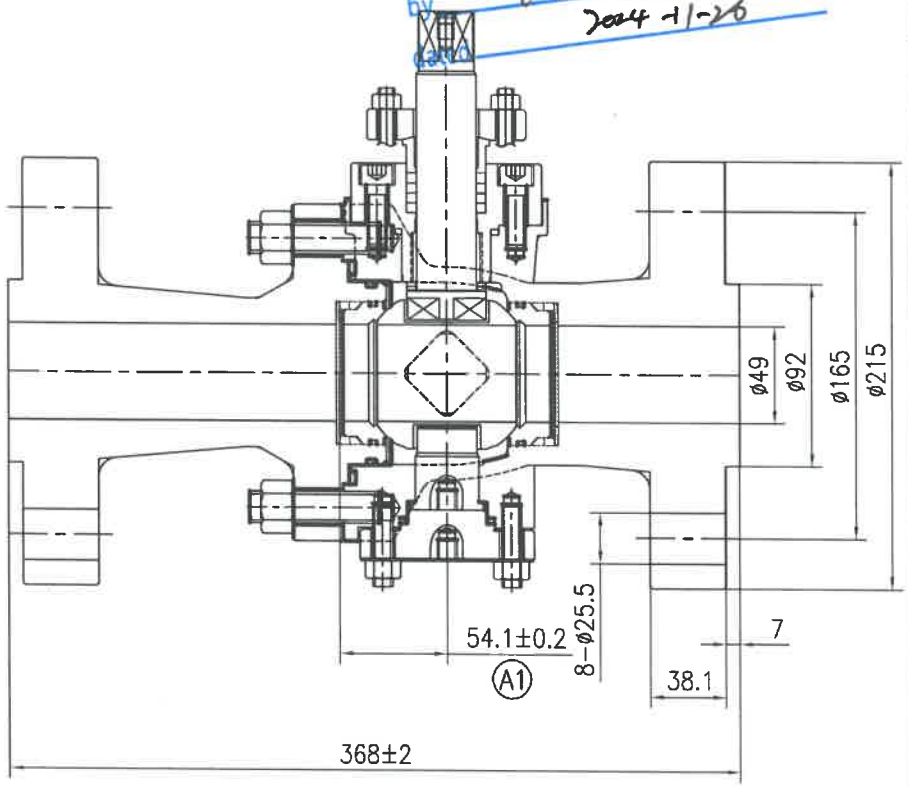
性 能 规 范	
公称压力或压力级	Class 900
公称通径或口径	NPS 2
壳体试验压力(液体)	22.5MPa
密封试验压力(气体)	16.5MPa
密封试验压力(气体)	0.35MPa

技术要求

1. 阀门的设计与制造按照ASME B16.34的规定。
2. 阀门的结构长度根据ASME B16.10的规定。
3. 法兰连接尺寸按ASME B16.5的规定。
4. 阀门的试验与检验按API 598的规定。
5. 压力温度等级根据ASME B16.34。
6. 阀门禁油脱脂处理。
7. A类尺寸1个。

受控

TÜV SÜD Certification and Testing (China) Co., Ltd.
Industry Service
☒ reviewed
☐ witnessed
by
2024-1-26



