

***Safety is the First & Most Important !
Enjoy your work with PROSAVE Safety & Environment Protection Devices.***



PROSAVE – Your choice for Safety

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Company Introduction

◆ Head Office & Factory I

- Land Area : 4,320 m²
- Factory Area : 2,934 m²
- Address : 115-22, Techno valley 1-ro,
Jillye-myeon, Gimhae-si, Gyeongsangnam-do
South Korea



Company Introduction

◆ Factory II

- Land Area : 3,072 m²
- Factory Area : 900 m²
- Address : 1407, Daman-ri, Jillye-myeon, Gimhae-si, Gyeongsangnam-do South Korea



◆ Branch office

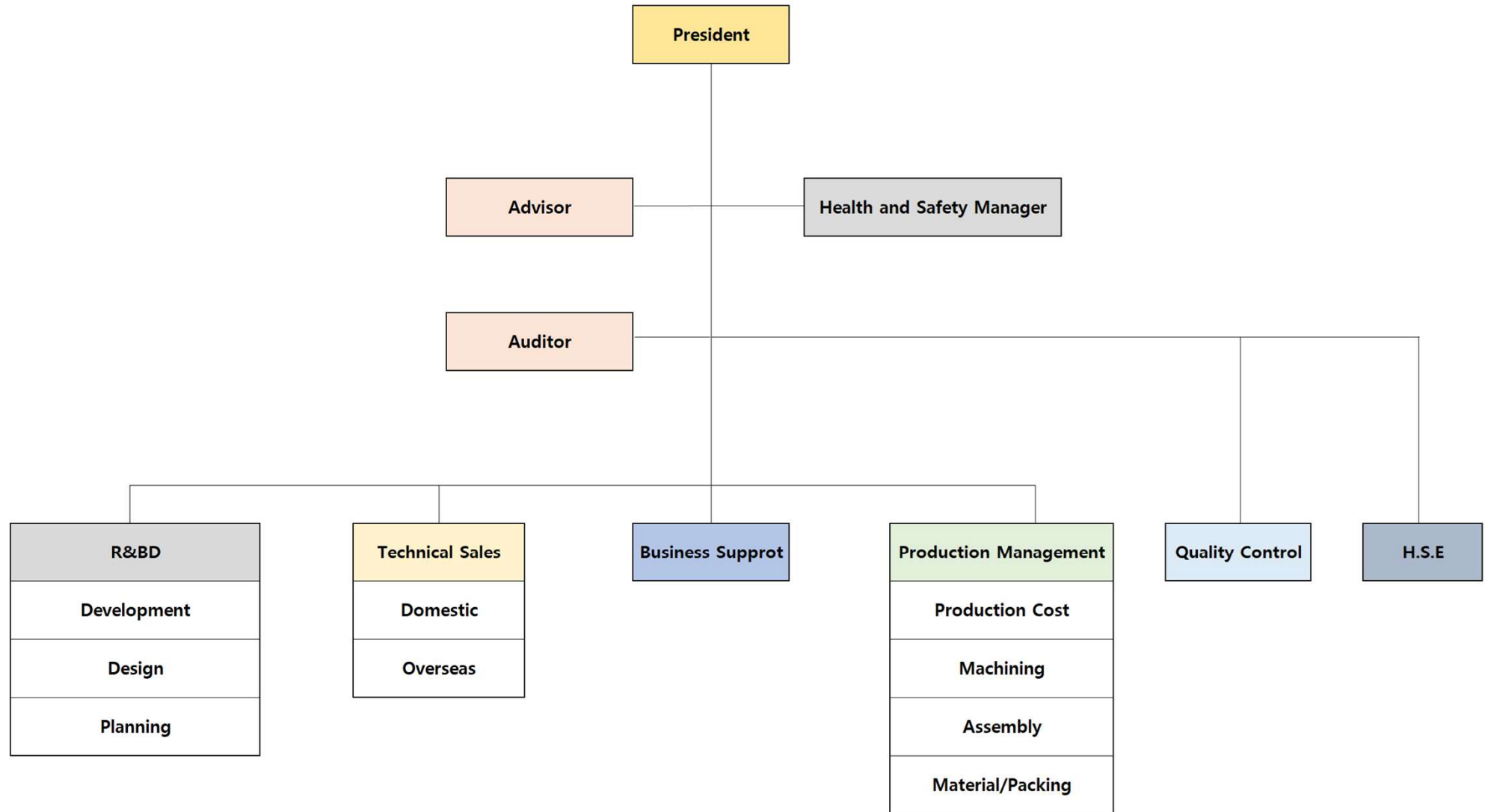
Department : Sales, R&D

Address : 20F-06 Centem SkyBiz
Haundae-Gu, Busan, South Korea



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ORGANIZATION



History

2024 : Obtained **NSF/ANSI/CAN 61 and 372 (Drinking Water System)** Certification for **CAV-D and KSBJ Valves**

IMI, IHI Corporation, vendor registration completed

Obtained **ISO 45001** Certificate

2023 : Awarded USD 5 Million export tower

2022 : Designated as an innovative product by the Ministry of SMEs and Startups – no leak air release Valve applicable under 100 kPa

Designated as an innovative product by the Ministry of Environment – High-speed response intelligent pr. reducing valve

2021 : Awarded Global small & Strong Enterprise by Ministry of SMEs and Startups

MMHE, ARAMCO ASIA Vendor registration completed

2020 : Awarded Star Enterprise from Gyeongsangnam-do

Awarded as “**Excellent Corporation R&D Center**” by Ministry of Science and ICT

Obtained **KC (for Water Supply)** Certification for **CAV-D and KSBJ and PRV Valves**

2019 : SBM Offshore, KNPC, POSCO, PEMEX vendor registration completed

