

ISO 15848-1

QUALIFICATION

CERTIFICATE



Certificate No.: 315987

Ref. Test report No.: 315986

We hereby certify that the valve below has passed the fugitive emission test successfully according to Class BH of ISO15848-1:2015+Amd.1:2017 for a total of **1500** cycles.

Name of manufacturer	Antiwear (Suzhou) Industrial Intelligent Technology Co., Ltd.
Postal Address of manufacturer	No.988, Yuexiu Road, Fenhui Economic Development Zone, PC: 215200, Suzhou City, Jiangsu Province, P. R. China
Item	3" CL2500 Ball Valve
Valve size(NPS)	3"
Pressure rating(Class)	Class2500
Stem size	Φ45mm
Body/bonnet material	ASTM A182 F347
Stem seal material	Ni + Flexible Graphite Packing
Valve assembly drawing no.	HTB-F2-2500-3-RJ-NN Rev.A1

The tested valve covers performance class (para.6.6):

ISO FE BH – CO2 – SSA0 – tRT – CL2500 – ISO 15848-1

Extension of qualification (in particular) to untested valves in accordance with paragraph 8 of ISO15848-1.

Other stem sizes qualified: 22.5 mm up to 90 mm

Other pressure ranges qualified: Class 2500 and lower

This certificate must be read in conjunction with test report No.: 315986

Shanghai, December 13, 2024
(Place, date)

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


Guilin Chen
TÜV SÜD Certification and Testing (China) Co., Ltd.
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Test Report

(Valve fugitive emission test according to ISO15848-1: 2015+Amd.1:2017)

Certificate No. : 315987
Test Report No.: 315986

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

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

Lab of test: Antiwear (Suzhou) Industrial Intelligent Technology Co., Ltd

Test Date: December 07-10, 2024

Description of valves: 3" CL2500 Ball Valve
Size:3"
Pressure Rating: Class2500
Drawing No. HTB-F2-2500-3-RJ-NN Rev.A1

Test Witnessed By: CHEN Guilin/ TÜV SÜD Inspector

Inspection and Tests

1. Conformity of Equipment

The test equipment was verified by TÜV SÜD inspector according to requirements of ISO15848-1:2015+Amd.1:2017 and found satisfactory. The detailed arrangement of the fugitive emission test equipment is shown below:

Figure 1 Typical stem seal leakage measurement system with Vacuum Method

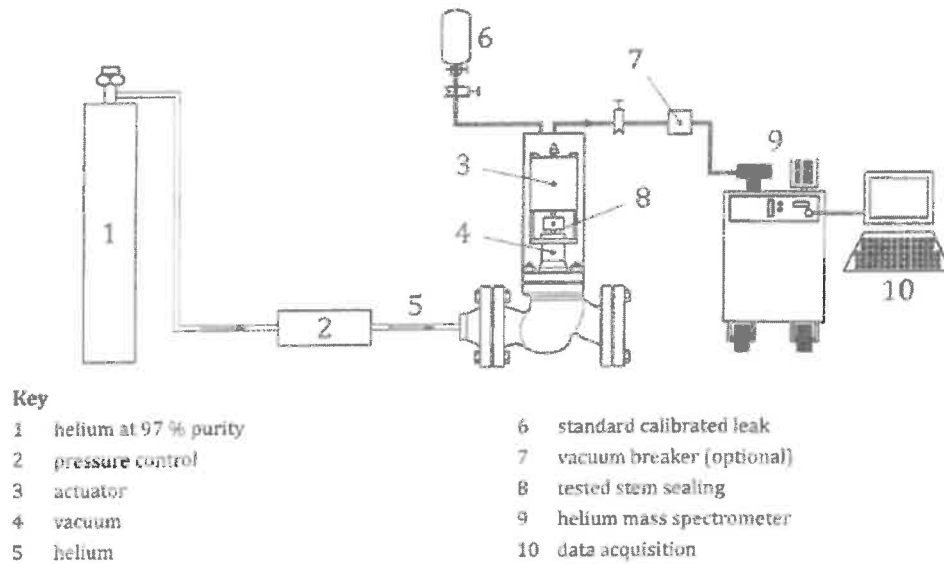
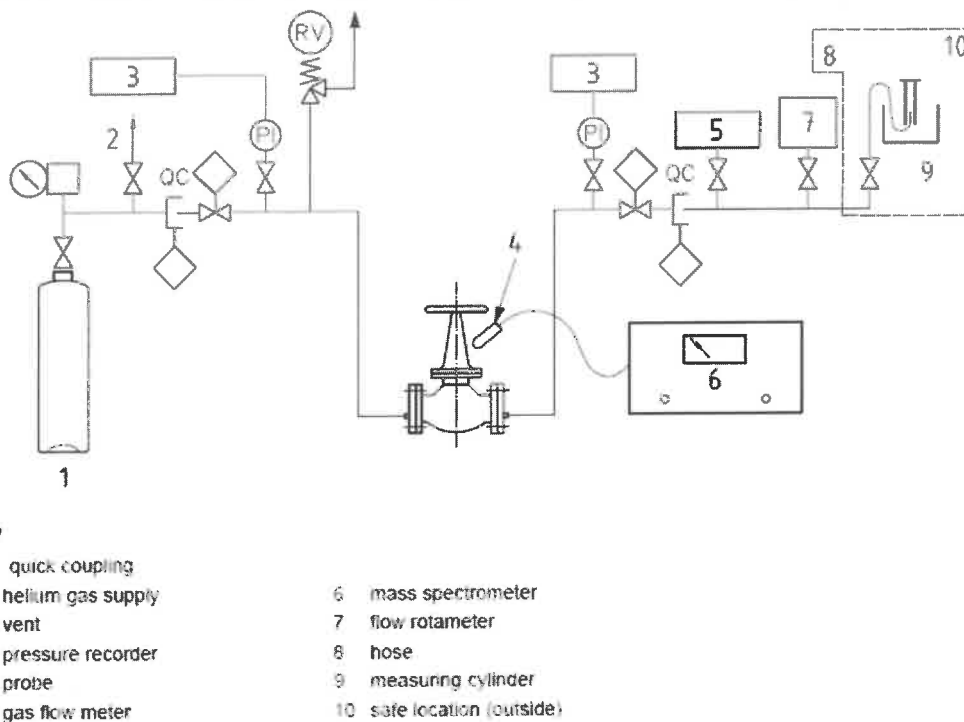


Figure 2 Typical body seal leakage measurement system with Sniffing Method





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2. Document review

The specific product data file provided by the valve manufacturer includes:

- cross sectional valve assembly drawing;
- bill of valve material
- stem or shaft seal description, dimension and specifications;
- body seal description, dimension and specifications;
- material specifications of stem or shaft seal components;
- hydrostatic test certificate.

The above documents are reviewed with no objection.

3. Technical Data of Test Valve:

General description of test valve

Name of manufacturer	Antiwear (Suzhou) Industrial Intelligent Technology Co., Ltd.
Postal Address of manufacturer	No.988, Yuexiu Road, Fenu Economic Development Zone, PC: 215200, Suzhou City, Jiangsu Province, P. R. China
Item	3" CL2500 Ball Valve
Valve size(NPS)	3"
Pressure rating(Class)	Class2500
Stem size	Φ45mm
Body/bonnet material	ASTM A182 F347
Stem seal material	Ni + Flexible Graphite Packing
Valve assembly drawing no.	HTB-F2-2500-3-RJ-NN Rev.A1

4. Visual and dimensional check of the test valve:

The test 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.: HTB-F2-2500-3-RJ-NN Rev.A1 and results found satisfactory. The mark was verified on valve as following:

==	<u>3"</u>	<u>2500</u>	<u>F347</u>
Manufacturer` Brand	Size	Class	Material

The stem size was measured as Ø45mm.

5. Preparation of the test valve:

Before the fugitive emission test, the test valve was hydrostatic tested under 621bar, the test showed no visible leakage or deformation. Then the valve was cleaned and dried.

