

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Water and Foam Monitor**with type designation(s)
Fog/Jet Monitor (FJM)

Issued to

Macron Safety Systems (UK) Ltd
GREAT YARMOUTH NORFOLK, United Kingdomis found to comply with
Det Norske Veritas' Offshore Standards
Det Norske Veritas' Rules for Classification of Ships**Application :****The water and foam monitor is approved for installation on ships and offshore vessels.**
For max. capacities and working pressures, see page 2 of the certificate under
Application/Limitations.**Product(s) approved by this certificate is/are accepted for installation on all vessels classed**
by DNV GL.This Certificate is valid until **2019-06-30**.Issued at **Høvik** on **2015-07-20**DNV GL local station: **Great Yarmouth**for **DNV GL**Approval Engineer: **Ragnar Tonjer**

Petter Langnes
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

"Fog/Jet Monitor (FJM)"

Water and Foam monitors made of stainless steel (body, outer pipe and nozzle disc).

Traded as a product from Tyco Fire Protection Products.

Application/Limitation

The flow and throw length are variable of number of turns (turn disk inside) and pressure. This is defined as K-factor in the table below. The monitors have an elevation from – 60 to +90 degrees.

Size	Capacity up to	Throw length up to (using water)	K-factor (Q/Sqt(P) [lit/min / Sqt(bar)])	Max working pressure
FJM-80	3700 lit/min at 10,4 bar	75 metre at 10 bar	230 to 1140	16 bar
FJM-100	6000 lit/min at 10 bar	82 metre at 10 bar	490 to 1900	16 bar
FJM-150	11700 lit/min at 10 bar	92 metre at 10 bar	1520 to 3700	16 bar
FJM-200 G	20000 lit/min at 10 bar	123 metre at 11 bar	3000 to 6300	13 bar

Approved for use with approved foam concentrates. Mixing ratio up to 6 % (+compensation). Foam concentrates with viscosity less than 200 cSt (deck foam systems) or with viscosity less than 100 cSt (inside air systems), may be tested with water/water (as applicable).

Other models which may provide the same capacities as in the above table, but with slightly different pressures and throw lengths are: FJM-80 S, FJM-80 WTO, FJM-80 WTO S, FJM-100 S, FJM-100 WTO, FJM-100 WTO S, FJM-100 EL, FJM-100 H, FJM-150 S, FJM-150 WTO, FJM-150 EL, FJM-150 H, FJM-200 GS, FJM-200 EL, FJM-200 EL/FJF, and FJM-200 EL/SLN. Selection criteria and number of turns to be specified in each case.

FJM "S" models (with in-built foam concentrate inductor) will require approval in each case. To be flow tested at manufacturer's premises before delivery. Tolerance for foam concentrate usage shall be tested at commissioning, and thoroughly documented for relevant pressures vs. compensation percentage.

Hydraulic test to 1.5 times working pressure to be documented before delivery.

Works certificate indicating mechanical properties of materials in the monitor and pressure test report is to accompany each product.

Materials are to be in accordance with the DNV Rules Part 4, Ch.1, Sec.1 (Pipe of class III).

The specific arrangement of water monitors, piping and control equipment is subject to approval in each case.

Max hose length is 3 m when suction height is 3 m, and 5 m when foam storage is at same deck level as the monitor. For further details, see Type Approval documentation, page 3.

Each product is to be supplied with its manual for installation, use and maintenance.

Type Approval documentation

Certification in accordance with Standard for Certification No. 1.2, Type Approval, January 2013.

Job Id: **262.1-002521-8**
Certificate No: **TAF0000024**

Test Report No. 420GTB04 (for FJM-200) dated 30 August 2004 from Bureau Veritas.

Capacity test report dated 23 May 1994 from DNV Gothenburg.

Report from witness test dated 12 November 1998 from Svenska Skum AB, witnessed by American Bureau of Shipping (ABS).

Test report No 1026 dated 9 November 2006 from Svenska Skum, witnessed by China Classification Society.

Installation and Operation manual No. 10101E Issue 02 dated 2011-10.

Drawings (Fog/Jet Monitors, basic versions):

Size:	Drawing no:
FJM-80	21001, rev.3 dated 2006-03-08
FJM-100	21023, rev.3 dated 2006-03-08
	31904, rev.4 dated 2009-06-11
FJM-150	20985, rev.5 dated 1999-10-19
FJM-200 G	1920-00, rev.0 dated 2001-06-11

Tests carried out

According to DNV Type Approval Programme 474.51.

Marking of product

The product 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 Standard for Certification No. 1.2 Type Approval Item 4.