

Marine application

BSKY FOAM Fixed Low Expansion Foam Fire Extinguishing System



BSKY Fire Protection — Enjoy the Way to Safety

High-Efficiency, Non-Toxic Open Space Protection Solution

Fire suppression in the open spaces of a vessel is highly challenging, as wind effects and the continuous supply of oxygen can cause fires to spread rapidly, potentially resulting in severe damage to the ship or its structure, the environment, and even loss of life. The BSKY FOAM marine fixed low-expansion foam fire extinguishing system utilizes non-toxic foam concentrate, water, and air to effectively extinguish fires in open areas.

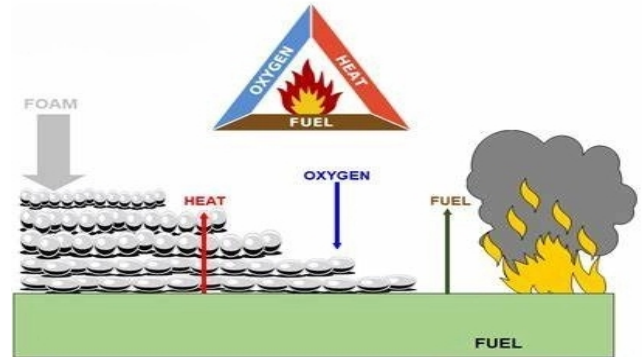
The principle of foam fire extinguishing is that seawater mixed with foam concentrate incorporates air to generate foam. This foam forms a thick blanket over the burning material, isolating it from the surrounding air and cutting off the oxygen supply. At the same time, the foam cools the fuel, thereby achieving fire suppression. Foam is effective not only against ordinary fires but is especially suitable for extinguishing oil fires. Therefore, it is commonly used for firefighting on cargo oil tank decks.

In low-expansion foam fire-extinguishing systems, the foam expansion ratio (the ratio of the volume of foam produced to the volume of foam concentrate) generally does not exceed 12:1. The concentrate and seawater are mixed at a 3% proportion by means of a proportional mixer, forming a fully blended solution. When this solution is discharged under pressure through the nozzle, it comes into contact with air and produces uniformly sized bubbles for discharge.

The BSKY FOAM fixed low-expansion foam fire-extinguishing system is available in two types: balanced (PHP series) and pressurized (PHYM series), allowing flexible selection based on different vessel requirements.

Product Features

- Low-expansion foam quickly covers the surface of burning materials, preventing further fire spread.
- Fixed foam monitors enable firefighting from a predetermined safe distance, while portable foam guns provide coverage in areas shielded from the reach of the monitors.



BSKY FOAM meet the requirements of BV 、 NK 、 ABS 、 LR 、 RS system comply with the requirements MSC.206(81) and MSC.339(91)。

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Regulatory Requirements

- Chapter 5 of the International Code for Fire Safety Systems (FSS Code), as amended by MSC.327(90) and MSC.339(91).
- Rules for Classification of Steel Ships issued by China Classification Society (CCS).
- Chapter 11 of the International Code for the Construction and Equipment of Ships Carrying Dangerous Chemicals in Bulk (IBC Code).
- Article 18 of Chapter II-2 of the International Convention for the Safety of Life at Sea, 1974, as amended.

Applicable Spaces

Decks of Ships Carrying Dangerous Chemicals/oil in Bulk.