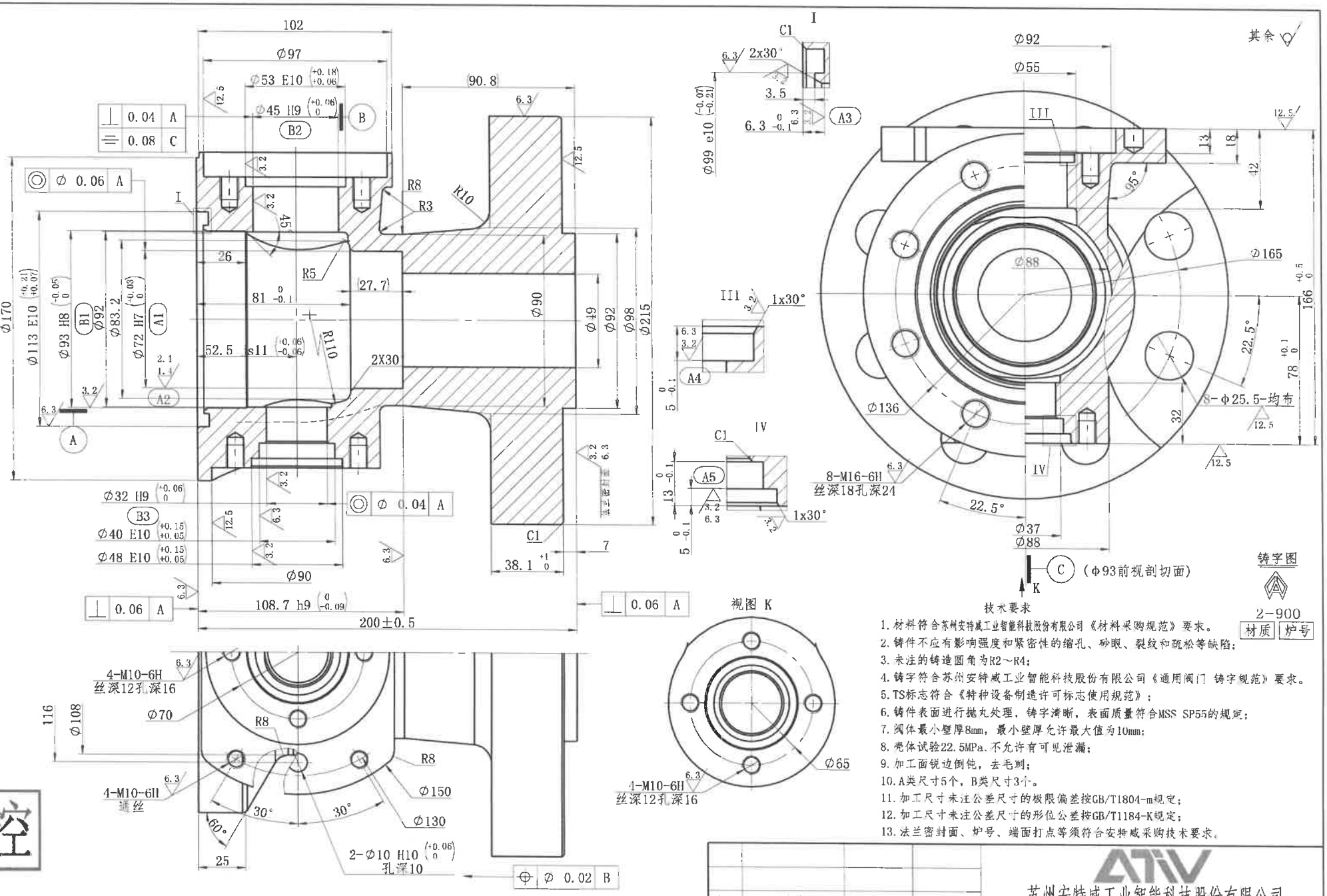
序号	规格	数量	版本	备注
28	标准碟簧-GB/T1972-A16	4	A1	
27	螺母-GB/T6175-M8	4	A1	
26	全螺纹螺柱-GB/T901-M8x50	4	A1	
25	填料压套-30.5x44x18-X6	1	A1	
24	填料压板-33x60x15-YD-X6	1	A1	
23	垫圈-30x40x5	2	A1	
22	石墨环-30x40x5	2	A1	
21	螺钉-GB/T70.1-M10x30	4	A1	
20	填料函-2G9Y-F-X6	1	A1	
19	石墨环-45x53x4	1	A1	
18	轴承-30x36x25-SD-X6	1	A1	
17	止推轴承-31x39.5x2-SD-X6	2	A1	
16	阀杆-24x30x33x155-0.8-PT-X6	1	A1	
15	球座组件-球体-2G9Y-Q49-X6-B+座圈-2G9Y-C-PHB-Q49-X6-D(1+2)	1	A1	
14	压环-64x72x5-X6	2	A1	
13	碟簧-71.5x53x1.5x3-X6	2	A1	
12	密封环-64x72x7-J45	2	A1	
11	缠绕垫-100x113x4.5	1	A1	
10	螺母-GB/T6175-M16	8	A1	
9	全螺纹螺柱-GB/T901-M16x65	8	A1	
8	阀帽-2F9RF-Q49-X6-D	1	A1	
7	阀体-2F9RF-Q49-X6-D	1	A1	
6	轴承-28x34x12-SD-X6	1	A1	
5	石墨环-40x48x4	1	A1	
4	螺母-GB/T6175-M10	4	A1	
3	全螺纹螺柱-GB/T901-M10x40	4	A1	
2	座轴-2G9Y-0.8-B+PT-X6	1	A1	
1	下盖-2G9Y-X6	1	A1	