2018 : Obtained Type Approval Certificates for Flameless Explosion Relief Valve for DF / Gas Engine(**DNV-GL, LR, KR**)

KOC, SCHLUMBERGER, KAHRAMAA, HSHI, HMD vendor registration completed

History

2017 : Moved to new site (Techno valley 1-ro, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, Korea)
TECHNIMONT, PTTEP vendor registration completed

2016 : DSME, TOYO ENGINEERING, HITACHI, DU(DISEL UNITED), PETRONAS vendor registration completed

2015 : TAKREER, MODEC Offshore, Technip FMC vendor registration completed
Awarded USD 3 Million export tower

2014 : Obtained **ISO 14001** Certificate

2013 : Obtained **INNO-BIZ** Certificates and awarded USD One(1) Million Export tower

2012 : Obtained Type Approval Certificates for Smart High Velocity Pressure/Vacuum Relief Valve
(MED(CE), DNV, ABS, LR, BV, GL, RINA, KR, NK, CCS, RS)

2011 : Obtained **ISO 9001** Certificate
Obtained Type Approval Certificates for Crankcase Explosion Relief Valves
(MAN Diesel & Turbo, GL, DNV, BV, LR, ABS, RINA, KR, NK, CCS & RS)
Obtained Patent of High Velocity Pressure/Vacuum Valves & Crankcase explosion relief valve
Established Institute of Technical Research & Development
HHI, DOOSAN, SHI, TORISHIMA PUMP, CTCI, STX, YMD, RMD, SAMSUNG C&T, DAELIM, BECHTEL, NIOEC, NIOC Vendor registration completed

2010 : **Established PROSAVE** to provide Safety valves for Diesel Engine, Power & Desalination and Off-shore Plants

Products

1. Combination AIR RELEASE & VACUUM BREAKER VALVE



Air Relief valve is designed to release accumulated **Air Pockets** from the system in pressured pipelines of offshore, industrial Gas plants and fresh water plants.

Air Pockets cause increase of energy consumption because pumping operation will be at higher water heads to overcome pressured air.

