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Industrie Service

CERTIFICATE

(Certificate of conformity with technical requirements in:)

API STANDARD 6FA FIFTH EDITION, MAY 2020

Certificate No.: 309405

Ref. Test report No.: 309406

Name and postal address of manufacturer: FX Flow Control BV
No.88, East Lianxing Road, Tangtou Industrial Zone,
Oubei Street, Yongjia County, Wenzhou City,
Zhejiang 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	4" CL150 Globe Valve
Description of Valve	Globe Valve
Valve Size (NPS)	4"
Pressure Rating (Class)	Class 150
Valve Body Material	ASTM A216 WCB

2. Qualified Range of Valves :

Type	Globe Valves
Description of Valves	Globe Valves
Qualified Sizes (NPS) *(according to API 6FA Table 4)*	4"; 6"; 8"
Qualified Pressure Ratings (Class) *(according to API 6FA Table 6)*	150;300
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. Service brand * Industry Service *

Shanghai, July 31, 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

Industrie Service

Appendix 1:

Certificate No.: 309405

Ref. Test report No.: 309406

Name and postal address of manufacturer: **FX Flow Control BV**
No.88, East Lianxing Road, Tangtou Industrial Zone,
Oubei Street, Yongjia County, Wenzhou City,
Zhejiang Province, P. R. China

Technical Data of Valve

1. Type of Test Valve: 4" CL150 Globe Valve

2. Description of Test Valve: Globe Valve

3. Details of Valve:

Valves Size (NPS) / Material / Part Name	4"
Body	ASTM A216 WCB
Bonnet	ASTM A216 WCB
Disc	ASTM A105N+13Cr
Seat	Overlay 13Cr
Stem	ASTM A182 F6a
Gasket	SS304 + Graphite
Packing	Graphite
Bonnet Nut	ASTM A194 2H
Bonnet Bolt	ASTM A193 B7
Gland Flange	ASTM A216 WCB
Gland	ASTM A276 410
Backseat	ASTM A276 410
Design Drawing No.:	4-150LB-1 REV00

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

Guilin Chen

Shanghai, July 31, 2024
(Place, date)

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

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

Certificate No.: 309403
Test Report No.: 309404

Applicant / Manufacturer: FX Flow Control BV
No.88, East Lianxing Road, Tangtou Industrial Zone,
Oubei Street, Yongjia County, Wenzhou City, Zhejiang 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: Suzhou GME Inspection & Testing Co., Ltd.

Test Date: July 16, 2024

Description of valves: 4" CL150 Gate Valve
Size: 4"
Pressure Rating: Class 150
Drawing No.: GATE-4"CL150-00

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
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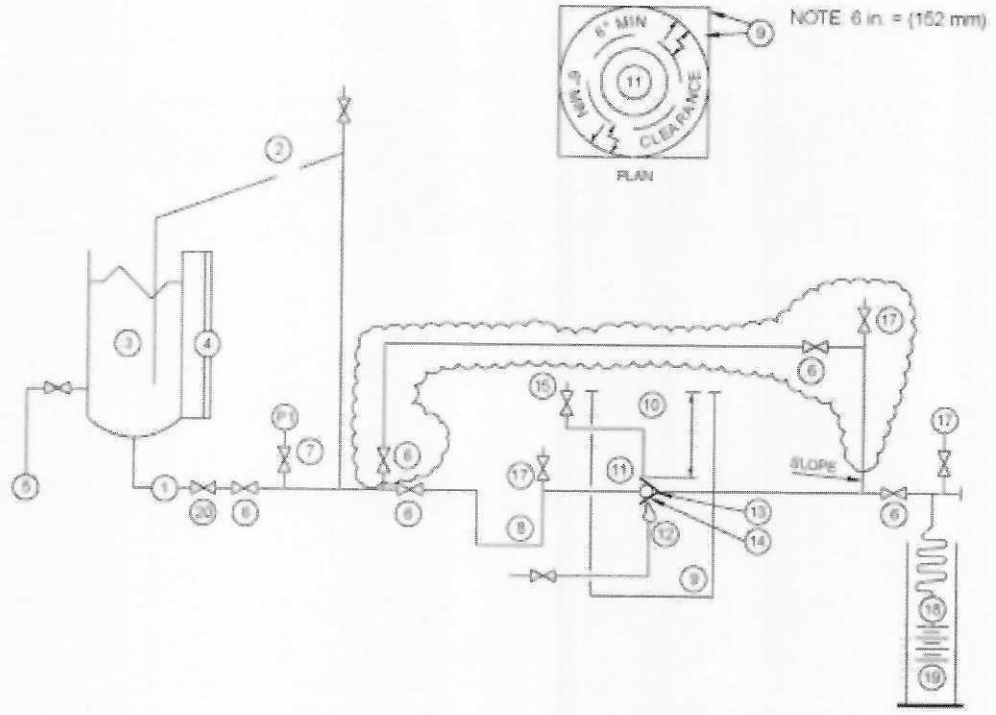
Inspection and Tests

