DNV·GL

Certificate No:
TAF00001BF

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Equivalent Sprinkler System

with type designation(s)
HI-FOG 1900

Issued to
MARIOFF CORPORATION OY
VANTAA, Finland

is found to comply with
DNV GL rules for classification – Ships
DNV GL offshore standards
DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations

Application :

Approved for use as a replacement part of automatic water sprinkler system for accommodation, public spaces and service areas, provided acceptance by Flag Administration.

Approved for use as a replacement part in the existing sprinkler systems only, not applicable for new installations.

For Application/Limitation see page 2.

Issued at **Høvik** on **2019-10-23**
This Certificate is valid until **2024-10-22**.
DNV GL local station: **Helsinki FIS**

Approval Engineer: **Nanna Martine Jacobsen**

for **DNV GL**

Mårten Schei-Nilsson
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

Product description

"HI-FOG 1900"
is an automatic, fast response, water mist system, composed of section of sprinkler heads, stainless steel piping, sections valves, control systems, filters and separators, pumps, break and pressurised hydro pneumatic tanks.

Only the sprinkler heads are type approved by this certificate.

The sprinkler heads are manufactured by Marioff at Kerava, Finland.

Application/Limitation

The sprinkler head HI-FOG 1900 may be used as replacement part of the HI-FOG 1000 sprinklers on the following conditions:

Original sprinkler type HI-FOG 1000	Replacement sprinkler type HI-FOG 1900, type A[1)]	Replacement sprinkler type HI-FOG 1900, type B[2)]	Water mist system approved under TAC
1N 1MB 6MB 100A	A1N 1MB 6MB 100A	B1N 1MB 6MB 100A	F-21051
1N 1MC 6MC 100A	A1N 1MC 6MC 100A	B1N 1MC 6MC 100A	
2N 1MC 6MC 100A	A2N 1MC 6MC 100A	B2N 1MC 6MC 100A	
1N 1ME 6MF 10RA	A1N 1ME 6MF 10RA	B1N 1ME 6MF 10RA	F-21052
1N 1MC 6VD 10RA	A1N 1MC 6VD 10RA	B1N 1MC 6VD 10RA	
1N 1MC 6VD 10RA	A1N 1MC 6VD 10RA	B1N 1MC 6VD 10RA	F-21053

1) HI-FOG 1900, type A may be used in socket A1000 and AB, with or without stop valve. When used in A1000 with stop valve, a spacer and O-ring 15x2.0 (replacing O-ring 15x1.5) is required.
2) HI-FOG 1900, type B may be used in socket A1000 and AB, with or without stop valve.

Sprinkler type HI-FOG 1900	k-factor [lpm/bar$^{1/2}$]	Flow [lpm]	Pressure [bar]	Data Sheet
A1N 1MB 6MB 100A	1.45	15.9	120	K0013381
A1N 1MC 6MC 100A	2.5	27.4	120	K0013381
A2N 1MC 6MC 100A	2.5	27.4	120	K0013381
A1N 1ME 6MF 10RA	6.4	55.0	75	K0013381
A1N 1MC 6VD 10RA	4.2	36.0	75	K0013381
A1N 1MC 6VD 10RA	4.05 (1.70)	44.4 (13.2)	120 (60)	K0013381
B1N 1MB 6MB 100A	1.45	15.9	120	K0013381, Rev.B
B1N 1MC 6MC 100A	2.5	27.4	120	K0013381, Rev.B
B2N 1MC 6MC 100A	2.5	27.4	120	K0013381, Rev.B
B1N 1ME 6MF 10RA	6.4	55.0	75	K0013381, Rev.B
B1N 1MC 6VD 10RA	4.2	36.0	75	K0013381, Rev.B
B1N 1MC 6VD 10RA	4.05 (1.70)	44.4 (13.2)	120 (60)	K0013381, Rev.B

For all applications:

A. Approved for use as a replacement part of automatic water sprinkler system for accommodation, public spaces and service areas, provided acceptance by Flag Administration. If the flag Administration has specific requirements this will prevail.
B. Approved for use as a replacement part in the existing sprinkler systems, originally installed with HI-FOG 1000 sprinklers, not applicable for new installations.
C. Maximum operating pressure (rated working pressure) is 140 bar. Minimum operating pressure (design pressure) 120 - 60 bar. Minimum initial working pressure (standby pressure) 25 bar.
D. All sprinklers are to be installed in the ceiling in a pendant (downward) position.
E. All nozzles are made of nickel coated brass and fitted with 2 mm, Job 57°C (orange code) bulbs. Bulbs with higher temperature ratings, but not more than 30°C over ambient temperature, are subject to approval in each case.

Replacement (installation) testing:

- System to be cleaned in accordance with routines outlined in maker's installation manual.

- Water to be in accordance with manufacturer's specification for water quality. No chemicals shall be added to the water, for the purpose of e.g. cleaning, bacterial control, corrosion inhibition, etc., without the acceptance from the Manufacturer.
- Not less than 2 sprinkler heads in each section shall be tested. Testing may be limited to 10 sections, i.e. 2 x 10 sprinkler heads if it is successful.

Periodical testing:
- The testing shall comply with instructions from flag administration, DNV GL Statutory Interpretations and maker's maintenance manual. As a minimum, not less than 2 sprinkler heads in each section shall be tested annually. For vessels with more than 10 sections, testing may be limited to 10 sections, i.e. 2x10 sprinkler heads. Select sprinkler heads not recently tested/replaced.
- Water from reservoir and all tested nozzles to be sampled and checked on board for compliance with manufacturer's specification for water quality. Dependent on the results, a further laboratory analysis of a sample from each failing section shall be conducted on shore.
- No chemicals shall be added to the water, for the purpose of e.g. cleaning, bacterial control, corrosion inhibition, without the acceptance from the Manufacturer.
- Periodical flushing, control and inspection to be in accordance with maker's system description manual and DNV GL Rules.

Type Examination documentation

Tests carried out
Tested according to IMO Res. A.800(19).

Marking of product
The sprinklers are to be marked with type designation whereas pump / control unit is to be marked with name of manufacturer and type designation.

Periodical assessment
DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Programme DNVGL-CP-0338, Section 4.