6. Calibration of test instrument



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The test instrument was turned on, warmed up at the minimum time according to the requirements of the equipment manufacturer and calibrated with the standard calibrated leak 100% helium according to the procedure specified in Annex A, Para.A.1.4.2 of ISO15848-1:2015+Amd.1:2017.

7.Fugitive emission test and measurement

The test valve was mounted on a test rig with the stem positioned vertical. And the fugitive emission test is carried out as per requirement of ISO15848-1:2015+Amd.1:2017 Para.5.

7.1 Preliminary tests at room temperature (test 1)

The valve was pressurized with test fluid Helium to 413.7bar according to manufacturer's requirements in the partly opened position, the temperature at locations "X"/"Y"/"Z" are measure and recorded as room temperature

The stem seal leakage measurement was performed by the Vacuum method as described in ISO15848-1 Annex A.

The body seal leakage measurement was performed by the sniffing method as described in ISO15848-1 Annex B.

The test results are as follows:

Test results of preliminary tests

Item	ISO15848-1 Required Value	Actual Value
Stem leakage (mbar.l/s)	$\leq 8.02 \times 10^{-5}$	1.6×10^{-6}
Body seal leakage(ppmv)	≤ 50	18
The test results meet the requirements of ISO15848-1:2015+Amd.1:2017.		

7.2 Mechanical cycle test at the room temperature (test 2/3/4/5/6)

A total of 1500 mechanical cycles was performed on the test valve while it was kept pressurized under a differential pressure of 413.7bar according to the manufacturer's requirements at room temperature. The pressure should be improved and kept at 413.7bar to measure the leakage, and then the leakage from the stem seal and from the valve body seal were both measured with following results:

Test results of final tests

Item	ISO15848-1 Required Value	Actual Value
Stem leakage (mbar.l/s)after 50 cycles	$\leq 8.02 \times 10^{-5}$	1.8×10^{-6}
Stem leakage (mbar.l/s)after 100 cycles	$\leq 8.02 \times 10^{-5}$	1.7×10^{-6}
Stem leakage (mbar.l/s)after 150 cycles	$\leq 8.02 \times 10^{-5}$	2.0×10^{-6}
Stem leakage (mbar.l/s)after 200 cycles	$\leq 8.02 \times 10^{-5}$	3.6×10^{-6}
Stem leakage (mbar.l/s)after 205 cycles	$\leq 8.02 \times 10^{-5}$	2.5×10^{-6}
Body seal leakage(ppmv) after 205 cycles	≤ 50	20
Stem leakage (mbar.l/s)after 1000 cycles	$\leq 8.02 \times 10^{-5}$	3.3×10^{-6}
Stem leakage (mbar.l/s)after 1500 cycles	$\leq 8.02 \times 10^{-5}$	3.7×10^{-6}
Body seal leakage(ppmv) after 1500 cycles	≤ 50	24
The test results meet the requirements of ISO15848-1:2015+Amd.1:2017		

8. Post test examination

After all the above tests completed, the test valve was disassembled and all sealing components visually examined. It is found that no notable wear and any other significant observations.



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9. Performance classes

As a result of the above tests, the test valve covered performance classes as follows:

ISO FE BH – CO₂ – SSA0 – tRT – CL2500 – ISO 15848-1

10. Extension of qualification to untested valves shall be according to ISO15848-1:2015+Amd.1:2017 paragraph 8.

We, hereby declare that I have checked test valve and witnessed the fugitive emission test on the tested valve according to ISO15848-1:2015+Amd.1:2017. The test results are as mentioned in this report.

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

RONG Zhibin

Prepared by: Rong Zhibin

Date: December 13, 2024

Chen Guilin

Reviewed by: Chen Guilin

Date: December 13, 2024

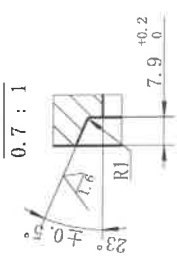
Annexes:

- 1) Copy of Drawing No.: HTB-F2-2500-3-RJ-NN Rev.A1.
- 2) Test Report of Fugitive Emission Test No. ATW-SY202412.