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)

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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	4" CL150 Gate Valve
Description of Valves	Gate Valve
Pressure Class	Class 150
Valve Size	4"
End to End	ASME B16.10
Designed Standard	API 600

b)Details of technical data on test valve

Part Name	Materials
Body	ASTM A216 WCB
Bonnet	ASTM A216 WCB
Wedge	ASTM A216 WCB+13Cr
Seat Ring	ASTM A105N+STL6
Stem	ASTM A182 F6a
Gasket	SS304 + Graphite
Stem Packing	Graphite
Bonnet Nut	ASTM A194 2H
Bonnet Bolt	ASTM A193 B7
Gland Flange	ASTM A216 WCB
Gland	ASTM A276 410
Backseat	ASTM A276 410
Design Drawing No.:	4-Z41-150LB-1 REV00

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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. 4-Z41-150LB-1 REV00 and results found satisfactory. The mark was verified on valve as following:

--	4"	150	WCB
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 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 1.5 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 1.5 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°C 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°C within 6 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.

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Test result of fire test with high pressure

Item	API 6FA Required Value	Actual Value
Test Pressure (MPa)	1.5 MPa	1.4 – 1.6 MPa
Test Temperature	761 - 980℃	761 – 931℃
Through-valve leakage according to API 6FA Para.4.4.2.2	≤ 400 ml / in. / min	6.675 ml / in. / min
Total weight of water through valve seat during cooling down period	0 ml	
Total time from fire test to cooling down	36 Minutes	
External Leakage according to API 6FA Para.4.4.2.2	≤ 100 ml / in. / min	3.725 ml / in. / min
Conclusion: the test result is satisfactory according to API 6FA.		

7.2. Fire test with low pressure

Decrease the test pressure to 0.2 MPa and maintain this pressure for 5 minutes, measure the leakage through valve's seat and external leakage for a period of 5 minutes.

Increase pressure on the test valve to the high test pressure 1.5MPa and maintain this pressure for 5 minutes, measure the leakage through valve's seat and external leakage for a period of 5 minutes.

The test result of the above both is shown as below:

Test result of low pressure test

Item	API 6FA Required Value	Actual Value
Test Pressure (MPa)	0.2 MPa	0.2 MPa
Test Duration	5 Minutes for 0.2 MPa	
Through-valve leakage according to API 6FA Para.4.4.3.2	≤ 40 ml / in. / min	3.0 ml / in. / min
External Leakage according to API 6FA Para.4.4.3.2	≤ 20 ml / in. / min	0.5 ml / in. / min
Item	API 6FA Required Value	Actual Value
Test Pressure (MPa)	1.5MPa	1.5MPa
Test Duration	5 Minutes for 1.5 MPa	
Through-valve leakage according to API 6FA Para.4.4.3.2	≤ 40 ml / in. / min	4.75 ml / in. / min
External Leakage according to API 6FA Para.4.4.3.2	≤ 20 ml / in. / min	3.975 ml / in. / min
Conclusion: the test result is satisfactory according to API 6FA.		

8. Operational Test:

The test valve was cooled below 100℃ within 6 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:

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Test result of operational test

Item	API 6FA Required Value	Actual Value
Test Pressure (MPa)	1.5 MPa	1.5 MPa
Test Time	5 minutes	
External Leakage according to API 6FA Para.4.4.4.2	≤ 200 ml / in. / min	3.5 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: July 31, 2024

