

STATEMENT OF CONFORMITY

DNV GL Certificate No.:
Z0567077-2020-PA-IND

Initial date:
12-March-2020

Valid:
12-March-2023

This certificate consists of 3 pages

This is to certify that the Functional Safety Capability of

QUICK EXHAUST VALVE (SQEV) (1/4", 3/8", 1/2", 3/4", 1")

as per table shown in Page 2 & 3 of this Certificate

Manufactured by:

Shavo Norgren (India) Pvt. Ltd.

Regd. Off: 74, Mittal Chambers, Nariman Point, Mumbai 400 021, INDIA

Factory: R-545, M.I.D.C., T.T.C. Industrial Area, Rabale, Navi Mumbai - 400 701, Maharashtra, INDIA

have been assessed by **DNV GL**, and found to confirm to the Functional safety standards and sub-clauses:

IEC 61508:2010 Parts 1 to 7

The above Products and its associated data contained herein can be considered for use in the design of safety functions up to and including

SIL 3

When used in accordance with the scope and conditions of this certificate.

The Safety Integrity Level (SIL) relates to the complete safety System, not the individual elements, therefore this certificate only demonstrates the capability of the product to be implemented into a safety system of a required integrity level as defined above.

Place and date:
Ahmedabad, India
12-March-2020

**DNV GL Business Assurance India
Private Limited**



Manojkumar Panchal
Head of Section, Project Manager

Certificate number:- Z0567077-2020-PA-IND Rev 0.0

Certificate history

Revision	Description	Issue Date
0.0	Original certificate	2020-03-12

Products covered by this Certificate: - QUICK EXHAUST VALVE

Table 1 QEV models as per size

Sr No	Model	Pipe Size	Drawing & Revision No.
1	SQEV	1/4" High Flow version	SN-6649-02 R0
2	SQEV	3/8" High Flow version	SN-6583-02 R0
3	SQEV	1/2" High Flow version	SN-6582-02 R0
4	SQEV	3/4" High Flow version	SN-6581-02 R0
5	SQEV	1" High Flow version	SN-6580-02 R0
6	SQEV	1/2" Standard Flow Version	SN-6643-02 R0
7	SQEV	1" Standard flow version	SN-6644-02 R0

Applied Standards:

IEC 61508:2010 Parts 1 to 7

Product Details

Safety function under consideration : As per SIL Safety Case Report Z0567077-A
 Architectural Constraints : HFT: 0
 : SFF:
 Quick Exhaust Valve – 91.6% (Table 1&2)
 Values used to demonstrate achieved SFF^[4] : As per below Table 2,
 Random Hardware Failure Rates (FIT) : As per below Table 2

Table 2: Failure rates for Quick Exhaust Valve

Sr. No.	FAILURE MODE	FAILURE RATE (FIT)	SAFE FAILURE FRATION (SFF)
1	Safe (Detected + undetected)	280	91.6%
2	Dangerous undetected	57	

Probability of Failure on Demand NA
 Hardware Safety Integrity Compliance Route 1_H
 Systematic Safety Integrity Compliance NA as per clause 7.4.2 of IEC 61508 Part 2
 Systematic Capability^[2] SC 2
 Overall SIL Capability Achieved^[3] SIL 3

^[1] According to IEC 61508:2010 Part 2 Clause 7.4.2 & 7.4.4

^[2] According to IEC 61508:2010 Part 4 Clause 3.5.9

^[3] Lowest SIL indicated

^[4] According to IEC 61508 Part 2 section 7.4.2 & 7.4.4

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Information supporting the failure data

- | | |
|--|---|
| 1. Product ID | : As per Page 2 & 3 |
| 2. Functional specification | : As per SIL Safety Case Report Z0567077-A |
| 3. Environmental Limits | : NA |
| 4. Lifetime / Replacement Limits | : 20 Years |
| 5. Maintenance Requirements | : As detailed in Operation & Maintenance manual |
| 6. Diagnostic Coverage | : NA |
| 7. Diagnostic Test interval | : NA |
| 8. Evidence of use in similar conditions | : NA |

Conditions of Safe Use

1. User shall comply with the detail contained in the manufacturer user manual as well as the information provided above.
2. Selection of this equipment for use in a safety application shall only be made by a competent person.
3. The collection of any data associated with this type for equipment during operations shall be collected and reported to the manufacturer
4. The product shall be tested at regular intervals to identify any malfunctions in accordance with the product safety manual.

Conditions of Certificate

1. This certificate is based on the assessment carried out by DNV GL as recorded in assessment reports; SIL Safety Case Z0567077-A.
2. Printed copies of the certificates are not a controlled version.
3. This certificate is based on the contract, (Project No. Z0567077), agreed between DNV GL and Shavo Norgren (India) Pvt. Ltd.
4. Shavo Norgren (India) Pvt. Ltd. shall ensure the Management of Functional Safety is maintained.
5. DNV GL shall be notified of any changes to the product that may impact on this certificate during the period of validity.
6. The use of this certificate is subject to the 'certificate agreement' for Functional Safety Certification.
7. This certificate remains the property of DNV GL and shall be returned upon request.

Other valid terms and conditions are found in the DNVGL Agreement.

END OF CERTIFICATE