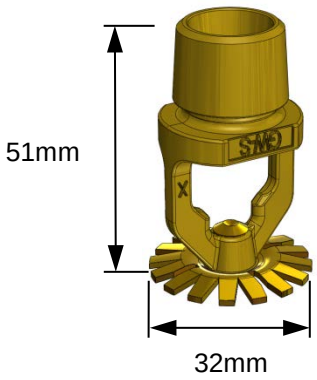
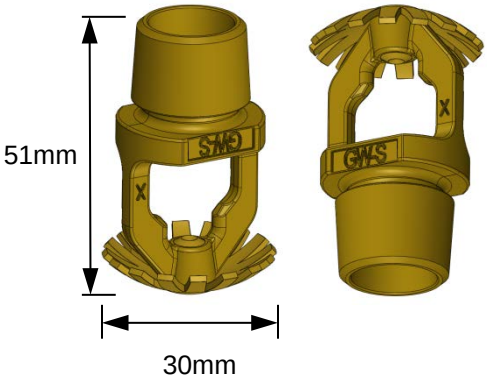
GW
DRENCHER NOZZLE - MARINE
SSP & CUP

GW SPRINKLER A/S

The GW type “S” range of Drencher Nozzles offers the latest in design and performance, both highly compact and durable.
Drencher Nozzles are open sprinklers, available in two different styles and with different orifice sizes (K-factors) to accommodate most system design requirements.

Style	**SSP**	**CU/P**
Description	**S**prinkler **S**pray **P**endent	**C**onventional **U**pright/**P**endent
Installation	Pendent	Upright or Pendent
Spray characteristics	100% of water distributed in a downwards *parabolic* full coverage spray.	Approx. 50% water is reflected upwards forming a *spherical* spray, wetting the ceiling above and the floor below.
Foot print	Circular	Circular
Spray angle	~140°	360°
Thread	½” BSPT	½” BSPT
Weight	64 g	64 g
Design & Dimensions		

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Data sheet no.: **WS055 1001 D**

Date: 17 January 2017

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Orifice sizes
(K-factors)

SSP	CUP	Type	K-factor	Orifice dia. mm.
✓		7	32	7,2
✓		8	41	8,2
✓		9	47	8,7
✓		9,5	57	9,4
✓		10	62	9,9
✓	✓	11	80	11,05
✓	✓	13	115	13,2

Material: Brass, chrome plated (standard)
SS316 stainless steel (optional)

Working pressure: 0,8 to 12 bar

Max. coverage per nozzle: 12 m²

Max. spacing: 4 m

Typical application rate: 5 mm / m² / min.
The application rate of a fixed water spraying system can be varied by adequate selection of nozzle K-factor, nozzle spacing and operating pressure.

Approval:

Bureau Veritas (BV).
Approved for use as drencher nozzle in fixed water spraying systems having to comply with IMO Res. A123 (V).

Application: The GW-s Drencher Nozzle is intended for use in ***special category spaces***.
Special category spaces are those enclosed spaces above or below bulkhead deck intended for the carriage of motor vehicles with fuel in their tanks for their own propulsion, into and from which such vehicles can be driven, and to which passengers have access.