HTB-F2-2500-3-RJ-NN物料清单

序列号	物料名称	物料编码	属性	材料	数量
1	HTB-3C25RJ-S52-BBBE6-1	1016002685	制造件	F347	1
1.1	HTBBJ-3C25RJ-S52-BBBE6	1110001767	制造件	A182 F316L	1
1.1.1	阀体-3C25RJ-Q57-D-F347	1301015339	制造件	F347	1
1.1.2	阀帽-3C25RJ-Q57-D-F347	1301026469	制造件	F347	1
1.1.3	全螺纹螺柱-GB/T901-M36x3x150-B8-2	1404021240	采购件	B8-2	6
1.1.4	螺母-GB/T6175-M36x3-A194-8	1404030127	采购件	A194-8	6
1.1.5	三角自密封垫-136.5x13-304	140512000	采购件	304	1
1.1.6	上游阀座-3J25Y-C-PT-Q57-D-Inconel718+CrC	1303022527	制造件	Inconel718+CrC	1
1.1.7	下游阀座-3J25Y-C-PT-Q57-D-Inconel718+CrC	1303022528	制造件	Inconel718+CrC	1
1.1.8	垫片-126x96x4-112x7-316	1311050104	制造件	316	1
1.1.9	螺钉-GB/T70.1-M6x10-B8M-2	1404040441	采购件	B8M-2	8
1.1.10	碟簧-86x60x1.75x3.8-X6-Inconel750	1316040373	制造件	Inconel750	1
1.1.11	球体-3C25Y-Q57-A-Inconel718+CrC	1303013189	委外加工件	Inconel718+CrC	1
1.1.12	阀杆-35x45xB35x325-0.8-PT-Inconel718+CrC	1304021194	制造件	Inconel718+CrC	1
1.1.13	石墨环-55x63x4-柔性石墨	1405030644	采购件	柔性石墨	1
1.1.14	轴承-55x63x20-PH-316+G06	1305010048	制造件	316+G06	1
1.1.15	止推轴承-45x55x3-SJ-G01	1305070002	采购件	G01	1
1.1.16	止推轴承-45x55x3-SJ-G02	1305070046	采购件	G02	1
1.1.17	三角自密封垫-64x8-304	140512001	采购件		1
1.1.18	填料函-3C25Y-F347	1305021300	制造件	F347	1
1.1.19	全螺纹螺柱-GB/T901-M16x75-B8-2	1404020698	采购件	B8-2	6
1.1.20	螺母-GB/T6175-M16-A194-8	1404030020	采购件	A194-8	10
1.1.21	销-GB/T119.1-12x50-A2	1404050144	采购件	A2	2
1.1.22	轴承-45x53x20-PH-316+Ni60	1305010012	制造件	316+G06	1
1.1.23	填料垫-45x61x3-316	1305060027	采购件	316	1
1.1.24	包覆石墨环-45x61x40-SZ-Ni+柔性石墨	1405080032	采购件	Ni+柔性石墨	1
1.1.25	填料压套-45.5x65x22-X6-304	1305040199	采购件	304	1
1.1.26	填料压板-50x95x25-YD-304	1305030347	采购件	304	1
1.1.27	全螺纹螺柱-GB/T901-M16x85-B8-2	1404020391	采购件	B8-2	4
1.1.28	标准碟簧-GB/T1972-A31.5-631	1408020121	采购件	631	4
1.2	连接组件-3C25-BETTIS-G2114-2	12320803	制造件		1
1.2.1	支架组件-H105x35x18-165x22-315-Q235+Zn	12200629	采购件	Q235+Zn	1
1.2.1.1	面板-165x22-235x15-Q235	1307170115	制造件	Q235	1
1.2.1.2	基板-300x140x120x15-Q235	1307030276	制造件	Q235	2
1.2.1.3	筋板-55x35x12-Q235	1307040090	制造件	Q235	2
1.2.2	联轴器-K1Ax80x160x35-F6a	1304030807	采购件	F6a	1
1.2.3	键-GB/T1096-A22x14x100-45	1404060146	采购件	45	1
1.2.4	螺钉-GB/T70.1-M16x35-8.8+Zn	1404040574	采购件	8.8+Zn	8
1.2.5	垫圈-GB/T93-16-A2	1404070013	采购件	A2	8
1.2.6	螺栓-GB/T5783-M20x40-8.8+Zn	1404010277	采购件	8.8+Zn	4
1.2.7	垫圈-GB/T93-20-A2	1404070015	采购件	A2	4



