Certificate No: LR22119519SF
Issue Date: 30/01/2022
Expiry Date: 29/01/2027

# Certificate Of Fire Approval

This is to certify that the product detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations and with the International Convention for the Safety of Life at Sea, (SOLAS), 1974, as amended, for use on ships and offshore installations classed with Lloyd's Register, and for use on ships and offshore installations when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

| | |
|---|---|
| **Manufacturer** | **HD Fire Protect Pvt. Ltd.** |
| **Address** | D-6/2, Road No.34, Wagle Industrial Estate, Thane, 400604, India |
| **Type** | WATER SPRAY SYSTEM COMPONENT |
| **Description** | Fixed Fire Extinguishing System Component – "Medium Velocity Open Water Spray Nozzles, Types: MV-A, MV-AS, MV-B, MV-BS and MV-E " |
| **Trade Name** | "Medium Velocity Open Water Spray Nozzles, Types: MV-A, MV-AS, MV-B, MV-BS and MV-E " |
| **Specified Standard** | Performance testing in accordance with FM Approval Standard: "Class 2021/2025 (February 2010)-Automatic and Open Water-Spray Nozzles for Installation in Permanently Piped Systems" |

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document and its supplementary Type Approval Terms and Conditions form part of this Certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.

**Saji Abraham**

Surveyor to Lloyd's Register EMEA
A member of the Lloyd's Register group

71 Fenchurch Street, London, EC3M 4BS, United Kingdom

## ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR22119519SF

The undernoted documents have been appraised for compliance with the relevant requirements of International Conventions, and this Design Appraisal Document forms part of the Certificate.

This Design Appraisal Document forms part of the Certificate.

This certificate is a renewal of SAS F170021/M1

### EXAMINED DOCUMENTATION

#### Test Reports

1. Factory Mutual Research, Massachusetts, United States of America; Test report Project ID: 3046314/Class: 2025 dated 11 June 2013
2. Lloyd's Register Mumbai, Batch Inspection Performance Test Witness Report No: HD/SV/160923/01 dated 23 September 2016

#### Datasheets and Drawings*

1. Manufacturer's datasheet reference: HD 108 dated November 2015
2. Manufacturer's drawing reference: 115825 Rev. 1 dated 17 November 2016

*Note: Datasheets and Drawings are for reference only; approved product details and installation arrangements are to be in accordance with Conditions of Certification described below. Additionally, where differences exist between the drawings/datasheets and the Certificate, the information in the Certificate must be considered correct and applied.

### CONDITIONS OF CERTIFICATION

1. Restricted for applications where the water spray nozzles are used as an integral part of fixed water spray fire extinguishing systems outside the scope of statutory regulations only, such as for boundary cooling or other applications acceptable to the final Project Authority. Additional testing and approval will be required in order for the nozzles to be accepted for statutory applications (for example, fixed water spray fire extinguishing systems for machinery spaces, cargo pump rooms, accommodation spaces, ro-ro spaces, helicopter landing areas etc.)
2. Nozzle characteristics obtained from Type Approval tests are as described in Table 1 below.
3. Minimum water spray coverage area for each nozzle at 3m installation height to be as specified in Table 2 below and Manufacturer's datasheet reference: HD 108 dated November 2015
4. Approved range of operating pressures: 1.7 bar (25 Psi) up to 12.1 bar (175 Psi).
5. Fixed water spray systems incorporating these nozzles must be operationally tested at the final installation to ensure the required application rate and coverage is achieved in each case.

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6. Application in each case to be approved by Lloyd's Register at the design stage. All other system components to be approved for the operating pressures, suitability for the service and system specifications in accordance with Lloyd's Register's Rules and Regulations.
7. Nozzles may be fitted with blow-off caps as-tested
8. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype.
9. The certificate holder is solely responsible for the products supplied under this Certificate and to ensure that their products are fully compliant with the relevant statutory regulations and designed, manufactured and installed to the same quality and specifications as the prototype tested, including components that are designed and manufactured by third parties.

## ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR22119519SF

### Table 1: Nozzle Characteristics

| Model | Nominal K- Factor | | Nominal Spray Angles (Degrees) | Nominal Thread Size (in.) | Finishes |
|---|---|---|---|---|---|
| | lpm/bar$^{1/2}$ | gpm/psi $^{1/2}$ | | | |
| MV-A | 18 | 1.26 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 22 | 1.54 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 30 | 2.10 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 35 | 2.45 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 41 | 2.87 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 51 | 3.57 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 64 | 4.48 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 79 | 5.53 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 91 | 6.37 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-A | 102 | 7.14 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-AS | 18 | 1.26 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-AS | 22 | 1.54 | 65, 80, 90, 100, | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |

## ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR22119519SF

| Model | Nominal K- Factor | | Nominal Spray Angles (Degrees) | Nominal Thread Size (in.) | Finishes |
|---|---|---|---|---|---|
| | lpm/bar$^{1/2}$ | gpm/psi $^{1/2}$ | | | |
| | | | 110, 120, 140 | | |
| MV-AS | 30 | 2.10 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-AS | 35 | 2.45 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-AS | 41 | 2.87 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-B | 18 | 1.26 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-B | 22 | 1.54 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-B | 30 | 2.10 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-B | 35 | 2.45 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-B | 41 | 2.87 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-B | 51 | 3.57 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-B | 64 | 4.48 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-B | 79 | 5.53 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-B | 91 | 6.37 | 65, 80, 90, 100, | 1/2 | Stainless Steel |

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| Model | Nominal K- Factor | | Nominal Spray Angles (Degrees) | Nominal Thread Size (in.) | Finishes |
|---|---|---|---|---|---|
| | lpm/bar$^{1/2}$ | gpm/psi $^{1/2}$ | | | |
| | | | 110, 120, 140 | | |
| MV-B | 102 | 7.14 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-BS | 18 | 1.26 | 65, 80, 90, 100, 110, 120, 140 | ½ | Stainless Steel |
| MV-BS | 22 | 1.54 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-BS | 30 | 2.10 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-BS | 35 | 2.45 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-BS | 41 | 2.87 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Stainless Steel |
| MV-E | 18 | 1.26 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-E | 22 | 1.54 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-E | 30 | 2.10 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-E | 35 | 2.45 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-E | 41 | 2.87 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-E | 51 | 3.57 | 65, 80, 90, 100, | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |

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| Model | Nominal K- Factor | | Nominal Spray Angles (Degrees) | Nominal Thread Size (in.) | Finishes |
|---|---|---|---|---|---|
| | lpm/bar$^{1/2}$ | gpm/psi $^{1/2}$ | | | |
| | | | 110, 120, 140 | | |
| MV-E | 64 | 4.48 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-E | 79 | 5.53 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-E | 91 | 6.37 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |
| MV-E | 102 | 7.14 | 65, 80, 90, 100, 110, 120, 140 | 1/2 | Brass, Chrome, Electroless Nickel Plated, Epoxy Powder Coated |

**Table 2-Minimum nozzle coverage area, at 3m height and 12.1bar**

| Nozzle Spray Angle | Minimum Coverage Area (in m2) |
|---|---|
| 65 | 8.04 |
| 80 | 9.08 |
| 90 | 12.57 |
| 100 | 22.9 |
| 110 | 22.9 |
| 120 | 38.48 |
| 140 | 36.32 |

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Reference: UKITSO/FIRE/TA/

**DESIGN APPRAISAL DOCUMENT**

## ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No. LR22119519SF

### PLACE OF PRODUCTION

HD Fire Protect Pvt. Ltd.
D - 6/2, Road Number 34
Wagle Industrial Estate
Thane – 400604
India

Saji Abraham
Senior Specialist
Fire & Safety, Statutory Discipline Team
UK&I Technical Support Office, Marine & Offshore
Lloyd's Register EMEA

***Supplementary Type Approval Terms and Conditions***

*This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).*