序号	更改文件号	签名	日期

ATV 苏州安特威阀门有限公司

设计	张世亮	校对	赵保俊	版次	A1		
审核	杨树君					规格	MSBBJ-2F9RF-C-ZJ-X6-D-155
批准		日期	2021/3/16	比例	1:2.5		

MSBBJ-2F9RF-C-ZJ-X6-D-155物料清单				
序列号	物料名称	物料编码	属性	材料
1.1.1.1	下盖-2G9Y-X6-F316L	1302080557	采购件	F316L
1.1.1.2	底轴-2G9Y-0.8-A+PT-X6-630+G14	1304010900	采购件	630+G14
1.1.1.3	全螺纹螺柱-GB/T901-M10x40-B8-2	1404020636	采购件	B8-2
1.1.1.4	螺母-GB/T6175-M10-A194-8	1404030040	采购件	A194-8
1.1.1.5	石墨环-40x48x4-柔性石墨	1405030858	采购件	柔性石墨
1.1.1.6	卷制轴承-30x34x12-SD-X6-316L+QPQ	1305120066	采购件	316L+QPQ
1.1.1.7	阀体-2F9RF-ZP-Q49-X6-D-CF8	1.3012E+11	制造件	CF8
1.1.1.8	阀帽-2F9RF-ZP-Q49-X6-D-CF8	1.30124E+11	制造件	CF8
1.1.1.9	全螺纹螺柱-GB/T901-M16x65-B8-2	1404020639	采购件	B8-2
1.1.1.10	螺母-GB/T6175-M16-A194-8	1404030020	采购件	A194-8
1.1.1.11	缠绕垫-100x113x4.5-316L+柔性石墨	1405040401	采购件	316L+柔性石墨
1.1.1.12	阀座-2G9Y-C-PHB-ZP-Q49-X6-D-F51+G05+G50	1303026164	委外加工件	F51+G05+G50
1.1.1.13	O型圈-GB/T3452.1-64.77x2.62-V0390N	1406011019	采购件	V0390N
1.1.1.14	密封环-64x72x9-J45-柔性石墨	1306020618	采购件	柔性石墨
1.1.1.15	碟簧-71.5x53x1.5x2.8-X7-631	1316040509	采购件	631
1.1.1.16	压环-64x72x5-X6-316	1303110450	采购件	316
1.1.1.17	球体-2G9Y-PHA-Q49-X6-B-F51+G06	1303011686	采购件	F51+G06
1.1.1.18	阀杆-24x30x33x155-0.8-PT-X6-630+G14	1304021120	采购件	630+G14
1.1.1.19	止推轴承-31x39.5x2-SD-X6-316+QPQ	1305070591	采购件	316+QPQ
1.1.1.20	卷制轴承-30x34x25-SD-X6-316L+QPQ	1305120035	采购件	316L+QPQ
1.1.1.21	石墨环-45x53x4-柔性石墨	1405030348	采购件	柔性石墨
1.1.1.22	填料函-2G9Y-E-X6-F316L	1305021126	采购件	F316L
1.1.1.23	螺钉-GB/T70.1-M10x30-B8-2	1404040267	采购件	B8-2
1.1.1.24	盘根-30x40x5-石墨盘根(易天地1374PR系列)	1405020281	采购件	石墨盘根(易天地1374PR系列)
1.1.1.25	填料压板-33x60x15-YD-X6-304	1305030321	采购件	304
1.1.1.26	填料压套-30.5x44x18-X6-304	1305040191	采购件	304
1.1.1.27	全螺纹螺柱-GB/T901-M8x50-B8-2	1404021063	采购件	B8-2
1.1.1.28	螺母-GB/T6175-M8-A194-8	1404030190	采购件	A194-8
1.1.1.29	标准碟簧-GB/T1972-A16-631	1408020139	采购件	631



