

ISO 15848 PART 1: FUGITIVE EMISSION TYPE TEST CERTIFICATE
Conformity with Fugitive Emission Testing
Acc. to BS EN ISO 15848-1: 2015 + A1: 2017

Certificate No.: PITS-FET-15848-P1-KVPL-CERT-001

Date: 07/09/2024

Test Dates: 05/09/2024 to 07/09/2024

Name & Address of the Valve Manufacturer

KARAN VALVES PRIVATE LIMITED
PLOT NO. 41/1 & 66, KARUNA SAGAR INDUSTRIAL ESTATE, OPPOSITE ANIL STARCH MILL, NARODA ROAD, AHMEDABAD - 380025, GUJARAT, INDIA

Name & Address of the Testing Facility

PURVA INSPECTION & TESTING SERVICES
16, SATYAM ESTATE, STEEL TOWN, BESIDE HOF, MORAIYA, CHANGODAR, AHMEDABAD, GUJARAT, PIN CODE: 382213, INDIA

We hereby certify that the results of Valve Tests carried out under witness of M/s DNV (TPIA) on the Industrial Valve below meeting the requirements in the standard mentioned above. For detailed Valve technical data and information refer to the Test Report.

1. Valve Details:

Valve Type & Size	FLOATING TYPE BALL VALVE; SOFT SEATED; 2 PIECE; SIDE ENTRY; BI-DIRECTIONAL; FULL BORE; FLANGE END RF SERRATED; LEVER OPERATED DESIGN AS PER: ISO 17292:2015; ASME B16.34-2020 API SPEC 6D 25 TH ED. NOV 2021, ERRATA 1 DEC 2021, ERRATA 2 APR 2022, ERRATA 3 OCT 2023, ADDENDUM 1 APR 2023 NPS 1 1/2 (40 MM), CLASS 600 (PN 100)
Valve Model	BV 40FB 600
Valve Style	FLOATING TYPE BALL VALVE; SOFT SEATED; 2 PIECE; SIDE ENTRY; BI-DIRECTIONAL; FULL BORE
Drawing No	FBV-40FB-600-ASSEMBLY
Valve Sr. No.	H1234-24
Material of Construction	ASTM A216 GR WCB (BODY & BODY ADAPTER); ASTM A351 FR CF8M (BALL); ASTM A276 GR 316 (STEM, SPACER GALND)
Seat Ring	PEEK
Other Soft Materials	GFT (GLASS FILLED TEFLON): STEM THRUST WASHER; VITON: STEM & BODY "O" RING; RPTFE (15% GFT): STEM SEAL
Stem or Shaft Seal (Gland Packing) (Bonnet Packing)	GRAPHITE + RPTFE DIMENSIONS: 25.5 MM X 20.0 MM X 2.5 MM; QTY: 1 NO GRAPHITE + 1 NO RPTFE VITON "O" RING: 17.17 MM X 1.78 MM
Body Seal(s): Gasket	SPIRAL WOUND GASKET SS316 WITH GRAPHITE FILLER + VITON "O" RING DIMENSIONS: 75 MM X 67 MM X 3.2 MM + 59.92 MM X 3.53 MM
Material specifications of stem (or shaft) seal components	PACKING GLAND: SS316 (SPACER GALND); GLAND FLANGE: SS304 (STEM NUT) BACKSEAT BUSH: NOT APPLICABLE; PACKING SPACER: NOT APPLICABLE



TESTED BY:
FOR PURVA INSPECTION & TESTING SERVICES
DHAIVAL CHAUHAN
(NDT LEVEL II- MASS SPECTROMETER LEAK TESTING)



WITNESSED BY:
BHAVIN NALIYAPARA (TPIA) (M/S DNV)