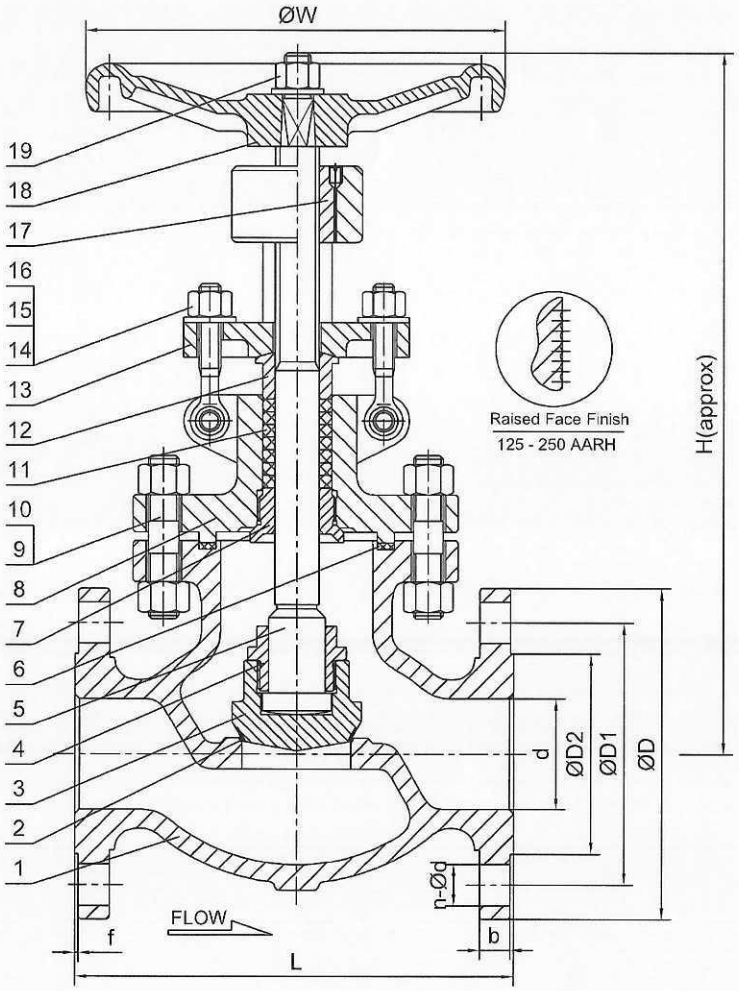
Chen Guilin

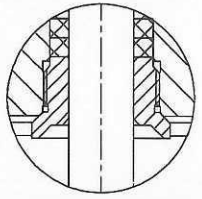
Reviewed by: Chen Guilin Date: July 31, 2024

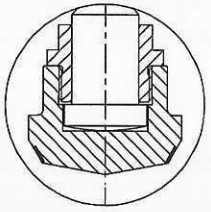
Annexes:
1) Copy of Drawing No. 4-Z41-150LB-1 REV00.
2) Copy of Test Record of Fire Test No. GMB202406012-1.

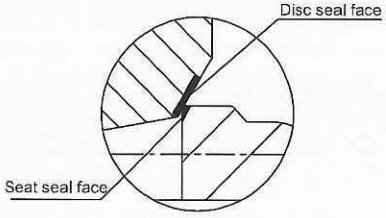
GUTTER

Item	Nominal Diameter NPS	DN	d	D	D1	D2	L	b	f	n-Ød	H	W	WT(Kg)
1	4"	100	102	230	190.5	157.2	292	22.3	2	8-Ø19	420	300	48




Renewable Backseat


Swivel Plug Disc



Integral Seat

TÜV SÜD Certification and Testing (China) Co., Ltd.
Industry Service
[X] reviewed
[ ] witnessed
by
dated 2024-7-16

NO	PART NAME	MATERIAL	REMARKS
19	H.W. Nut	ASTM A194 2H	
18	Handwheel	Ductile Iron	
17	Stem Nut	Copper Alloy	
16	Eyebolt Nut	ASTM A194 2H	
15	Eyebolt	ASTM A193 B7	
14	Eyebolt Pin	ASTM A276 410	
13	Gland Flange	ASTM A216 WCB	
12	Gland	ASTM A276 410	
11	Packing	Graphite	
10	Bonnet Nut	ASTM A194 2H	
9	Bonnet Bolt	ASTM A193 B7	
8	Bonnet	ASTM A216 WCB	
7	Backseat	ASTM A276 410	
6	Gasket	SS304+Graphite	
5	Stem	ASTM A182 F6a	
4	Disc Nut	ASTM A105N	
3	Disc	ASTM A105N+13Cr	
2	Seat	Overlay 13Cr	
1	Body	ASTM A216 WCB	

FX FLOW
Web: www.fxflow.nl
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FX FLOW CONTROL BV

REVISIONS					TECHNICAL DATA			STANDARDS	
REV	DESCRIPTION	DATE	PREP.	APPR.	Shell Test	3.0	Mpa	DESIGN	BS 1873
00	First issued	2024/06/25	WANG	DL	H.P. Seat Test(Water)	2.2	Mpa	END TO END	ASME B16.10
					L.P. Seat Test(Air)	0.6	Mpa	END DIMENSION	ASME B16.5
					Backseat Test	2.2	Mpa	PRESSURE TEST	API 598
					Design Temp.	-29~425℃		PRES. - TEMP. RATE	ASME B16.34
					Application	Water,Oil&Gas		MARKING	MSS SP-25

Description:
GLOBE VALVE, BB
4" ANSI CLASS 150, RF
OS & Y, FULL PORT

Drawing NO.
4-150LB-1

ONLY FOR INFORMATION

ALL DIMENSIONS ARE IN mm