Air Relief valve has function to protect high shock and **surge pressure, water hammer and liquid overflow** from fresh or sea water pipelines.

Air Relief Valve can assure low maintenance cost of pipelines and pump systems in advance.

Major Advantages

- **Pressure & Vacuum relief function**
- **Anti-Surge & Anti-Shocks**
- **Surge and Water hammer Protection**
- **Liquid Overflow Protection**
- **Relief air pocket from pipeline**
- **Increasing pump efficiency**
- **Less system energy**
- **Maintenance free**



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Reference



- * ITEM : CAV-D-C-28
- * PROJECT : GOSEONG HAI THERMAL POWER PLANT(UNIT 1&2) - 1040MW
- * Contractor : SK ECO PLANT
- * Customer : GOSEONG GREEN POWER
(Korea South East Power Co., Ltd,
SK ECO PLANT, SK Gas Consortium)



- * ITEM : CAV-D-10&20
- * PROJECT : BUK-PYEONG THERMOELECTRIC POWER PLANT
- * Contractor : STX HEAVY INDUSTRY
- * Customer: GS DEP

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Reference



* ITEM : CAV-D-8

* PROJECT : MARAFIQ MED

* Contractor : DOOSAN HAEVY INDUSTRY

* Customer: MARAFIQ



* ITEM : CAV-D-4

* PROJECT : NEMBA STAGE 2 (SNX)

* Contractor : DAEWOO SHIPBUILDING &
MARINE ENGINEERING

* Customer: CHEVRON

Reference



- * ITEM : ARL-4
- * PROJECT : Shuaibah 3 IWP Project
- * Contractor : DOOSAN HAEVY INDUSTRY
- * Customer: Shuaibah Three Water Desalination



- * ITEM : CAV-D-1
- * PROJECT : Yanbu4 Project
- * Contractor : DOOSAN HAEVY INDUSTRY
- * Customer: Saudi local water desalination company

2. Vacuum Breaker Valve



Vacuum Breaker Valve is designed and tested according to the **API 2000 code**

The latest technologies is applied to provide protection against positive or vacuum over pressure and it prevents air intake not to lose evaporation in **pipeline**.

Major Advantages

- **Vacuum Protection**
- **Protection in Drainage Systems**
- **Keeping Other Liquids Flowing**

Vacuum Breaker Valve, spring loaded model, is designed to handle under pressure of minimum -150mmW.C and maximum -7000mmW.C

Body material are available of Aluminum, Carbon Steel, 304SS and 316SS with various trims to meet diverse customers requirement.

Sizes range from 25mm through to 600mm with ANSI 150 FF flanges as standard.
(Different connections are available on request)

Reference



* ITEM : VBAR-C-14

* PROJECT : GOSEONG HAI THERMAL

POWER PLANT(UNIT 1&2) - 1040MW

* Contractor : SK ECO PLANT

* Customer : GOSEONG GREEN POWER

(Korea South East Power Co., Ltd, SK ECO PLANT)



* ITEM : VBAR-6

* PROJECT : MAFUMEIRA SUL

* Contractor : DAEWOO SHIPBUILDING & MARINE ENGINEERING

* Customer: CHEVRON

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Reference



- * ITEM : KSVB-4
- * PROJECT : Shuaibah 3 IWP Project
- * Contractor : DOOSAN HAEVY INDUSTRY
- * Customer: Shuaibah Three Water Desalination



- * ITEM : VA-AR-2 , VB-AR-6
- * PROJECT : H588 WIND TURBIN INSTALLATION PLATFORM
- * Contractor : MCQUAY MARINE
- * Customer: YANTAI CIMC RAFFLES OFFSHORE

3. Surge Relief Valve (for Water works & Oil)



N2 Loaded Operating Type

The **SRV-N2-X** is installed in locations where rapid response performance is required to protect piping systems from sudden changes in flow and pressure, as well as surge caused by sudden pump shutdown.