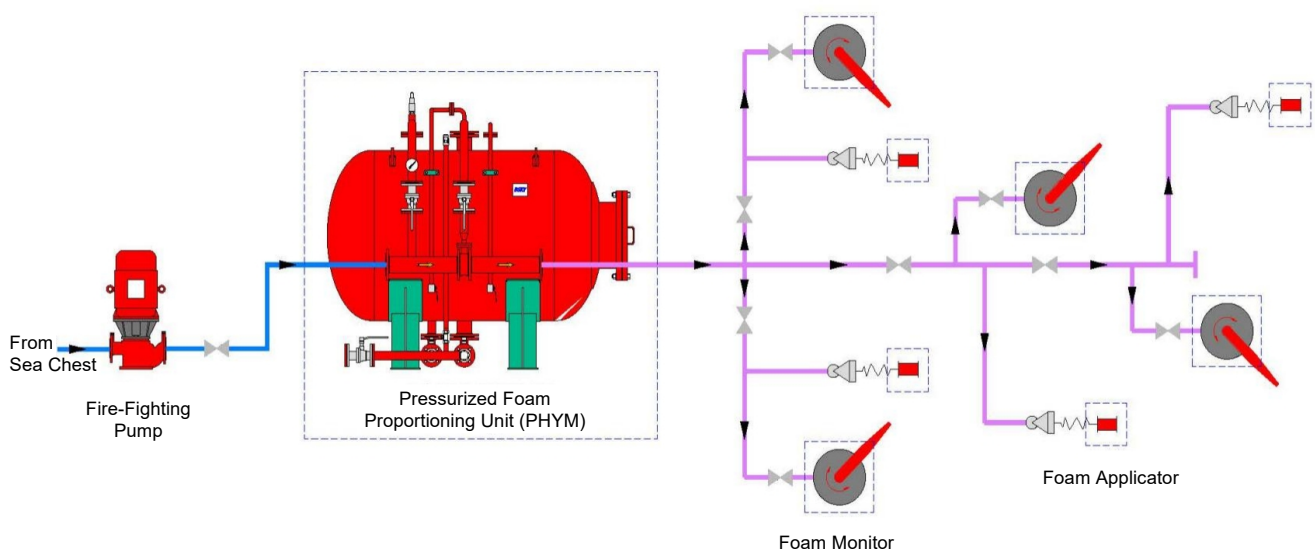
Pressurized Foam Proportioning Unit (PHYM)

The pressurized foam proportioning unit mainly consists of a foam concentrate pressure storage tank equipped with a bladder and a proportioner designed based on the Venturi principle. When water flowing through the system pipeline passes the pressure-reducing orifice plate in the proportioner, a pressure difference is created between the upstream and downstream sides of the orifice. A portion of the water from the high-pressure side enters the tank via the inlet pipe, compressing the bladder and forcing the foam concentrate inside the bladder out through the outlet pipe into the low-pressure side of the proportioner, where it mixes with water to form a foam solution. The resulting foam solution is then delivered to the foam generating equipment.



Model	Volume Range	Flow Range	Working Pressure	Installation Type
PHYM32/x	0.5~10 m ³	4L/S ~ 32L/S	0.6~1.2 MPa	Vertical / Horizontal
PHYM48/x		8L/S ~ 48L/S		
PHYM64/x		16L/S ~ 64L/S		
PHYM80/x		24L/S ~ 80L/S		

System Schematic Diagram



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Balanced Foam Proportioning Unit Requirements (PHP)

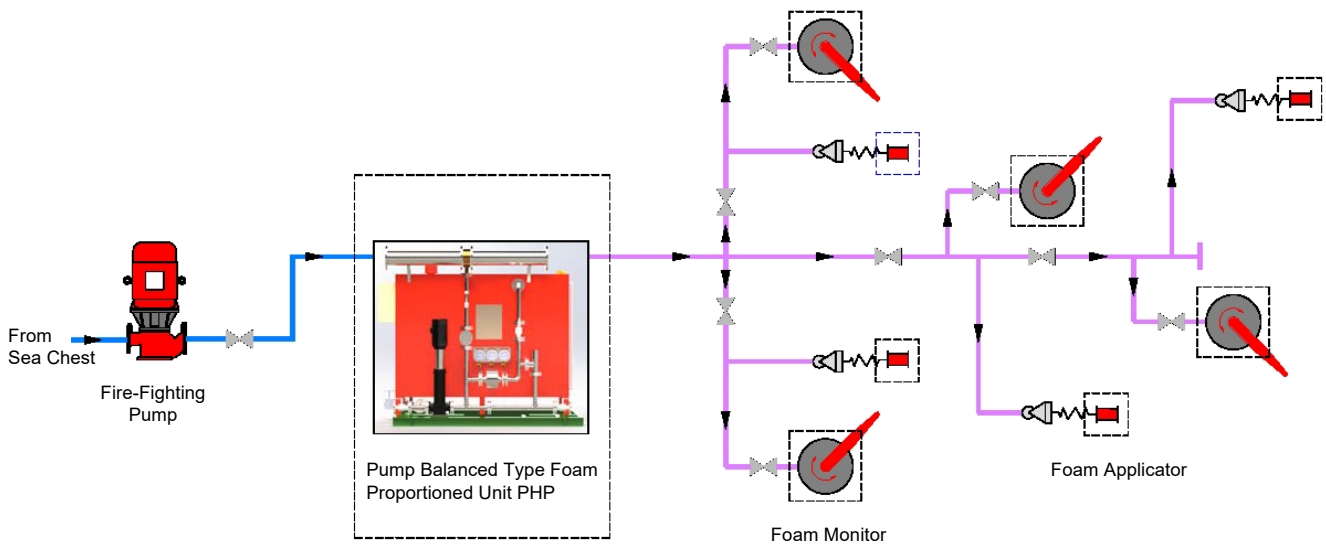
The mixing process of the foam solution in this unit is carried out by a foam concentrate pump, which pressurizes the foam liquid and injects it into the proportioner after being regulated by a balancing valve.

