



Industrie Service

CERTIFICATE

(Certificate of conformity with technical requirements in:)
API STANDARD 607 EIGHTH EDITION, OCTOBER 2022

Certificate No.: 296725

Ref. Test report No.: 296724

Name and postal address of 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

We hereby certify that the fire test on below valves have been conducted at the laboratory designated by manufacturer and witnessed by TÜV SÜD inspector according to requirements of API STANDARD 607 EIGHTH EDITION, OCTOBER 2022. The testing results of valves meet the requirements of API STANDARD 607 EIGHTH EDITION, OCTOBER 2022.

1. Description of Test Valve:

Type of Test Valve	NPS8 Class150 Ball Valve
Description of Test Valve	Ball Valve
Valve Size (NPS)	8"
Pressure Rating (Class)	Class 150
Valve Body Material	ASTM A351 CF3M

2. Qualified Range of Valves :

Type	Ball Valves
Description of Valves	Ball Valves
Qualified Sizes (NPS) (according to API 607 Table 3)	8" and larger
Qualified Pressure Ratings(Class) (according to API 607 Table 4)	Class 150, Class 300
Qualified Valve Material	According to API 607 7.2
Remark: the technical data of tested valves see back of this certificate appendix 1.	

This certificate is issued according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022, based upon the result of testing report on above mentioned test valve. The additional valve qualification shall be limited on similar valves of same basic design and construction as the test valves and of the same nonmetallic materials as the test valve in the seat-to-closure member seal, seat-to-body seal, stem seal, and body joint seal according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022, Paragraph 7.

Shanghai, August 30, 2023
(Place, date)



Guilin Chen
TÜV SÜD Industrie Service GmbH
Westendstr.199
80686 München Germany



Industrie Service

Appendix 1:

Certificate No.: 296725

Ref. Test report No.: 296724

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

Technical Data of Valve

1. Type of Test Valve: NPS8 Class150 Ball Valve

2. Description of Test Valve: Ball Valve

3. Details of Valve:

Valves Size (NPS) Material Part Name	8"
Body	ASTM A351 CF3M
Bonnet	ASTM A351 CF3M
Ball	ASTM A182 F316
Seat Insert	PCTFE
Stem	ASTM A182 FXM-19
Stem Packing	Graphite
Gland	ASTM A351 CF3M
Gasket	316+Graphite
Nut	ASTM A194 8
Bolt	ASTM A320 B8-2
Design Assembly Drawing No.:	SSBBJ-8S1F-LT-F-D Ver. A1

Shanghai, August 30, 2023
(Place, date)

TÜV SÜD Industrie Service GmbH
Shanghai Office
Floor 3-13, No.151, Heng Tong Road,
Shanghai 200070 P. R. China

Chen Guilin

Guilin Chen

TÜV SÜD Industrie Service GmbH

Westendstr.199
80686 München Germany

Tel.: +86 21 6141-0123
Fax: + 86 21 6140-8600



Test Report

(Fire test for valves according to API STANDARD 607 API STANDARD 607 EIGHTH EDITION, OCTOBER 2022.)

Certificate No. : 296725

Test Report No.: 296724

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 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: August 21, 2023

Description of valves: NPS8 CLASS 150 Ball Valve

Size: 8"