铸字图

2-900

材质 | 炉号

技术要求

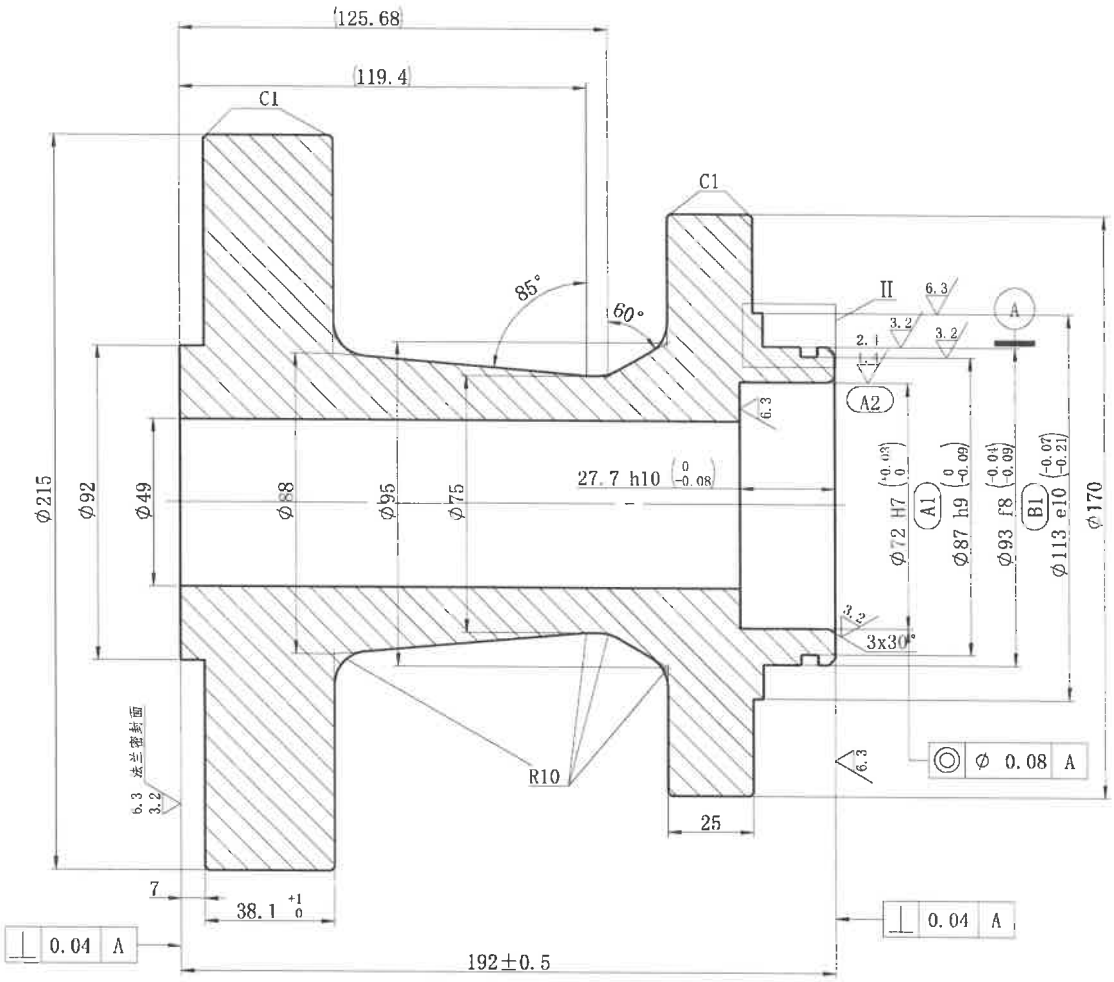
1. 材料符合苏州安特威工业智能科技股份有限公司《材料采购规范》要求。
2. 铸件不应有影响强度和紧密性的缩孔、砂眼、裂纹和疏松等缺陷；
3. 未注的铸造圆角为R2～R4；
4. 铸字符合苏州安特威工业智能科技股份有限公司《通用阀门 铸字规范》要求。
5. TS标志符合《特种设备制造许可标志使用规范》；
6. 铸件表面进行抛丸处理，铸字清晰，表面质量符合MSS SP55的规定；
7. 阀体最小壁厚8mm，最小壁厚允许最大值为10mm；
8. 壳体试验22.5MPa、不允许有可见泄漏；
9. 加工面锐边倒钝，去毛刺；
10. A类尺寸5个，B类尺寸3个。
11. 加工尺寸未注公差尺寸的极限偏差按GB/T1804-m规定；
12. 加工尺寸未注公差尺寸的形位公差按GB/T1184-K规定；
13. 法兰密封面、炉号、端面打点等须符合安特威采购技术要求。