It consists of a **main valve, solenoid valve, and N2 tank, all assembled and tested as a single unit, ready for field installation.**

Main Valve is closed tightly when normal operation is in state.

When excess pressure occurs in the piping system, the solenoid valve operates based on the surge **signal from the pressure transmitter**, and the main valve opens to protect against the surge.

The total opening time is less than 100 milliseconds.

Major Advantage

- **No Required Extra Electric, Pneumatic, Hydraulic Power**
- **Stand Alone & Gas Control Valve Type**
- **Adjustable Opening and Closing Time**
 - Open and close time are adjustable based on operation circumstance.
 - In particular, close to full opening time is less than 100 millisecond.
- **Accurate and Precise Pressure Control**
 - Pressure of main valve is controlled by precise pressure control through N2 supplying control.

3. Surge Relief Valve (for Water works)

SRV is installed in the bypass line to protect the piping system from the surge by sudden flow change and/or sudden pump stop.



Solenoid Operating Type

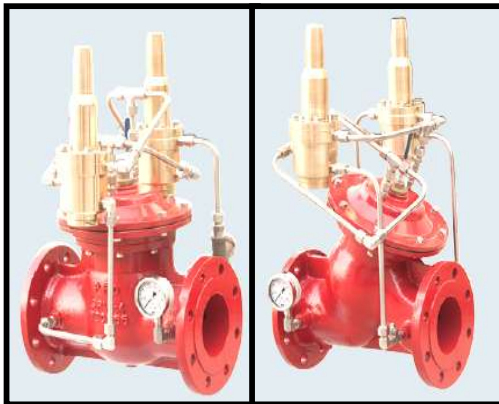
SRV-S-A/Y consists of a main valve, solenoid valve and air set, which is assembled and tested as a unit and ready for field installation.

Main Valve is closed tightly when normal operation is in state.

When a exceeding pressure in piping system is come, surge command from pressure transmitter activates the solenoid valve and then main valve is opened to protect the surge.

In case of solenoid operating type, the full opening time is less than 200 millisecond.

*** Reference project: Buk-Pyeong thermoelectric power plant**



Pilot Operating Type

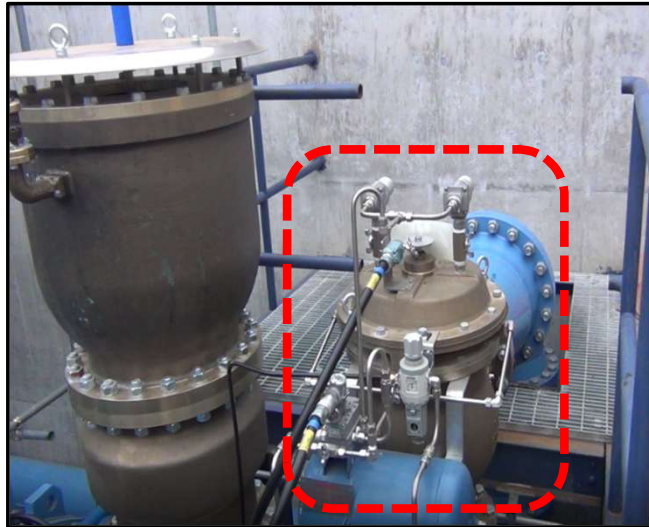
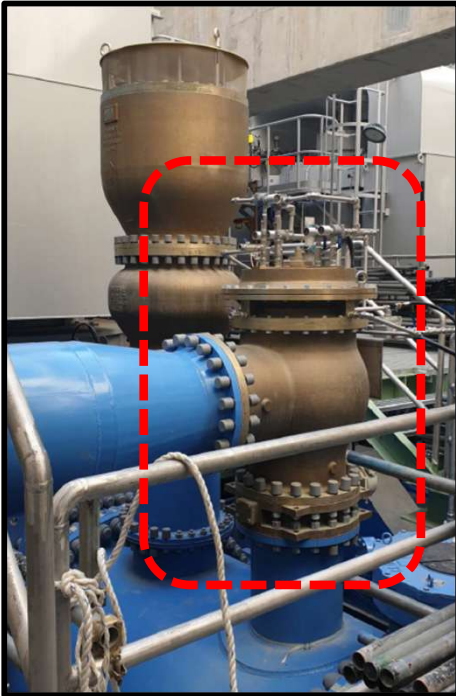
SRV-P-A/Y consists of a main valve, low and high pilot valve, and accessories, which is assembled and tested as a unit and ready for field installation.

