



**Ministry of Defence
Defence Standard 02-877**

Issue 2 Publication Date 12 November 2009

**Requirements for Fine Water Spray
Firefighting Systems for Main and
Auxiliary Machinery Spaces on Surface
Ships**

Category 2



Contents

Foreword iv

1 Scope 1

2 Warning 1

3 Normative References..... 1

4 Definitions 2

4.1 **Design point** 2

4.2 **Strainer differential pressure** 2

4.3 **Design flow**..... 2

4.4 **High hazard locations** 2

4.5 **Vulnerable equipment** 2

5 Health and safety considerations 2

6 Informative References 3

6.1 **System overview**..... 4

6.2 **Fine Water Spray Overview** 5

6.3 **System capability** 5

6.4 **System vulnerability**..... 6

6.5 **Fine Water Spray and firefighting strategy**..... 7

6.6 **System operation**..... 7

7 Installation requirements 11

7.1 **Planning and documentation** 11

7.2 **Design point** 12

7.3 **Extent of protection**..... 12

7.4 **Performance considerations** 12

7.5 **Water supplies** 13

7.6 **Firefighting foam supply and proportioning unit**..... 13

7.7 **Spacing and location of nozzles** 14

7.8 **Hydraulic design criteria**..... 17

7.9 **Pipework, valves and devices** 19

7.10 **Identification of firefighting systems, signs and notices** 19

8 Equipment specifications 20

8.1 **Firefighting foam system** 20

8.2 **Selection of nozzles** 20

8.3 **Pipework**..... 20

8.4 **Valves** 21

8.5 **Strainers** 21

8.6 **Flow testing facility** 21

8.7 **System monitoring** 21

9 Procedural requirements 22

9.1 **Testing and commissioning** 22

9.2 **Operational procedures** 22

9.3 **Maintenance** 22

9.4 **Post fire procedures**..... 23

10 Spares and redundancy 23

Figures

Figure 1 - Schematic of Fine Water Spray system key elements..... 4

Figure 2 – Typical fine Water Spray system..... 9

Figure 3 - Nozzle positions relative to obstructions..... 15

Figure 4 - Distance of FWS nozzle deflector from obstructions 16

Figure 5 - Distance of MV sprayer deflector from obstruction..... 17

Tables

Table 1 – Maximum coverage and spacing of nozzles	14
Table 2 – Actions to be taken to overcome obstructions to water discharge	15
Table 3 – Actions to be taken to overcome obstructions to water discharge	16
Table 4 - Equivalent length of fittings and valves	18
Table 5 - Selection of pipework and fittings for FWS	20

8.2 Selection of nozzles**8.2.1 Fine water spray nozzles**

Compartment high level protection in spaces shall be provided by FWS nozzles located beneath the deckhead or beneath high level obstructions. The FWS nozzles shall be GW Model LOFLOW K15C, having a k factor of 15 or similar products having a demonstrated equivalent performance. FWS nozzles shall have ½" inch nominal threaded connections suitable for connecting to an ISO 7-1 female thread. Fine water spray nozzles shall not be used to protect bilges.

8.2.2 Medium velocity spray nozzles

Protection of bilge spaces may be provided by MV spray nozzles located beneath the floor plates. The spray nozzles shall be either Tyco MV12, 160° spray angle and k factor of 18 or similar products having a demonstrated equivalent performance. Spray nozzles shall have ½ inch nominal threaded connections suitable for connecting to an ISO 7-1 female thread. MV sprayers shall not be used for high-level space protection.