



Industrie Service

Attestation of BS6364:1984 (R2015)

Attestation No.:279619

Ref. report No. :279620

Manufacturer : DBV Valve Co., Ltd.

Postal address of manufacturer : Tangtou Village, Oubei Street, Yongjia County,
PC: 325105, Wenzhou City, Zhejiang Province, P. R. China

Order Number :7482362198

Test Valves:

Valve Description	Low temperature butterfly valves
Valve Type	VKF1250B1-01P-SRB
Valve Size	NPS 10
Pressure Rating	Class 150
Standard	BS6364:1984 (R2015)

Upon request by DBV Valve Co., Ltd., the inspector of TÜV SÜD Industrie Service GmbH Shanghai Office has witnessed relevant tests in accordance with BS6364:1984 (R2015) and manufacturer's requirements.

The results are positive so that the manufacturer has capability to provide the valves manufactured in line with applicable standard.

Details could be taken from the associated report with the No.: 279620

Shanghai, August 3, 2021
(Place, date)

Chen Guilin



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Inspection-No.: 279620

Nature Of Inspection:

1. Review relevant documents
2. Witness relevant test

This is to report that we, TÜV SÜD Industrie Service GmbH Shanghai Office on 2021-05-15 at the request of DBV Valve Co., Ltd. conducted the following inspection:

1. Review relevant documents

1.1 Assembly drawing

Approved assembly drawing with drawing no. VLK-20201221-03 Rev.1 on VKF1250B1-01P-SRB NPS10 CL150 low temperature butterfly valves have been supplied by DBV Valve Co., Ltd. Detail information on the tested valve can be seen in the drawings and the drawings have been as annex 1.

2. Witness relevant test

2.1 General information

DBV Valve Co., Ltd. commissioned us to witness cryogenic test according to BS6364:1984 (R2015) valves for cryogenic service to verify whether the test result can meet the specific requirements.

2.2 Valve information

The valves have been chosen for test by DBV Valve Co., Ltd. at random, detail information has been shown as follows:

No.	Valve name	Valve type	Body Material	Size and Pressure	Sample No.
1	low temperature butterfly valve	VKF1250B1-01P-SRB	ASTM A351 CF8	NPS10 CL150	VB06111-1
2	low temperature butterfly valve	VKF1250B1-01P-SRB	ASTM A351 CF8	NPS10 CL150	VB06111-2
3	low temperature butterfly valve	VKF1250B1-01P-SRB	ASTM A351 CF8	NPS10 CL150	VB06111-3

2.3 Test condition

Testing principles are according to according to annex A of BS6364:1984 (R2015) valves for cryogenic service and specific requirements by the client and the key test conditions have been specified according to the following detail information.

Test Fluid	99.999%helium gas
Test Temperature(°C)	-196°C and Room Temperature
Body Leakage	No visible leakage
Seat Leakage	No visible leakage for room temperature; 6ml/min*DN for -196°C

2.4 Test Records

2.4.1 Prior to testing

The manufacturer have dealt with the valves according to Annex A.2 and then send valves to laboratory for test.

2.4.2 Testing

1. Test apparatus is chosen according to Annex A.3 and before cryogenic test, an initial system proving test has been carried out at maximum seat test pressure at ambient temperature by using helium gas and the valve can be for the test to proceed (as Annex A.3.1.2).
2. Cool down the valve to the test temperature (-196°C) according to client's requirements and repeat the initial system proving test,
3. Open and close the valve 20 times and then leakage has been measured.