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Stem Diameter	20.0 mm
Stem Material Specification	ASTM A276 GR 316
Gland Bolt Tightening Torque	115 N-m
Stroke Length / Angle	90°
Testing Temperature	AMBIENT (ROOM TEMPERATURE) (RT) (+5°C to +40°C) TO 200°C
Test Pressure	RATED PRESSURE SPECIFIED AT THE TEST TEMPERATURE AT ROOM TEMPERATURE: 106 kg/cm ² g; AT 200°C TEMP: 90 kg/cm ² g
Valve Mounting Position	STEM HORIZONTAL
Mechanical & Thermal Cycle	1500 CYCLES (FULL STROKE) WITH THREE THERMAL CYCLES (A TOTAL OF 50 CYCLES AT RT, 50 CYCLES AT ELEVATED TEST TEMP, 50 CYCLES AT RT, 50 CYCLES AT ELEVATED TEST TEMP, 5 CYCLES AT RT, 795 CYCLES AT RT, 500 CYCLES AT ELEVATED TEST TEMP)
Valve Performance Class	CO2
Method of Sample Selection	RANDOMLY SELECTED FROM THE PRODUCTION
Valve Mounting Instructions	NOT APPLICABLE

2. **Test Fluid:** Helium Gas of 99.99% purity

3. **Acceptance Criteria as per:** BS EN ISO 15848-1, Table 1 & Table 2:

Fugitive Emission Tightness Class	Stem (or Shaft) Seals Leakage Rate	
	mbar.l / s per mm stem diameter through stem seal system	Calculated Leak rate mbar.l / s
Class AH	$\leq 1.78 \times 10^{-7}$	$\leq 3.56 \times 10^{-6}$
Class BH	$\leq 1.78 \times 10^{-6}$	$\leq 3.56 \times 10^{-5}$
Class CH	$\leq 1.78 \times 10^{-4}$	$\leq 3.56 \times 10^{-3}$

Body Seals Leakage Rate (ppmv)	Body Seals Leakage Rate (mbar.l/s)
≤ 50	$\leq 5.0 \times 10^{-5}$

Note:

1 ppmv = 1×10^{-6} mbar.l/s

1 atm.cm³/s = 1 mbar.l/s = 1 atm.cc/s ≈ 1 std.cc/s



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4. **Test Report No:** PITS-FET-15848-P1-KVPL-RP-001

5. **Results:**

Tested valve values observed meet the requirement Fugitive Emission
"Tightness Class BH for CO₁"; & "Tightness Class BH for CO₂"
as per BS EN ISO 15848 Part 1 hence acceptable.

6. **Additional Valves qualified by this test according to the Section/Clause No 8 of BS EN ISO 15848 Part 1:**

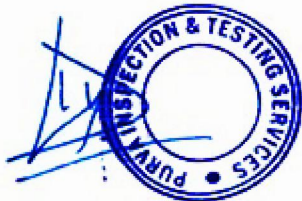
Type of Valve : FLOATING TYPE BALL VALVE; SOFT SEATED; 2 PIECE; SIDE ENTRY; BI-DIRECTIONAL; FULL BORE;
FLANGE END RF SERRATED; LEVER OPERATED
DESIGN AS PER: ISO 17292:2015; API SPEC 6D 25TH ED. NOV 2021, ERRATA 1 DEC 2021, ERRATA 2 APR 2022, ERRATA 3
OCT 2023, ADDENDUM 1 APR 2023; ASME B16.34-2020
VALVE MODEL: BV 40FB 600
STYLE: FLOATING TYPE BALL VALVE; SOFT SEATED; 2 PIECE; SIDE ENTRY; BI-DIRECTIONAL; FULL BORE

Stem Diameter : 10.0 mm to 40.0 mm
Class Rating : Class 600 (PN 100) and Lower
Temp Class : From Room Temperature (RT) (+5°C up to +40°C) up to 200°C
Performance Class : ISO FE BH - C01 - SSA 0 - t200°C - CL600 - ISO 15848-1
ISO FE BH - C02 - SSA 0 - t200°C - CL600 - ISO 15848-1

Above qualification subject to:

Upon the successful completion of the test program as defined in this part of ISO 15848, this qualification can be extended to untested sizes and classes of valves of the same type, if the following criteria are met:

- The stem (or shaft) seals and body seals are of the same material, design (shape), and construction, independent of the size;
- Loading arrangement applies a similar sealing stress to the seal element as that applied in the test valve;
- The type of motion of the stem (or shaft) is identical;
- Tolerances classes and surface finishes specifications of all valve components which affect sealing performance are identical; NOTE- The tolerances classes are in accordance with ISO 286-1 and ISO 286-2.
- The tightness class required is equal to, or less severe than that of the qualified valve.
- The use of gearbox or other actuator does not require separated qualification, provided above criteria are met.



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