Pressure Rating: Class 150

Drawing No.: SSBBJ-8S1F-LT-F-D Ver. A1

Test Witnessed By: CHEN Guilin / TÜV SÜD Inspector

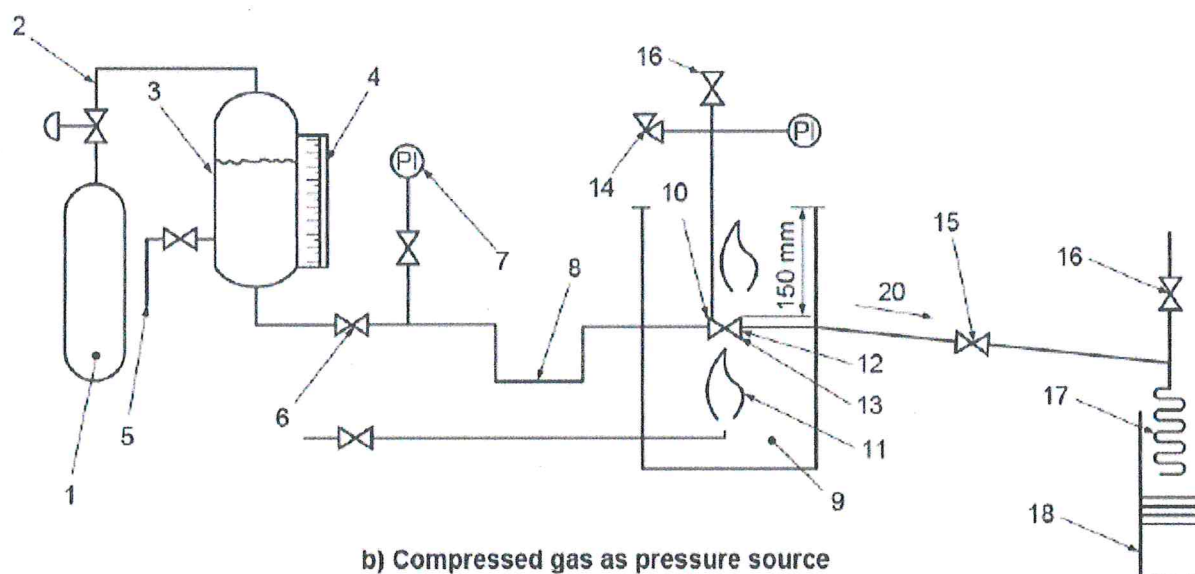
Test Report No.: 296724

Inspection and Tests

1. Conformity of Equipment

The test equipment was verified by TÜV SÜD inspector according to requirements of API STANDARD 607 EIGHTH EDITION, OCTOBER 2022. Para.5.3 and found satisfactory. The detail arrangement of the fire-test equipment is shown below:

Figure 1. Typical Fire-Test System Using Compressed Gas as the Pressure Source



Key

- | | | |
|--|--|------------------------------|
| 1. Pressure source | 10. Test valve mounted horizontally with stem in horizontal position | 19. Check valve |
| 2. Pressure regulator and relief | | 20. Slope |
| 3. Vessel for water | 11. Fuel gas supply and burner | 21. Clearance: 150 mm (6in.) |
| 4. Calibrated sight gauge | 12. Calorimeter cubes | |
| 5. Water supply | 13. Flame environment and body thermocouples | |
| 6. Shut-off valve | 14. Pressure gauge and relief valve | |
| 7. Pressure gauge | 15. Shut-off valve | |
| 8. Piping arranged to provide vapor trap | 16. Vent valve | |
| 9. Enclosure for test | 17. Condenser | |
| | 18. Container | |

Test Report No.: 296724

2. Calibration of measurement and test instrument

The measurement and test instrument have been properly calibrated such as pressure gauges, thermocouples, etc.

3. Technical Data of Test Valve:

a) Description of test valve

Type of Test Valves	NPS8 Class150 Ball Valve
Description of Valves	Ball Valve
Pressure Class	Class 150
Valve Size	8"
Flange Connection	ASME B16.5
Designed Standard	API 6D/ BS 6364/ MSEC SPE77/200

b) Details of technical data on test valve

Part Name	Materials
Body	ASTM A351 CF3M
Bonnet	ASTM A351 CF3M
Ball	ASTM A182 F316
Seat Insert	PCTFE
Stem	ASTM A182 FXM-19
Stem Packing	Graphite
Gland	ASTM A351 CF3M
Gasket	316+Graphite
Nut	ASTM A194 8
Bolt	ASTM A320 B8-2
Design Assembly Drawing No.:	SSBBJ-8S1F-LT-F-D Ver. A1

Test Report No.: 296724

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. SSBBJ-8S1F-LT-F-D Ver. A1 and results found satisfactory. The mark was verified on valve as following:

<u>ATW</u>	<u>8"</u>	<u>150</u>	<u>CF3M</u>
Manufacturer` Brand	Size	Class	Material

5. Document Review:

The chemical and mechanical test report of castings was reviewed and found satisfactory. Also the inspection report of shell test, hydro seat test and air seat 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 607.