Main Valve is closed tightly when normal operation is in state.

Main Valve is opened when low pilot valve detects the negative pressure in piping system to prevent the pipe pressure rise, and when the pilot valve of high pressure part detects the exceeding pressure in piping system in order to discharge pressure.

*** Reference project: Korea Rural community corporation(KRC)**

Reference



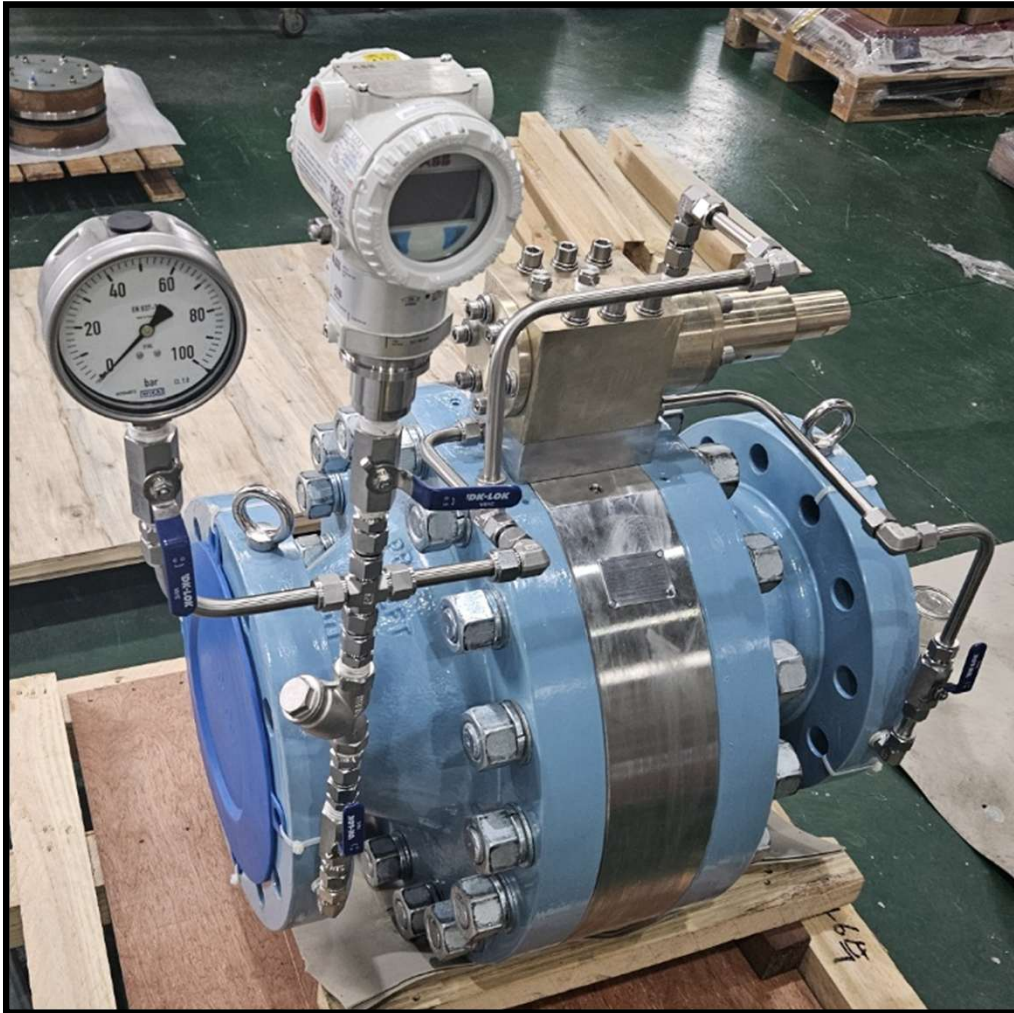
- * ITEM : SRV-A-12 (Solenoid Operating Type)
- * PROJECT : BUK-PYEONG THERMOELECTRIC POWER PLANT
- * Contractor: STX HEAVY INDUSTRIES
- * Customer : GS DEP