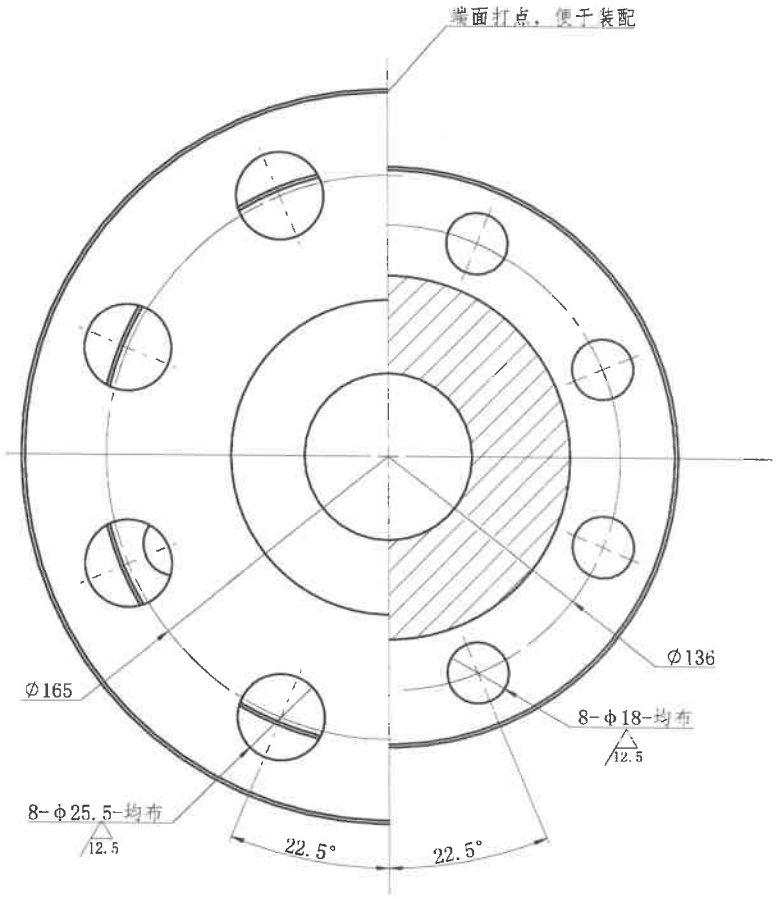
受控

序号	更改文件号		签名	日期		
设计	王睿腾	校对	董伟	版次	A1	
审核	杨博君	毛重	18.959Kg			规格
批准	黎玉飞	日期	2024/8/8	比例	1:1.8	