Two thermocouples (part 13) are installed to measure flame temperature, one is located under valve body, another is located under valve stem, both within 25mm. Two calorimeters (part 12) are positioned to the same place as the thermocouples do.

6.2 The test system including test valve (part 10) 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 2.8 MPa 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 2.8 MPa. No leakage was found on system and test valve.

7. Fire Test:

The fire test was conducted according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022 Section 5. The pressure of the system upstream was kept 0.2 MPa, then the fire ignited. The flame temperature reached 750°C within 2 minutes after ignition. The test pressure and temperature were maintained at 0.2 MPa during the fire test. The temperature and pressure were recorded continuously by the operators. The system and test valve was cooled below 100 °C within 5 minutes by shower nozzles after 30 minutes fire test. The loss of water weight in vessel was measured by weighing scale and water in calibrated container (part 18) were read and recorded. The test result is shown as below:

Test Report No.: 296724

Test result of fire test

Item	API 607 Required Value	Actual Value
Test Pressure (MPa)	0.2 MPa	0.196-0.205 MPa
Test Temperature	750 - 1000 °C	814.4 – 901.1°C
Through-valve leakage according to API 607 table 1	≤ 800 ml / minute	6.2 ml / minute
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	≤ 200 ml / minute	3.6 ml / minute
Conclusion: the test result is satisfactory according to API 607.		

8. Low Test:

The test valve was cooled below 100 °C within 5 minutes after complete the fire test. The low pressure test was conducted according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022 Para. 6.4 and 5.6.15. The test result was recorded as below:

Test result of low pressure test

Item	API 607 Required Value	Actual Value
Test Pressure (MPa)	0.2 MPa	0.2 MPa
Test Temperature	30 °C	
Test Time	5 minutes	
External Leakage	≤ 320 ml / minute	1.6 ml / minute
Conclusion: the test result is satisfactory according to API 607.		

After completing the static leakage tests, close the shut-off valve, operate the test valve against the low test pressure at 0.2 MPa to the fully open position and then to the fully closed position. Open the shut-off valve). Allow the system to stabilize for a five-minute period, and once completed, record in the test report the through-seat leakage over a five-minute time period.

Test result of low pressure test

Item	API 607 Required Value	Actual Value
Test Pressure (MPa)	0.2 MPa	0.2 MPa
Test Temperature	30 °C	
Test Time	5 minutes	
External Leakage	≤ 320 ml / minute	2.0 ml / minute
Conclusion: the test result is satisfactory according to API 607.		

9. Operational Test:

The test valve was cooled below 100 °C within 5 minutes after complete the fire test. The operational test was conducted according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022 Para. 6.6 and 5.6.17. The upstream pressure was increased to 1.5 MPa then the test valve was fully opened against the high test pressure differential to vent the piping and test valve body cavity to remove air or steam. The



Test Report No.: 296724


downstream shutoff valve was then closed and the system pressure was increased to and maintained at 1.5 MPa. 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 as below:

Test result of operational test

Item	API 607 Required Value	Actual Value
Test Pressure (MPa)	1.5 MPa	1.5 MPa
Test Temperature	30 °C	
Test Time	5 minutes	
External Leakage	≤ 200 ml / minute	2.0 ml / minute
Conclusion: the test result is satisfactory according to API 607.		

The undersigned, hereby declare that I have checked test valve and witnessed the fire test on the test valve according to API STANDARD 607 EIGHTH EDITION, OCTOBER 2022. The test result is satisfactory.