- * ITEM : SRV-A-24 (Solenoid Operating Type)
- * PROJECT : GOSEONG HAI THERMAL POWER PLANT(UNIT 1&2) - 1040MW
- * Contractor : SK ECO PLANT
- * Customer : GOSEONG GREEN POWER (Korea South East Power Co., Ltd, SK ECO PLANT)

- * ITEM : SRV-I-4 (Pilot Operating Type)
- * PROJECT : DUKHAN PRODUCTION FACILITIES UPGRADE PHASE 1A
- * Contractor : ROOTS ENERGY & ENGINEERING SERVICES WLL
- * Customer : QATAR PETROLEUM

Reference



- ITEM : SRV-X-8 (AXIAL with Pilot TYPE)
- PROJECT
PEKERJAAN EMERGENCY TAHAP-2 REVITALISASI
JALUR PENERIMAAN ERDAMPAK KEBAKARAN
DI INTEGRATED TERMINAL JAKARTA FT PLUMPANG
- Contractor : PT. KRANINDO PRIMA
- Customer : PERTAMINA PATRA NIAGA

4. Deluge Valve

DVGS is installed in deluge fire protection system. When the system is activated by a heat or smoke detection system, DVGS will release the water to all the sprinkler heads.

Major Advantage

- **No Required Extra Electric, Pneumatic, Hydraulic Power - Hydraulically Operated Diaphragm Valve**
- **Quick Release**
- **No Flow Obstruction**
- **Invulnerability to Water Hammer**



* ITEM : DVGS -A06&10

* PROJECT : PEGAGA DEVELOPMENT PROJECT

* Contractor : SAPURA ENERGY

* Customer : MUBADALA PETROLEUM

5. Deflagration Flame Arrester



- EC-Type Examination Certificate
- Meet the latest international rule requirement of ISO 16852:2016 and API 2000 (7TH, 2014)
- Protection against explosion and deflagration flame
- High flow capacity and minimum pressure loss
- Available bi-directional flow and flame passage
- Available vertical and horizontal installation
- High performance chemical resistance material

Approved by **ATEX & IMO**

Deflagration type In-Line Flame Arrester for

Gas group IIA (Petroleum), IIB3 (Chemical), **IIC (Hydrogen)**

6. Detonation Flame Arrester



- EC-Type Examination Certificate
- Meet the latest international rule requirement of ISO 16852:2016 and API 2000 (7TH, 2014)
- Protection against explosion and detonation flame
- High flow capacity and minimum pressure loss
- Available bi-directional flow and flame passage
- Available vertical and horizontal installation
- High performance chemical resistance material

Approved by **ATEX & IMO**

Detonation type In-Line Flame Arrester for

Gas group IIA (Petroleum), IIB3 (Chemical), **IIC (Hydrogen)**

Reference



- * ITEM : FA-8
- * PROJECT : BADAMYAR LCP AND WH 4
- * Contractor : HYUNDAI HEAVY INDUSTRY
- * Customer: TOTAL



- * ITEM : FE-2
- * PROJECT : SABIYA II OCGT POWER PLANT
- * Contractor : ALGHANIM
- * Customer : Ministry of Electricity and Water
KUWAIT



- * ITEM : DFA-24
- * PROJECT : FPSO GUANABARA MV31
- * Contractor : MODEC
- * Customer : PETROBRAS

