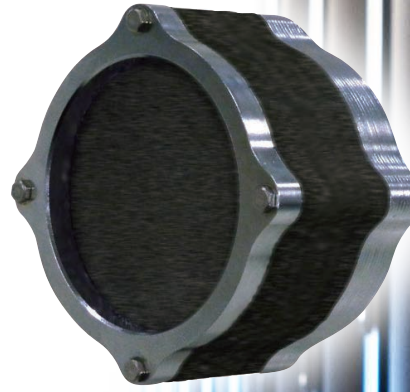


Noise Reduction Nozzle

To protect critical data and maintain business continuity



Pendant type



Sidewall type

Gas discharge noise of fire suppression systems may cause Hard Disc Drive failure

On September 10, 2016 in Romania, during a fire drill conducted at a datacenter run by a major European bank, the gas discharge noise emitted when the gas was released caused an unexpected failure on hard disk drives (HDDs). This made the bank's ATMs, online banking systems and websites go offline. As it was a large-scale, complicated failure that persisted from 1:00PM to 11:00PM of the same day, recovery using the backup system required a lot of time.

On April 18, 2018 in Sweden, the noise produced by the errant gas discharge of an inert gas fire suppression system destroyed the HDDs for around a third of the Nasdaq Nordic servers located at a data center in Vasby, a Stockholm suburb. Because of the incident, the Nasdaq Nordic markets in Sweden, Finland, Denmark, Iceland, and the three Baltic states could not start trading operations at 9:00AM local time until shortly after 2:00PM on the day.

Noise Reduction Nozzle

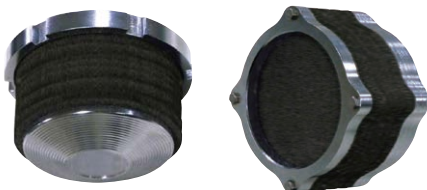
- Decreases impact on HDDs caused by the gas discharge noise
- Reduces discharge noise while maintaining the fire suppression performance
- Easily replace existing nozzles

Noise may affect HDDs

At a convention held by the Architectural Institute of Japan on September 11, 2010, an article entitled "Study on the effects of sound environment to precision instruments" was presented. According to this article, noise of 110 dB or larger may cause potential damage to HDDs.

Development of a noise reduction nozzle

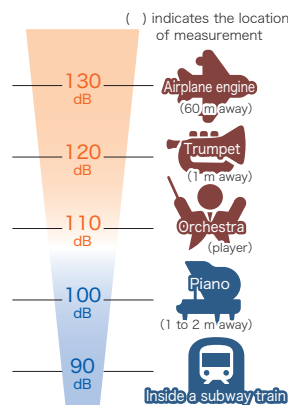
To provide HDDs with protection from the sound environment, Nohmi has developed a noise reduction nozzle that reduces gas discharge noise using our exclusive technology.



Pendant type

Sidewall type

Sound pressure level

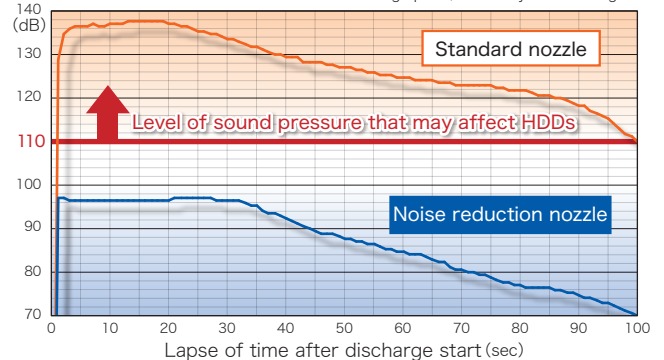


Effects caused by the gas discharge noise of a fire suppression system

The article mentioned in the paragraph on the left suggests that noise such as the gas discharge noise of a fire suppression system may have a negative impact on HDDs. Furthermore, there are risks including business downtime caused by the decreased speed of HDDs, as well as loss of data.

Sound pressure curve during fire suppression gas discharge

*Measured in front of the discharge point, 1 m away at a 45° angle



Sound pressure level

Classification	Nitrogen fire suppression system	
	Pendant type	Sidewall type
Nozzle flow rate ^{*1}	90 m ³ /min	90 m ³ /min
Sound pressure level ^{*2}	97 dB	99 dB

*1 The nozzle flow rate indicated above is an example. Products with different flow rates are also available.

*2 Results (maximum value) measured in front of the discharge point, 1 m away at a 45° angle.

Product specifications

Classification	Nitrogen fire suppression system					
	Pendant type		Sidewall type			
Model number	25PNQ	32PNQ	20ZMQ(U)	25ZMQ(U)	32ZMQ(U)	40ZMQ(U) ^{*3}
Full length x full width (mm)	88x90	93x110	90x97	100x97	118x118	139x140
Weight (kg)	1.2	2.0	1.6	1.4	2.2	3.7

*3 This product is designed to be a replacement for existing large flow rate nozzles.

NOTE:

This system is intended to suppress a fire in its early stage. Please note that it may not suppress the fire if kind, quantity and/or arrangement of combustibles in the area protected by this system is changed after installing the system.

This system comprises cylinders filled with highly pressurized gas. Handle the cylinders with care according to the cautions indicated on them.

The discharge of a gas extinguishing agent results in the emission of a high level of noise. This noise may affect modern precision instruments such as hard disc drives ("HDD"). This effect occurs when discharging any agents described in NFPA such as inert gases, HFCs, HCFCs, FICs, FKs, and Halon.

In a communication equipment room, computer room or server room with hard disc drives installed, we recommend you to use the noise reduction nozzles described in this document, which emits a lower level noise when discharging the gas. Please note that NOHMI does not guarantee the performance of HDD. Other countermeasures may be effective to protect HDD, such as sound insulation and vibration isolation for HDD housing rack (i.e. use of acoustic absorption materials and vibration-proof materials, etc.), measures to protect HDD before discharging a gas agent (i.e. stop running HDD, evacuation of magnetic heads, etc.), or improvement in sound-proofing of HDD itself and/or data protection (backup of data, etc.). Please note that, even if a customer replaces the existing normal discharge nozzles with the noise reduction nozzles and adopts all or part of the above countermeasures, NOHMI does not guarantee the performance of HDD.

NFPA 75 "Protection of Information Technology Equipment" states that power supply to all electronic devices should be cut off at the same time when the gas fire suppression system starts discharging the gas agent.

The excessive pressure in a protected room caused by the discharge of the agent must be released to prevent the room from incurring damage. Therefore, a pressure relief device must be installed in the room.

Products of combustion may be released by fire. Therefore, an exhaust fan must be installed in the protected room and it must be activated after extinguishing the fire to remove the products of combustion.

The information contained herein does not purport to cover all the details or variations in the equipment described, nor provide for every possible contingency that may be met in connection with its installation, operation or maintenance.

Specifications are subject to change without notice. Contact Nohmi before relying on the information.

Actual performance is based on proper application of the product by a qualified professional.

Should further information be required or should particular concerns arise that are not covered sufficiently for the purchaser's purposes, the matter should be referred to Nohmi or your nearest distributor.

* "NN100" is the trademark registered by NOHMI BOSAI LTD.

* The original manufacturer of the NN100 system products is Koatsu Co., Ltd., an affiliate of Nohmi Bosai Ltd.

* The contents of this brochure are valid as of August 2018.