

EC-TYPE EXAMINATION CERTIFICATE (MODULE B)

Application of: Directive 2014/90/EU of 23 July 2014 on marine equipment (MED), issued as "Forskrift om Skipsutstyr" by the Norwegian Maritime Authority. This Certificate is issued by DNV GL AS under the authority of the Government of Norway.

This is to certify:

That the Devices to prevent the passage of flame into the cargo tanks in oil tankers

with type designation(s)

SMART-HV-3S, -4S, -5S, -6S, -8S, -10S, -12S; SMART-HV-3L, -4L, -5L, -6L, -8L, -10L, -12L

Issued to

Prosave Co.,Ltd.

Gimhae-si Gyeongsangnam-do, Korea

is found to comply with the requirements in the following Regulations/Standards:

Regulation **(EU) 2017/306,**

item No. MED/3.12. SOLAS 74 as amended, Regulation II-2/4 & II-2/16, IMO

Res.MSC.98(73)-(FSS Code) 15

Further details of the equipment and conditions for certification are given overleaf.

This Certificate is valid until **2023-02-15**.

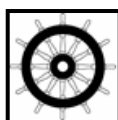
Issued at **Høvik** on **2018-02-16**

DNV GL local station:

Gimhae Station

Approval Engineer:

Adel Samiei



Notified Body
No.: **0575**

for **DNV GL AS**

Roald Vårheim

Head of Notified Body



The mark of conformity may only be affixed to the above type approved equipment and a Manufacturer's Declaration of Conformity issued when the production-surveillance module (D, E or F) of Annex B of the MED is fully complied with and controlled by a written inspection agreement with a Notified Body. The product liability rests with the manufacturer or his representative in accordance with Directive 2014/90/EU.

This certificate is valid for equipment, which is conform to the approved type. The manufacturer shall inform DNV GL AS of any changes to the approved equipment. This certificate remains valid unless suspended, withdrawn, recalled or cancelled.

Should the specified regulations or standards be amended during the validity of this certificate, the product is to be re-approved before being placed on board a vessel to which the amended regulations or standards apply.



Product description

High Velocity vents and vacuum relief valve with integrated gas freeing cover

Type SMART-HV in two categories: Type L (large flow capacity) and Type S (small flow capacity)

Design according to:

- 1) ISO15364:2016 - Ships and marine technology - Pressure/vacuum valves for cargo tanks
- 2) IMO MSC/Circ. 677 (as amended by MSC.1/Circ. 1009 and MSC.1/Circ. 1324) - Revised standards for design, testing and locating of devices to prevent the passage of flame into cargo tanks
- 3) ISO 16852:2010 - Flame arresters, Performance requirements, test methods and limits for use

Part	Materials
Valve body/house	FCD450 or SCS14A or SCS16A
Check lift handle	SUS316 or SUS316L
Pressure disc	SUS316 or SUS316L
Vacuum disc	SUS316 or SUS316L
Vacuum seat	SCS14A or SCS16A
Flame screen cover	SUS316 or SUS316L

Application/Limitation

These high velocity valves with vacuum relief valves may be fitted on tanks containing products with Maximum Experimental Safety Gap (MESG):

- Equal to or greater than 0.90 (Apparatus Group IIA) (Sizes DN200,250,300)
- Equal to or greater than 0.65 (Apparatus Group IIB) (Sizes DN80,100,125,150)

Type	Max eqv. Pipe length	Pipe Size	Set Pressure	
			Pressure side	Vacuum side
HV-3S	30 meter	DN80	14kPa – 21kPa	3.5kPa – 7.0kPa
HV-4S	30 meter	DN100	14kPa – 21kPa	3.5kPa – 7.0kPa
HV-5S	30 meter	DN125	14kPa – 21kPa	3.5kPa – 7.0kPa
HV-6S	15 meter	DN150	14kPa – 21kPa	3.5kPa – 7.0kPa
HV-8S	15 meter	DN200	14kPa – 17.5kPa	3.5kPa
HV-10S	3.5 meter	DN250	14kPa – 17.5kPa	3.5kPa
HV-12S	3.5 meter	DN300	14kPa – 17.5kPa	3.5kPa
HV-3L	24 meter	DN80	14kPa – 21kPa	3.5kPa – 7.0kPa
HV-4L	24 meter	DN100	14kPa – 21kPa	3.5kPa – 7.0kPa
HV-5L	24 meter	DN125	14kPa – 21kPa	3.5kPa – 7.0kPa
HV-6L	3.5 meter	DN150	14kPa – 21kPa	3.5kPa – 7.0kPa
HV-8L	3.5 meter	DN200	14kPa – 17.5kPa	3.5kPa
HV-10L	3.5 meter	DN250	14kPa – 17.5kPa	3.5kPa
HV-12L	3.5 meter	DN300	14kPa – 17.5kPa	3.5kPa

Products covered by this certificate shall be installed on tankers which outlet openings of gas-freeing systems on tankers are fitted with inert gas systems; except HV-3S, HV-3L, HV-4S & HV-4L which they may be installed on non-inerted tankers.

The length of the standpipe between cargo tank and valve is restricted with regard to hammering. The maximum allowable dynamic pressure drop in the standpipe between the cargo tank and the valve is not to exceed the maximum equivalent (steel) pipe length as indicated above.

Maximum loading rate, sizing and location shall be in accordance with the latest revision of IMO MSC/Circ. 731

Each finished device shall be visually and dimensionally checked and shall be tested using air to verify that the leakage is below the maximum leakage rate as stated in instruction manual 1.4 (page 7) – reference to ISO 15364:2016 [6.1] and [10].

A copy of the instruction manual shall be kept on board which shall include:

- installation instructions;

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- operating instructions;
- maintenance requirements, including cleaning;
- copy of the laboratory report;
- flow test data, including flow rates under both positive and negative pressures, operating sensitivity, flow resistance and velocity, should be provided.

Type Examination documentation

KIMM test report no. 2011444323, 2011444323-1, 2011444323-2, 2011444323-3, 2011444323-4,

Tests carried out

Corrosion, Hydraulic, ice, flow, undamped oscillation, flash back, endurance burning, leakage tests

Marking of product

For traceability to this type approval each device is at least to be marked with:

- Manufacturer's name or trade mark.
- Manufacturer's address
- Type designation
- Additional marking acc. IMO MSC/Circ. 677 sec. 4.1 and ISO15364:2016 sec.12