TÜV SÜD Industrie Service GmbH

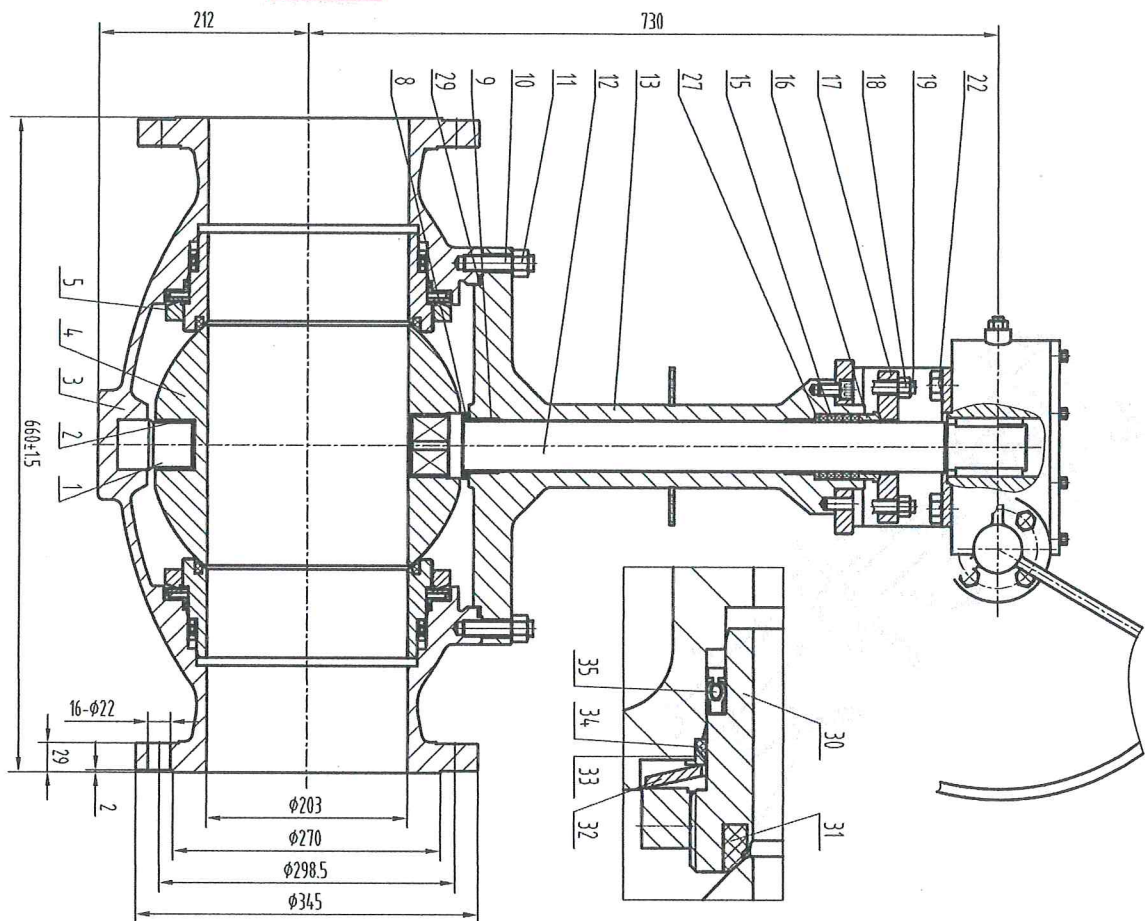
Chen Guilin

CHEN Guilin

Date: August 30, 2023

Annexes:

- 1) Copy of Drawing No. SSBBJ-8S1F-LT-F-D Ver. A1;
- 2) Copy of Test Record of Fire Test No. 2023FM862.

