

## SERVICE BULLETIN

Number 001/2012

<b>Product</b>	HI-FOG® Sprinklers
<b>Subject</b>	Contamination of HI-FOG sprinklers which may prevent activation.
<b>Summary</b>	This Service Bulletin describes potential reasons and methods for identification of contaminated sprinklers and actions to be taken in case contamination is found to ensure reliable operation.
<b>Date</b>	20 June 2012

This Service Bulletin replaces Service Bulletins 002/2005 and 003/2005.

### Background

See Quality Bulletin 002/2012 for reference.

A HI-FOG sprinkler is activated when the liquid filled glass bulb is exposed to heat and liquid expansion breaks the bulb (or it is mechanically broken), which allows the internal spindle to move, thus releasing the pressurized water creating the water mist. The HI-FOG sprinkler is a fine-mechanical device, the operation of which may be endangered if contaminated.

### Possible reasons for failure to activate

**Contamination** caused by **internal** or **external** factors may prevent the sprinkler from activating at the 25 bar stand-by pressure (or at higher pressure in case of severe contamination) when the sprinkler bulb is exposed to heat or mechanically broken.

Both internal and external contamination may cause increased friction of the internal spindle thereby increasing the pressure level required for sprinkler activation. If the pressure level required to activate the sprinkler is above the system stand-by pressure the HI-FOG system will not start automatically.

**Internal contamination** is most likely caused by poor water quality (see the Technical Data Sheet "Specification for water in HI-FOG systems"), but exposure to heat or humidity may also contribute (e.g., sprinklers in saunas).

Internal contamination can only be detected by testing or dismantling the sprinkler. In both cases the sprinkler cannot be re-used but should be replaced with a new one of the same type.

To avoid internal contamination of the sprinkler the water quality should be maintained as specified in the Technical Data Sheet "Specification for water in HI-FOG systems".

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Particles and impurities may also cause increased spindle friction or may block the sprinkler filter mesh or micro-nozzles (reducing or blocking the flow). Cleanliness of the pipe work and proper inlet filtration is essential to avoid this.



Picture 1 Contaminated spindle

**External contamination** [Picture 2 &3] is typical in areas with an aggressive atmosphere (e.g. spas, pool areas, pool equipment rooms, kitchen areas, outer decks and similar). External contamination is easily detected by visual examination.



Picture 2 Severe contamination



Picture 3 Various external contamination

Another reason for failure to activate may be **empty glass bulbs**. Empty glass bulbs are mainly caused by rough handling during installation or hits and blows to the sprinkler when in place. If the glass bulb is empty it will not break when exposed to heat, and thus the sprinkler will not activate. For more details, see Service Bulletin 001/2010.

### Actions required

- Regular testing and examination of all sprinklers is to be done in accordance with instructions and manuals, Authority requirements and Service Bulletin 002/2012. For sprinklers in spaces with an aggressive atmosphere (e.g. spa's, pool areas, saunas, pool equipment rooms, kitchen areas, outer decks and similar) more frequent testing and examination is required (see Service Bulletin 002/2012)
- The whole HI-FOG system is to be regularly tested and maintained in accordance with instructions and manuals



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- It is to be ensured that the water quality complies with the Technical Data Sheet “Specification for water in HI-FOG systems”. Samples should be taken annually from the feed tank(s) and from various locations in the HI-FOG system, see Service Bulletin 002/2012. Also flushing of the pipelines is to be done annually to exchange the water in the system.

### **Actions in case the tested sprinkler fails to activate**

If, during testing, sprinklers failing to activate at standby pressure are found, a further 2 to 5 sprinklers are to be tested in that section to establish the extent of issue. It is also recommended to test further sections if activation failures are found in those sections chosen for testing.

If only 1 out of 4 to 7 sprinklers tested in a section fail to activate it should initially be regarded as an isolated case. The sprinkler failing to activate should be sent to Marioff for further analysis together with details on location and water quality (or a sample).

If a sprinkler does not release at stand-by pressure the pump unit can be started manually to increase system pressure to verify that the sprinkler activates on nominal operation pressure (usually 140 bar). Alternatively, the sprinkler can be removed from the system and delivered to Marioff for release pressure verification testing (pressure is increased in steps to verify release pressure level).

If more than 2 sprinklers in one section or more than 10% of all sprinklers tested are found to fail to activate at stand-by pressure the following actions are recommended to mitigate the risk that a sprinkler would fail to activate in a fire situation (pending full corrective action):

- The HI-FOG pump is to be started manually (see manual for procedure) in the case of a fire alarm. This increases the system pressure which also ensures that sprinklers with increased release pressure are activated
- Increase the extent and frequency of fire patrol activities in the section(s) concerned

During testing it is recommended to take a water sample from each sprinkler failing to activate. The sample shall be taken so that it presents the water immediately next to the sprinkler (no flushing before sampling). Water samples can be sent to Marioff for analysis or to a local laboratory to verify the water quality against HI-FOG water specifications.

Marioff is to be contacted for advice and for examination of the problem in all cases where the failure rate is found to be considerable.

Flag administration (or class when authorized) or other authorities are to be informed, as applicable.



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For additional information and assistance, including product supplies, please contact Marioff's After Sales and Service Department.

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