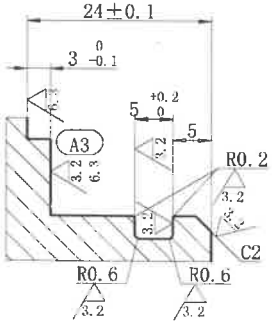
苏州安特威工业智能科技股份有限公司

阀体-2F9RF-ZP-Q49-X6-D





II



技术要求

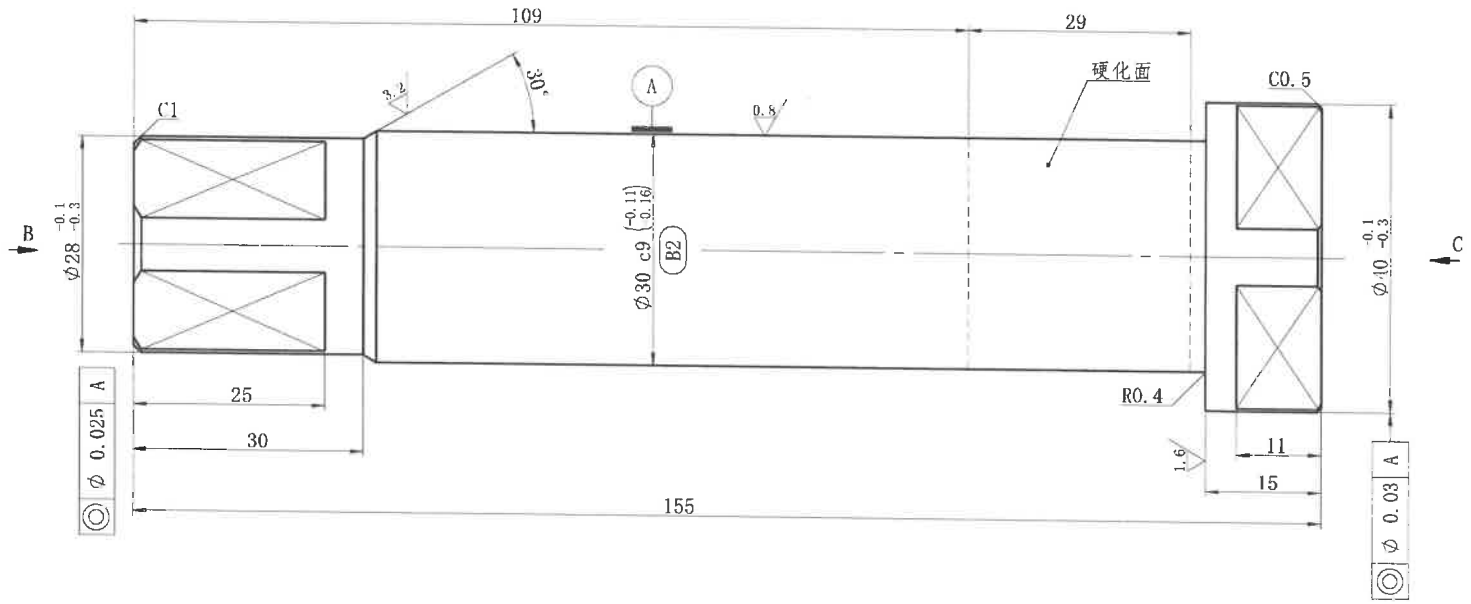
1. 材料符合苏州安特威阀门有限公司《材料采购规范》要求。
2. 铸件不应有影响强度和紧密性的缩孔、砂眼、裂纹和疏松等缺陷；
3. 未注的铸造圆角为R2～R4；
4. 铸字符合苏州安特威阀门有限公司《通用阀门 铸字规范》要求。
5. TS标志符合《特种设备制造许可标志使用规范》；
6. 铸件表面进行抛丸处理，铸字清晰，表面质量符合MSS SP55的规定；
7. 阀帽最小壁厚8mm，最小壁厚允许最大值为10mm；
8. 壳体试验22.5MPa，不允许有可见泄漏；
9. 加工面锐边倒钝，去毛刺；
10. A类尺寸3个，B类尺寸1个。
11. 加工尺寸未注公差尺寸的极限偏差按GB/T1804-m规定；
12. 加工尺寸未注公差尺寸的形位公差按GB/T1184-K规定；
13. 法兰密封面、炉号、端面打点等须符合安特威采购技术要求。