Reference



- ITEM : DFA-24
- PROJECT : FPSO RAIA OA42
- Contractor : MODEC
- Customer : ENI (Italy)

7. Breather Valve



- Designed according to the API 2000 (7TH, 2014) standard
- Reliable operation reduces vapor losses
- Suitable and compact design ensures long-term maintenance free life cycle
- Full lifting and high flow capacity
- Meet API leak test requirement
- **No need inside maintenance**
- **Available outside inspection, cleaning and maintenance without disassembling**

BV type is weight-loaded type with minimum setting ± 22 mm W.C and maximum setting ± 700 mm W.C

BS type is spring-loaded type with minimum setting ± 22 mm W.C and maximum setting ± 700 mm W.C

Major Advantages

- **Storage Tank Protection**
- **Evaporation Losses And Environmental protection**
- **Explosion And Vandalism Protection**
- **Stable Storage Of Fluids**

7. Breather Valve (Installed on By Pass Line)



- By-Pass Line Breather Valve Type.

- The in-line pressure/vacuum relief valve is an automatic pressure/vacuum valve, which operates through the vapor header.
- It relieves pressure and vacuum during loading, discharge, voyage and ballasting.
- The In-line pressure vacuum relief valve is a combined pressure/vacuum relief system, and it is designed for marine tankers and chemical tankers.
- The In-line pressure vacuum relief valve is designed and constructed to comply with IMO MSC/cirs 677.
- Usually the materials are available in Carbon Steel, Stainless Steel grade 304, 316 and 316L to suit individual requirements.

Major Advantages

- Reliable operations reduces vapor losses
- Suitable and compact design ensures long-term maintenance free life cycle
- ISO 15364:2021 leak test requirement
- Available outside inspection, cleaning and maintenance without disassembling

7. Breather Valve (Installed on FPSO)



- Cago Tank Breather Valve Type.
Installed on FPSO.

- The in-line pressure/vacuum relief valve is an automatic pressure/vacuum valve, which operates through the vapor header.
- It relieves pressure and vacuum during loading, discharge, voyage and ballasting.
- The In-line pressure vacuum relief valve is a combined pressure/vacuum relief system, and it is designed for marine tankers and chemical tankers.
- The In-line pressure vacuum relief valve is designed and constructed to comply with IMO MSC/cirs 677.
- Usually the materials are available in Carbon Steel, Stainless Steel grade 304, 316 and 316L to suit individual requirements.

Major Advantages

- Reliable operations reduces vapor losses
- Suitable and compact design ensures long-term maintenance free life cycle
- ISO 15364:2021 leak test requirement
- Available outside inspection, cleaning and maintenance without disassembling

Reference



* ITEM : BVA-18

* PROJECT : FSO Cidade de Macaé MV15(H149)

* Contractor : MODEC

* Customer : Petróleo Brasileiro S.A. (Petrobras)