受控

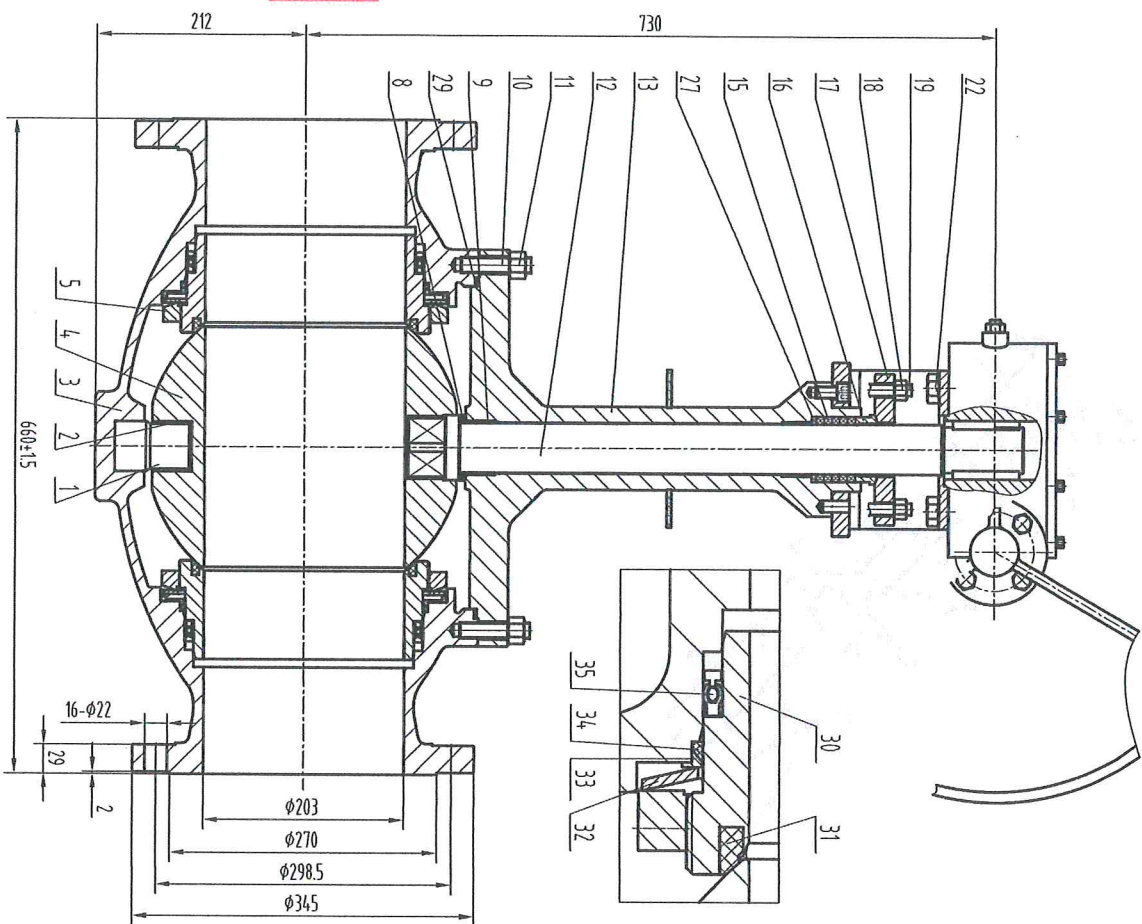


标准		35
设计标准	API 6D/BS 6364/MSCT SP671/200	Lip Seal-225x235x10
INSPECTION AND TEST	BS6364/API598	SEAT FIRE SAFE SEAL-8S1F
FACE TO FACE DIMENSION	ASME B 16.10 CLASS150	34 SEAT FIRE SAFE SEAL-8S1F
CONNECTION DIMENSION	ASME B 16.5	33 Metal ring-8S1F
FIRE TEST	API 607	32 SPRING-8S1F
DESIGN TEMPERATURE	-196°C ~120C°	31 SEAT INSERT-8S1F
NORMAL TEMPERATURE TEST		30 SEAT RETAINER-8S1F
NPS	8"	29 GASKET-326x344x3.2
CLASS	150	27 PACKING GASKET-8S1F
SHELL TEST PRESSURE	AIR 3.0MPa	22 SCREW-GB/T6170-M16x30
SEAL TEST PRESSURE-HIGH	AIR 2.2 MPa	19 STUD-GB/T901-M12x80
SEAL TEST PRESSURE-LOW	AIR 0.6 MPa	18 NUT-GB/T6175-M12
CRYOGENIC TEST		17 GLAND-8S1F
CRYOGENIC OPERATION TEST	2.0MPa WORKING SUCCESSFULLY	16 RETAINER-8S1F
MAXIMUM ALLOWABLE LEAKAGE OF VALVE SEAT (BS6364)	2.0MPa 1200cm ³ /min	15 STEM PACKING-50x66x8
REFRIGERANT	LIQUID NITROGEN (-196°C)	13 BONNET-8S1F
TEST MEDIUM	HELIUM	12 STEM-8S1F
APPLICABLE MEDIUM	CRYOGENIC MEDIUM	11 NUT-GB/T6175-M16
TUV SUD Industrie Service GmbH		10 STUD-GB/T901-M16x70
reviewed		9 BEARING-50x55x30
witnessed		8 THRUST WASHER-51x66x3
by <i>claw</i>		5 PRETENSIONING NUT-8S1F
dated <i>2023.8.1</i>		4 BALL-8S1F
		3 BODY-8S1F
		2 BEARING-45x50x40
		1 DOWN AXLE-8S1F
		N0. BOM DESCRIPTION MATERIAL QTY.

Number	Doc. No.	Sign	Date