When the main pipeline water experiences variations in pressure and flow rate under different operating conditions, the unit ensures a continuous supply of foam solution with a relatively accurate mixing ratio, delivering qualified foam to the foam generating equipment for effective fire suppression operations.

Model	Volume Range	Flow Range	Proportion Ratio	Working Pressure
PHP32	0.5~25 m ³	8L/S ~ 32L/S	3%	0.6~1.2 MPa
PHP100		16L/S ~ 100L/S		



System Schematic Diagram



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Horizontal Foam Pressure Tank

The pressurized foam tank is a device used in pressurized foam proportioning units to store foam extinguishing agent. It is equipped with an internal bladder. During operation, pressurized water enters the tank. When the pressure inside the tank rises to balance with the pressure of the main pipeline water, the foam concentrate within the bladder is forced by the pressure of the water in the tank into the proportioner pipeline, where it mixes with the pressurized water in a set ratio to form a foam solution.

Volume	Working Pressure	Material
0.5~10 m ³	0.6~1.2MPa	Tank Body: Pressure Vessel Steel

Proportioner

The foam proportioning unit is designed based on the advanced Venturi principle, ensuring precise mixing ratios between foam concentrate and water. For standard models, the mixing ratio is 3%. When using proportioners of different specifications, the nominal flow ranges of the unit are as follows.

Type	Flow range	Material
PHZ32	4L/S ~ 32L/S	Copper Alloy / Austenitic Stainless Steel
PHZ48	8L/S ~ 48L/S	
PHZ64	16L/S ~ 64L/S	
PHZ80	24L/S ~ 80L/S	
PHZ100	8L/S ~ 32L/S	
PHZ150	16L/S ~ 100L/S	

Pump

The foam pump is a vertical centrifugal pump, primarily used to draw foam concentrate from the foam tank and deliver it into the proportioner, where it mixes with fire water to form a foam solution.

Rated Working Pressure	Power supply
1.3MPa	AC380/440,3P,50/60Hz

Foam Monitor

The foam monitor features a long projection range, wide spray coverage, and convenient operation.

Mode of Operation	Working Pressure	Flow Range	Projection Range	Rotation Angle
Manual	0.6~1.2MPa	24~100 L/S	≥32m	Horizontal: 360 ° Vertical: -65 °~+85 °



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Foam Applicator

The foam gun generates and discharges air foam. It uses an orifice plate to create a vacuum pressure differential in the water flow, which draws in the foam solution and mixes it with air before discharging.

Working Pressure	Flow Range	Projection Range	Threaded Connection
0.5MPa	8 L/S	≥20m	KY65

Foam Concentrate

Foam concentrate is an agent that is miscible with water and can generate fire-extinguishing foam through chemical or mechanical methods. It is also referred to as foam extinguishing agent or foam concentrate, and serves as the base liquid for producing foam.

Name	Model	Quality guarantee period	Scope of application
Aqueous Film-Forming Foam Extinguishing Agent	AFFF3%	8 years	Gasoline, diesel, alcohol...
Alcohol-Resistant Aqueous Film-Forming Foam Extinguishing Agent	AFFF / AR3%	2years	Gasoline, diesel, alcohol, ether, ester, aldehyde, ketone, organic acid...
Fluoroprotein Foam Extinguishing Agent	FP3%	2 years	Generally non-water-soluble, flammable and combustible liquids.
Alcohol-Resistant Fluoroprotein Foam Extinguishing Agent	FP/AR3%	2 years	water-soluble flammable and combustible liquids such as alcohols, esters, ethers, ketones, and organic acids.
Alcohol-Resistant Foam Extinguishing Agent	S/AR3%	2 years	alcohols, esters, ethers, ketones, aldehydes, amines, organic acids, and oils.



Website



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