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；

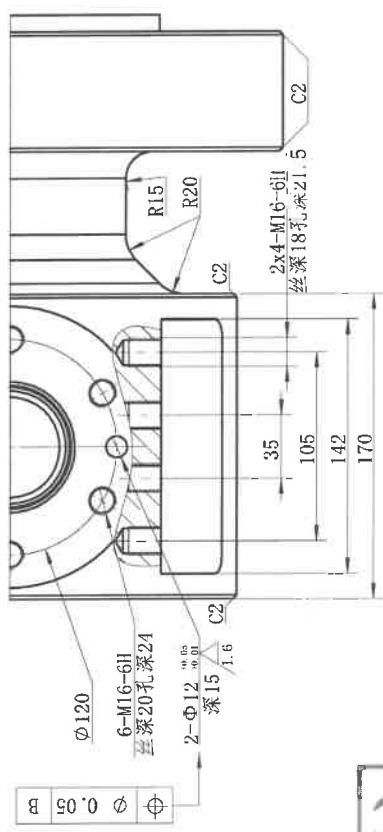
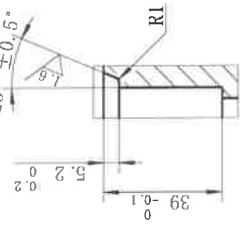
2. A类尺寸1个，B类尺寸2个；