Des.	ZhuJialun	ChenJibiao	1.1
audit	Wubin		
App.	Liyufei	Date	2023.7.14
		Sec.	1:9
		Specifications	SSRB1-8S1F-LT-F-D

Suzhou Antiwear Valves Co., Ltd.

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标准		35	套圈-225x235x10	Egiloy-M111	2
设计标准	API 6D/BS 6364/MSEI SPEC 77/200	34	防火石墨-8S1F	成型石墨	2
试验标准	BS6364/API598	33	压环-8S1F	A276 316	2
结构长度	ASME B 16.10 CLASS150	32	喉管-8S1F	Inconel X750	2
连接标准	ASME B 16.5	31	阀座-8S1F	PCTFE	2
防火试验标准	API 607	30	阀座支撑圈-8S1F	A182 F316	2
设计温度	-196℃~120℃	29	缠绕垫-326x344x3.2	316+柔性石墨	1
常温试验		27	填料垫-8S1F	A276 316	1
NPS	8"	22	螺栓-GB/T6170-M16x30	A320 B8-2	16
CLASS	150	19	螺栓-GB/T90.1-M12x80	A320 B8-2	2
壳体试验压力	AIR 3.0 MPa	18	螺母-GB/T6175-M12	A194 8	2
高压密封试验压力	AIR 2.2 MPa	17	填料压盖-8S1F	A351 CF3M	1
低压密封试验压力	AIR 0.6 MPa	16	填料压套-8S1F	A276 316	1
低温试验		15	填料-50x66x8	柔性石墨	5
低温动作试验	2.0MPa	13	上阀盖-8S1F	A351 CF3M	1
阀座最大允许泄漏量 (BS6364)	2.0MPa 1200cm ³ /min	12	阀杆-8S1F	A182 FXM-19	1
冷却介质	液氮(-196℃)	11	螺母-GB/T6175-M16	A194 8	16
试验气体	氮气	10	螺栓-GB/T90.1-M16x70	A320 B8-2	16
适用介质	低温介质	9	阀杆轴承-50x55x30	316+Cu+PTFE	2
		8	止推垫-51x66x3	316+QPA	2
		5	阀座螺母-8S1F	A276 316	2
		4	球体-8S1F	A182 F316	1
		3	阀体-8S1F	A351 CF3M	1
		2	轴承-45x50x40	316+Cu+PTFE	1
		1	底轴-8S1F	A182 F316	1
材料规格		序号	材料	数量	

序号	更改文件号	签名	日期	苏州安特威工业智能科技有限公司	
设计	朱佳俊	陈益标	版六		
审核	吴斌				
批准	黎玉飞	日期	2023.7.14		
		比例	1:9		
				规格	SSBBJ-8S1F-L1-F-D

ATW