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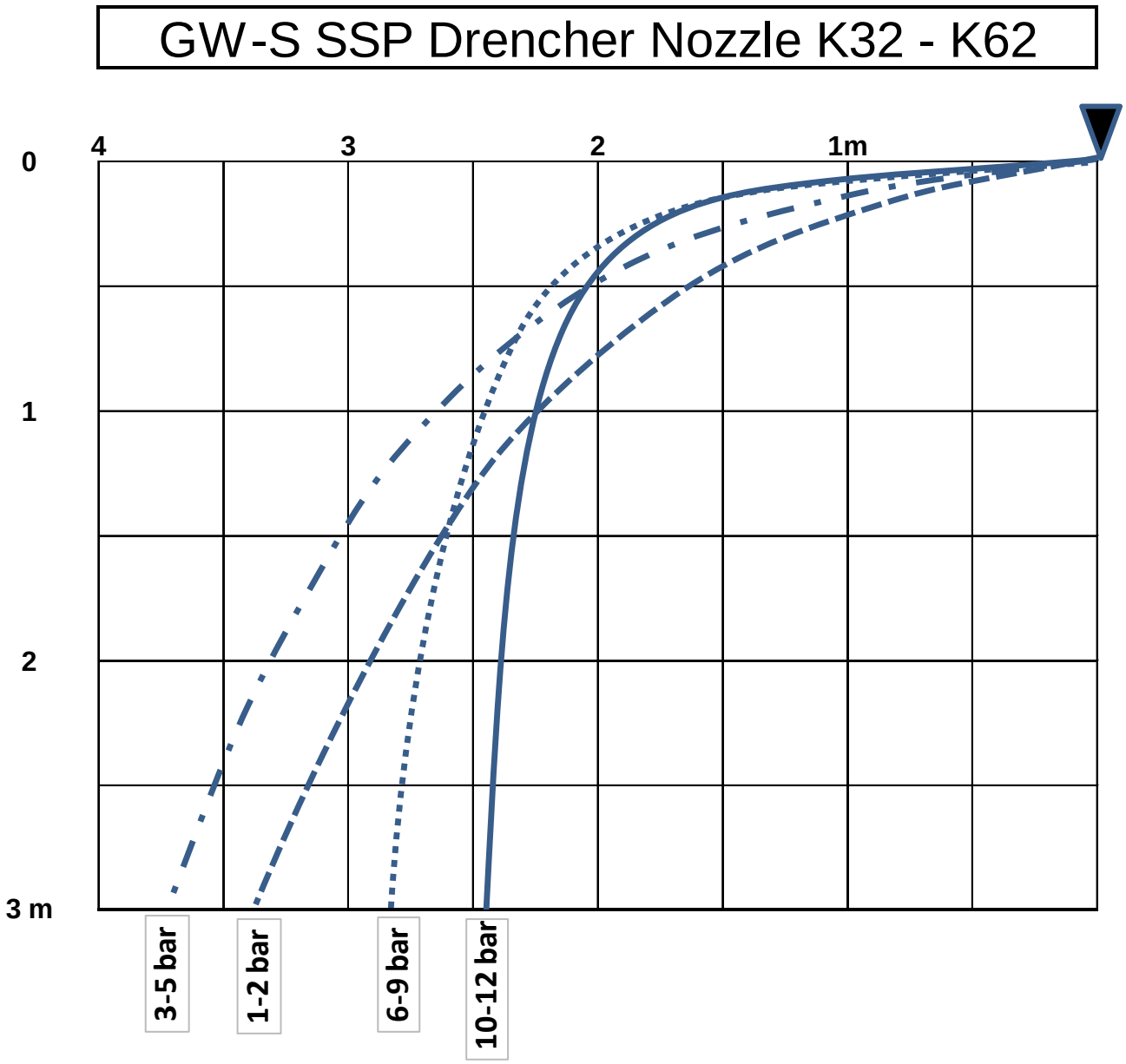
Spray pattern:



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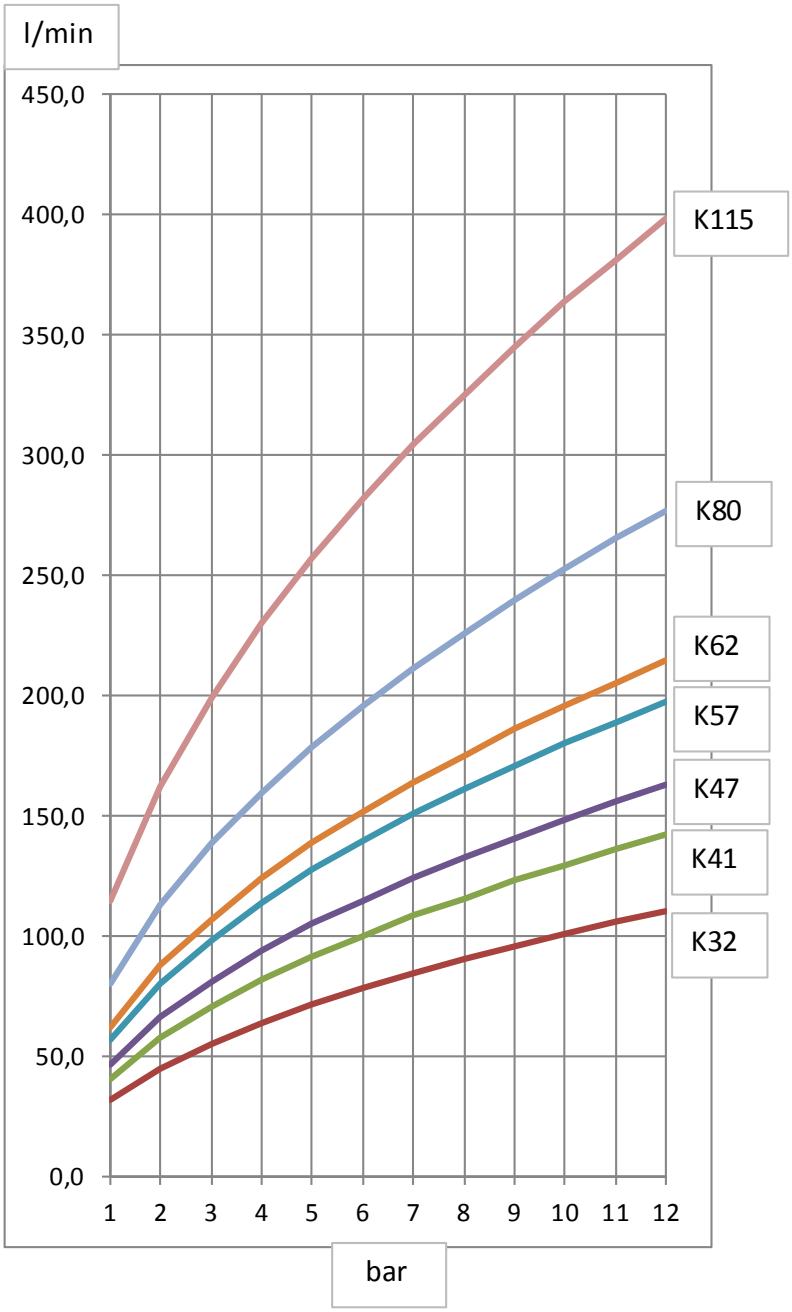
Flow / Pressure:



Q = K x √P

Q = l/min
K = nozzle K-factor
P = water pressure at nozzle (bar)

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Extract from SP Report: 2009:29 “Large Scale ro-ro deck fire suppression tests:

A water spray system designed in accordance with IMO Resolution A.123 (V) for vehicle and ro-ro cargo spaces in excess of 2,5 m in height has a water discharge density of 5 mm/min.
This density would provide fire control of a fire in the trailer of a heavy goods vehicle, i.e., the peak heat release rate would be significantly reduced compared tofree-burn conditions.
However, there is still a non-negligible risk that fire would spread to adjacent vehicles and the heating of the exposed steel deck above the fire is so high that fire spread to other decks is probable.
An increase of the water discharge density to 10 mm/min would drastically improve the performance of the system. A further increase of the density would not improve the performance as much, but would add a further safety factor to the design.

An increase of the system operating pressure would generate smaller water droplets and these tests show that the performance, in terms of fire suppression, heat attenuation and cooling of combustible gases, also improves. However, an increase in the system operating pressure will also result in a decrease in the coverage area of the nozzles, since the spray pattern tends to draw inwards at higher pressures. If the system operating pressure is increased it is, therefore, essential to reduce the coverage area of the individual nozzles, in order to ensure that proper water coverage is provided by the system as a whole.
This is especially important for applications where the vertical distance from the nozzles to the protected area is limited, as on vehicle decks.
An increased system operating pressure could also increase the velocities and themobility of the droplets, but the ability of the droplets to penetrate the fire plume maybe reduced due to their lesser size. Care should therefore be given to the maximum installation height in such a system.

Since the beginning of the 1990’s, water mist systems have become a viable alternative to traditional sprinkler systems in accommodation spaces and public areas on board ships. For these applications, a selling argument has been the reduced water demands. Water mist systems are also replacing halon in machinery spaces and are used an alternative to hazardous agents as Carbon Dioxide.
For vehicle and ro-ro cargo spaces, the fire load is virtually enormous and the volume of the spaces is huge. A fire may develop very fast and spread rapidly from vehicle to vehicle, facts that place stringent demands on the system. These tests show that a water mist system may be an alternative to a traditional water spray system.
However, the potential savings in water demand seem small, at least for ro-ro decks where the fire load is constituted of freight trucks or other larger vehicles.

The tests where the fires were fully exposed to the water spray shows that **there is a clear relationship between the level of performance and the water application rate.**
A discharge density of 15 mm/min provided immediate fire suppression, 10 mm/min fire suppression, and 5 mm/min fire control. However, improvements in performance were also documented with a higher system operating pressure and associated smaller water droplets.

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