3. 加工面锐边倒角，去毛刺；

4. 加工尺寸未注公差尺寸的极限偏差按GB/T1804-m规定；

5. 加工尺寸未注公差尺寸的形位公差按GB/T1184-K规定；

6. 法兰密封面、炉舌、端面打点等须符合安特威采购技术要求。

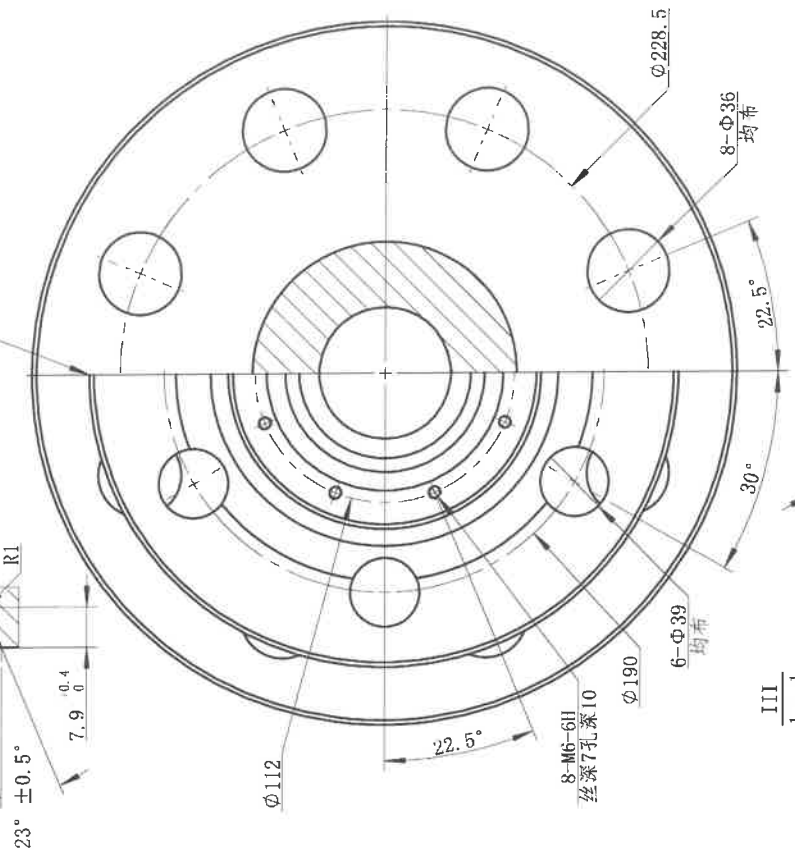


聖受

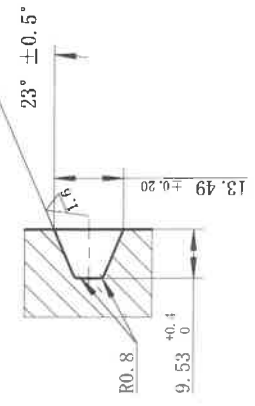
序号	更改文件号	签名	日期	苏州安特威工业智能科技股份有限公司	
设计	谷秋实	校对	版次	AI	
审核	杨树君	单重	89.19kg		
批准	黎玉飞	日期	2024/9/5	规格	阀体-3C25RJ-Q57-D

II
1:1

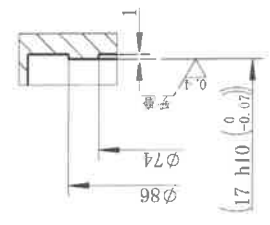
端面打点, 便于装配



III
1:1



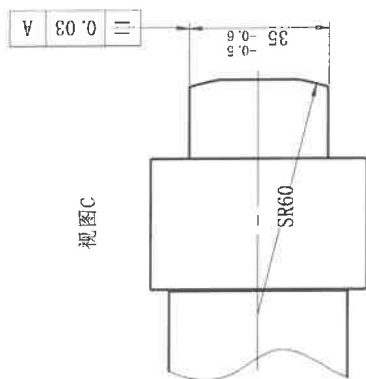
I
1:1



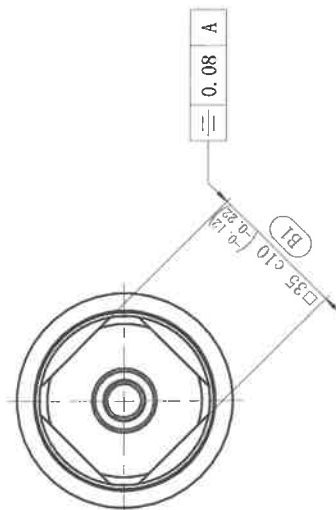
受控

- 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. A类尺寸1个, B类尺寸1个;
 3. 加工面锐边倒钝, 去毛刺;
 4. 加工尺寸未注公差尺寸的极限偏差按GB/T1804-m规定;
 5. 加工尺寸未注公差尺寸的形位公差按GB/T1184-K规定;
 6. 法兰密封面、炉号、端面打点等须符合安特威采购技术要求。

ATV				苏州安特威工业智能科技股份有限公司			
序号	更改文件号	签名	日期	规格	比例	0.45:1	
设计	谷秋实	校对	陈益标	版本	A1		
审核	杨树君	单重	66.28kg	日期	2024/9/5		
批准	黎玉飞	日期	2024/9/5	比例	0.45:1		



视图C



1. 材料符合苏州安特威阀门有限公司《材料采购规范》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 $\geq 0.15\text{mm}$ ，此图为准最终成形尺寸；
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—H规定；
6. 加工尺寸未注公差尺寸的形状公差按GB/T1184—K规定。

[illegible]

