

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Fire-extinguishing system for protection of galley deep-fat cooking equipment and galley range exhaust ducts

with type designation(s)

KJ FireOff N-pipe Type 2V-MBM-1, KJ FireOff Nozzle MK-1

Issued to

Knaack & Jahn Schiffbau GmbH
HAMBURG, Germany

is found to comply with

DNV GL rules for classification – Ships

DNV GL rules for classification – High speed and light craft

DNV GL rules for classification – Yachts

DNV GL rules for classification – Naval vessels

DNV GL offshore standards

Application :

Approved for use as a fixed fire-extinguishing system for galley deep-fat cooking equipment and galley range exhaust ducts.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.

This Certificate is valid until **2022-01-11**.

Issued at **Hamburg** on **2017-01-12**

DNV GL local station: **Hamburg**

for **DNV GL**

Approval Engineer: **Michael Kämpf**

Antje Fleischhauer
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

The galley protection system with nozzle designations « KJ FireOff N-pipe Type 2V-MBM-1 » and « KJ FireOff Nozzle MK-1 » is a low-pressure water mist system which is composed of spray heads, stainless steel piping, section valves, control system and pump unit.

The galley protection system should be designed according to SOLAS 2014 Ch. II-2, Reg.10.6.4 (deep-fat cooking equipment) and Reg. 9.7.5 (exhaust ducts from galley ranges).

Only the spray heads (nozzles) are type approved by this certificate. Other systems components are subject to case by case approval.

The spray heads are manufactured by VID Fire-Kill ApS, Svendborg, Denmark.

Application/Limitation

The spray heads are to be installed according to the following specifications:

Fat fryer protection	
Distance above fryer:	1 m – 1.5 m
Number of spray heads:	Six per 1.8 m pipe (3 pairs each 600 mm)
Position of spray head (pairs):	Two centrally over the protected area with approx. spreading angel of 60 degrees between nozzles and distance of 50 mm nozzle to nozzle
Maximum size of vats:	0.45 x 0.48 (W x H)
Maximum volume of vats:	30 l
Operating pressure:	7 bar – 9 bar
Spray heads type:	KJ FireOff N-pipe Type 2V-MBM-1

Duct protection	
Maximum protection length of each spray head:	0.5 m
Number of spray heads:	Twelve per 6 m pipe (nozzle spacing every 0.5 m)
Position of spray head:	Upper corner for square ducts (nozzle pointing 64° downwards, from vertical duct side) and upper side in round ducts (nozzle pointing downwards)
Maximum size of square ducts: ¹⁾	0.6 x 0.3 m (W x H)
Maximum size of round ducts: ¹⁾	Ø 0.57 m
Normal operating pressure:	6 bar
Spray heads type:	KJ FireOff Nozzle MK-1
Notes:	
1) Larger ducts can be accepted case by case (reduced nozzle spacing)	

Spray head information			
Spray head	k-factor ($Q = k \times p^{1/2}$)	Flow rate	Drawing no.
KJ FireOff N-pipe Type 2V-MBM-1 (per 1.8 m N-pipe) ²⁾	16.8 lpm/bar ^{1/2}	44.45 lpm at 7 bar	80704-557A
KJ FireOff N-pipe Type 2V-MBM-1 (per micro nozzle) ²⁾	2.8 lpm/bar ^{1/2}	7.41 lpm at 7 bar	80704-557A
KJ FireOff Nozzle MK-1 (per 6 m N-pipe) ³⁾	10.8 lpm/bar ^{1/2}	26.45 lpm at 6 bar	100303-807A
KJ FireOff Nozzle MK-1 (per micro nozzle) ³⁾	0.9 lpm/bar ^{1/2}	2.2 lpm at 6 bar	100303-807A
Notes:			
2) Spray heads are to be made of stainless steel "SS AISI 316" and have a maximum rated pressure of 9 bar.			

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3) Spray heads are to be made of stainless steel "SS AISI 303" and have a normal operating pressure of 6 bar.

System components are to be certified or inspected in accordance with DNVGL Rules.

For all systems:

1. Only stainless steel piping or piping of equivalent corrosion resistant material is to be applied and a system filter shall be provided for each pump unit (to avoid clogging of spray heads).
2. The pump unit is to be delivered with a DNVGL product certificate. Other system components are to be inspected acc. to DNVGL Rules. The piping shall be regarded as class III.
3. Ambient room temperature for pump unit should be between +4 °C and +45 °C.

The following items are to be submitted for approval for each project:

- System arrangement plans including location of spray heads, section valves and release stations.
- Specification of pipes, pump unit and associated components.
- Control, shutdown and alarm arrangements (SOLAS II-2/10.6.4.2-10.6.4.5).
- Manual containing operating and maintenance instructions.

Installation testing:

- Pressure testing of water pipe system to at least 1.5 times maximum working pressure.
- Other tests according to maker's system manual.

Periodical testing:

- Periodical control and inspection to be in accordance with the maker's system manual.

Type Approval documentation

Certification in accordance with Standard for Certification No. 1.2, Type Approval, April 2009.

Initial Type Approval Survey Report dated 17 June 2012 from DNV Fredericia.

Component Test Report Nos. 110914-6 and 111004-7, both dated 28 October 2011 from Danish Fire Laboratories.

Fire Test Report No. 120321-66, dated 5 July 2012 from Danish Fire Laboratories.

Fire Test Report No. 120323-67, dated 2 August 2012 from Danish Fire Laboratories.

Drawings No. 80704-557A, 100303-807A from manufacturer.

Drawing No. 2100-01-1-104, dated 30 July 2012 from Knaack & Jahn Schiffbau GmbH.

Design, Installation and Service Manual No. 120829-01-01, dated 29 August 2012 from manufacturer.

VID Fire-Kill ApS authorization for Knaack & Jahn Schiffsbau GmbH, dated 26 June 2012.

DNV TAC F-20255 dated 2012-10-05.

Tests carried out

Fire tested according to ISO 15371:2009. Component testing in according with MSC/Circ.1165.

Note: In terms of testing, no major changes in updated version ISO 15371:2015.

Marking of product

The spray heads are to be marked with the type designation whereas the pump/control units are to be marked with the name of manufacturer.

Periodical assessment



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The DNVGL'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 the procedure described in the Class Programme DNVGL-CP-0338, Section 4.