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4. The valve is returned to the ambient temperature and repeat the helium gas proving test and Leakage is also measured and at last dismantle the valve to examine all component parts for weak and damage
5. Open and close forces for the first and last operation and the following leakage test records can be seen as follows and detail information can be seen test report with report no. HCT2021VB06111 supplied by Wenzhou Haichuan Inspection Co., Ltd. as annex 2.
6. Test records:

1) NPS10 CL150 low temperature butterfly valve with serial no : VB06111-1

Test item	Test results	Remark
An initial system proving test Leakage(ml/min)	No Visible leakage	at maximum seat test pressure 1.90MPa at ambient temperature by using helium gas
An initial system proving test Leakage(ml/min)	No Visible leakage	at maximum seat test pressure 1.90MPa at -196℃ by using helium gas
Open and close forces (N.M)	26 N.M/30 N.M	for the first operation
Open and close forces (N.M)	28 N.M/32 N.M	for the last operation
Leakage(ml/min)	0	At the pressure 0.35 MPa
Leakage(ml/min)	0	At the pressure 0.70 MPa
Leakage(ml/min)	0	At the pressure 1.05 MPa
Leakage(ml/min)	0	At the pressure 1.40 MPa
Leakage(ml/min)	0	At the pressure 1.75 MPa
Leakage(ml/min)	0	At the pressure 1.90 MPa
Leak tightness for valve gland and body/bonnet joint	No Visible leakage	Valve in the open position and at the seat test pressure for 15 min
Leakage(mm ³ /s)	No Visible leakage	Return the valve to ambient temperature
Leakage(mm ³ /s)	0	
Surface performance for all parts	No applicable according to client's requirements	After dismantle the valve

2) NPS10 CL150 low temperature butterfly valve with serial no : VB06111-2

Test item	Test results	Remark
An initial system proving test Leakage(ml/min)	No Visible leakage	at maximum seat test pressure 1.90MPa at ambient temperature by using helium gas
An initial system proving test Leakage(ml/min)	No Visible leakage	at maximum seat test pressure 1.90MPa at -196℃ by using helium gas
Open and close forces (N.M)	35N.M/45N.M	for the first operation
Open and close forces (N.M)	31N.M/38N.M	for the last operation
Leakage(ml/min)	0	At the pressure 0.35 MPa
Leakage(ml/min)	0	At the pressure 0.70 MPa
Leakage(ml/min)	0	At the pressure 1.05 MPa
Leakage(ml/min)	0	At the pressure 1.40 MPa
Leakage(ml/min)	0	At the pressure 1.75 MPa
Leakage(ml/min)	0	At the pressure 1.90 MPa

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Leak tightness for valve gland and body/bonnet joint	No Visible leakage	Valve in the open position and at the seat test pressure for 15 min
Leakage(mm ³ /s)	No Visible leakage	Return the valve to ambient temperature
Leakage(mm ³ /s)	0	
Surface performance for all parts	No applicable according to client's requirements	After dismantle the valve

3) NPS10 CL150 low temperature butterfly valve with serial no : VB06111-3

Test item	Test results	Remark
An initial system proving test Leakage(ml/min)	No Visible leakage	at maximum seat test pressure 1.90MPa at ambient temperature by using helium gas
An initial system proving test Leakage(ml/min)	No Visible leakage	at maximum seat test pressure 1.90MPa at -196°C by using helium gas
Open and close forces (N.M)	36N.M/39N.M	for the first operation
Open and close forces (N.M)	34N.M/40N.M	for the last operation
Leakage(ml/min)	0	At the pressure 0.35 MPa
Leakage(ml/min)	0	At the pressure 0.70 MPa
Leakage(ml/min)	0	At the pressure 1.05 MPa
Leakage(ml/min)	0	At the pressure 1.40 MPa
Leakage(ml/min)	0	At the pressure 1.75 MPa
Leakage(ml/min)	0	At the pressure 1.90 MPa
Leak tightness for valve gland and body/bonnet joint	No Visible leakage	Valve in the open position and at the seat test pressure for 15 min
Leakage(mm ³ /s)	No Visible leakage	Return the valve to ambient temperature
Leakage(mm ³ /s)	0	
Surface performance for all parts	No applicable according to client's requirements	After dismantle the valve

2.5 Test Results

Hereby, it is certified that the tested valves of the above mentioned company has been tested and witnessed by the inspector of TÜV SÜD Industry Service GmbH Shanghai Office and the owner's representative. the test results are acceptable according to above mentioned specification.

Annex:

Annex 1 Approved assembly drawing with drawing no. VLK-20201221-03 Rev.1.




 Inspected by: Chen, Guilin

Date of issue: August 2, 2021