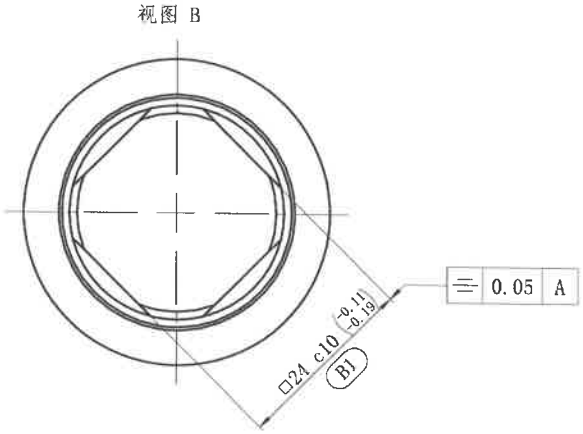
铸字图
2-900
材质 炉号

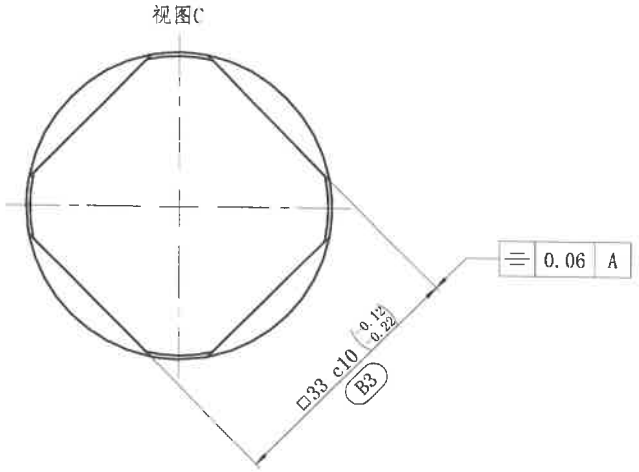
受控

序号	更改文件号		签名	日期			
设计	王睿腾	校对	董伟	版次	A1		苏州安特威阀门有限公司
审核	杨树君	毛重	16.24Kg			规格	阀帽-2F9RF-ZP-Q49-X6-D
批准	黎玉飞	日期	2024/8/8	比例	1:1.5		

其余 6.3







技术要求

1. 材料符合苏州安特威阀门有限公司《材料采购规范》要求；
2. 喷涂硬质合金，涂层硬度HRC≥65，涂层表面不得有裂纹、划痕、脱落等现象，喷涂表面之外的面在喷涂过程中需做好防护，硬质层有效厚度≥0.15mm,此图为最终成形尺寸；
3. B类尺寸3个；
4. 加工面锐边倒钝，去毛刺；
5. 加工尺寸未注公差尺寸的极限偏差按GB/T1804-m规定；
6. 加工尺寸未注公差尺寸的形位公差按GB/T1184-K规定。

受控

序号	更改文件号		签名	日期		
设计	谷秋实	校对	薛益标	版次	A1	
审核	杨树晋	毛重	0.86Kg			规格
批准	黎玉飞	日期	2019/6/21	比例	1.5:1	

苏州安特威阀门有限公司

阀杆-24x30x33x155-0.8-PT-X6