苏州安特威工业智能科技股份有限公司

阀门试压记录表

产品跟踪码	MO-190908130001	产品型号	HTB-F2-2500-3-RJ-NN		位号	/	口径	NPS3	数量
阀门类型	硬密封浮动球阀	项目号	ATW-SP190010-01		阀体材质	ASTM A182 F347	压力等级	Class2500	1
序号	项目	试验内容及数据							
1	阀体壳体试验	阀门半开，阀体按63MPa施加水压，60秒 内阀体、焊缝无渗漏。							
2	盘根高压试验	阀门半开，阀体按公称压力46.2MPa施加水压，60秒 内填料、缠绕垫无渗漏。							
3	密封试验 I	阀门关闭，从入口通入0.6MPa气压，保压60秒，漏率≤24泡/分；							
		6 泡/分							
		ml/分							
		阀门关闭，从入口通入19.8MPa水压，保压60秒，漏率≤24泡/分；							
		8 泡/分							
		ml/分							
4	结构长度	584±2 mm							
5	动作试验	气缸通入0.4 MPa气压，进气管内径为14 mm，开关时间<20s。							
		开关动作 5 次，动作灵活，无卡涩等异常现象。							
GB/T26480									
编制	李随义	日期	2024.8.20	校对	陈益标	日期	2024.8.20	记录单号	
试压	任松克	日期	2024.8.30	检验	廖仁义	日期	2024.8.30		

苏州安特威工业智能科技股份有限公司

ISO15848-1型式试验阀门低泄漏试压记录表

阀种		球阀		规格	NPS3 Class2500		试验日期	2024.12.7~10	报告编号	ATW-51202412
序号	项目	开关次数	试验温度	试验内容		阀杆外漏要求值	阀杆填料检漏值	壳体外漏要求值	中道壳体检漏值	
1	低泄漏测试	0	常温	从入口通入41.37MPa氨气，检测阀杆填料和壳体中道外漏，氨气漏率满足要求值		$\leq 8.02 \times 10^{-5}$ mBar·l/s	1.6×10^{-6} mBar·l/s	50ppm	18 ppm	
2		50	常温	从入口通入41.37MPa氨气，阀门动作开关 50 次后，检测阀杆填料外漏，氨气漏率满足要求值		$\leq 8.02 \times 10^{-5}$ mBar·l/s	1.8×10^{-6} mBar·l/s	/	/	
3		100	常温	从入口通入41.37MPa氨气，阀门动作开关 50 次后，检测阀杆填料外漏，氨气漏率满足要求值		$\leq 8.02 \times 10^{-5}$ mBar·l/s	1.7×10^{-6} mBar·l/s	/	/	
4		150	常温	从入口通入41.37MPa氨气，阀门动作开关 50 次后，检测阀杆填料外漏，氨气漏率满足要求值		$\leq 8.02 \times 10^{-5}$ mBar·l/s	2.0×10^{-6} mBar·l/s	/	/	
5		200	常温	从入口通入41.37MPa氨气，阀门动作开关 50 次后，检测阀杆填料外漏，氨气漏率满足要求值		$\leq 8.02 \times 10^{-5}$ mBar·l/s	3.6×10^{-6} mBar·l/s	/	/	
6		205	常温	从入口通入41.37MPa氨气，阀门动作开关 5 次后，检测阀杆填料和壳体中道外漏，氨气漏率满足要求值		$\leq 8.02 \times 10^{-5}$ mBar·l/s	2.5×10^{-6} mBar·l/s	50ppm	20 ppm	
7		1000	常温	从入口通入41.37MPa氨气，阀门动作开关 795 次后，检测阀杆填料外漏，氨气漏率满足要求值		$\leq 8.02 \times 10^{-5}$ mBar·l/s	3.3×10^{-6} mBar·l/s	/	/	
8		1500	常温	从入口通入41.37MPa氨气，阀门动作开关 500 次后，检测阀杆填料和壳体中道外漏，氨气漏率满足要求值		$\leq 8.02 \times 10^{-5}$ mBar·l/s	3.7×10^{-6} mBar·l/s	50ppm	24 ppm	

ISO 15848-1

杨利

日期

2024.12.7 2024.12.7
Industry Service

☐ reviewed

☒ witnessed

by Chen Lian

dated 2024-12-10