* ITEM : BVA-10 , BVA-14 , BVA-20

* PROJECT : UARU FPSO Project

* Contractor : MODEC

* Customer : MODEC



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Reference



* ITEM : BVFA-12

* PROJECT : SABIYA CCGT3 #54

* Contractor : ALGHANIM INTERNATIONAL

* Customer : MEW



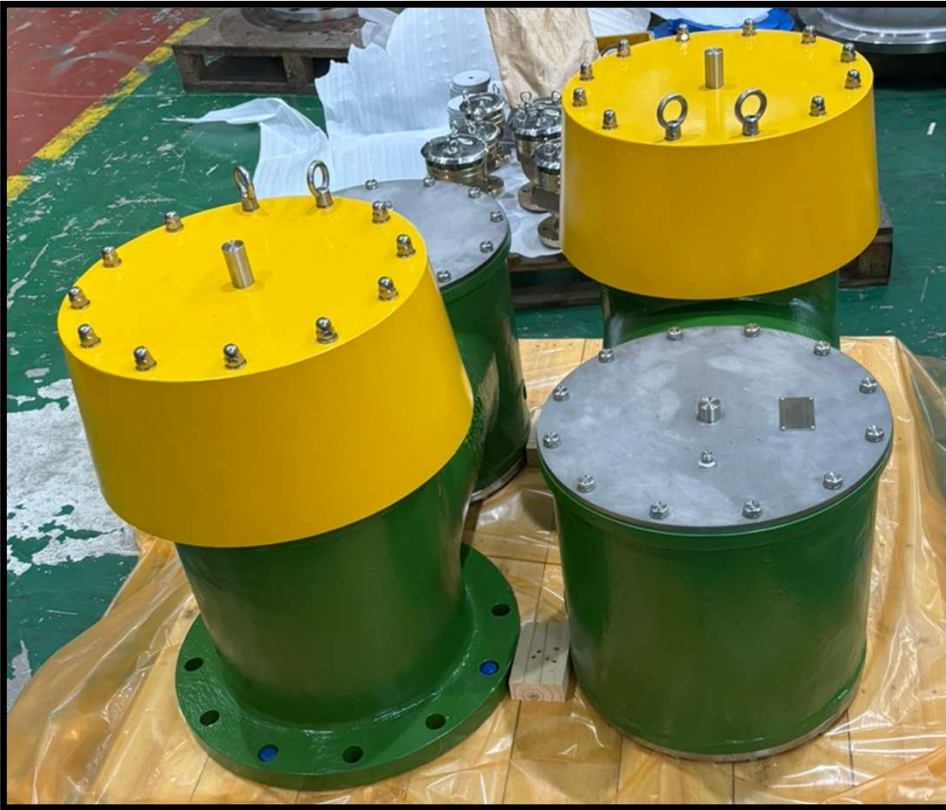
* ITEM : BV-3

* PROJECT : SOUTH PARS PHASE 12

* Contractor : PETRO PARS

* Customer : POGC

Reference



* ITEM : BV-14

* PROJECT : JAFURAH COGENERATION PLANT

* Contractor : DOOSAN ENERBILITY

* Customer : JAFUTAH GAS FILED



* ITEM : BP-6 , BP-8

* PROJECT : IGD EXPANSION PHASE II PROJECT

* Contractor : SAP&KAPS PETROLEUM

* Customer : ADNOC

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8. Breather Valve with Flame Arrester



- **Flame arrester Combined with Model BVF** pressure vacuum relief valve
Manufactured and tested according to API 2000 / ISO 16852:2016 standard
- The **BVF** model is employed to alleviate **overpressurized vacuums**.
- In the event of external ignition, the flame arrester prevents flame transmission from entering the piping systems and tanks.
- The **BVF** type is weight-loaded type with minimum setting ± 22 mm W.C and maximum setting ± 700 mm W.C.
- Usually the materials are available in **Aluminum, Carbon Steel, Stainless Steel grade 304, 316 and 316L** to suit individual requirements.

Major Advantages

- **Designed according to the API 2000 standard.**
- **Suitable and compact design ensures long-term maintenance free life cycle**
- **Meet API leak test requirement**
- **Available outside inspection, cleaning and maintenance without disassembling**
- **ISO 16852:2016 7.3.2.1 End-of-line flame arrester test compliance Protects against atmospheric deflagration**

Reference



- * ITEM : BVF-12
- * PROJECT : FORMOSA PETROCHEMICAL CORPORATION PJT
- * Contractor : FORMOSA PETROCHEMICAL
- * Customer : FORMOSA PETROCHEMICAL



- * ITEM : BVF-3
- * Contractor : PT. KARYA NIREKO WARGA NUSA

9. Pilot Operated Pressure/Vacuum Relief Valve



Pressure and/or Vacuum Relief valves are used for dangerous oil, gas or petrochemical storage tanks and other process vessels or systems to prevent structural damage due to excess pressure or vacuum incoming.

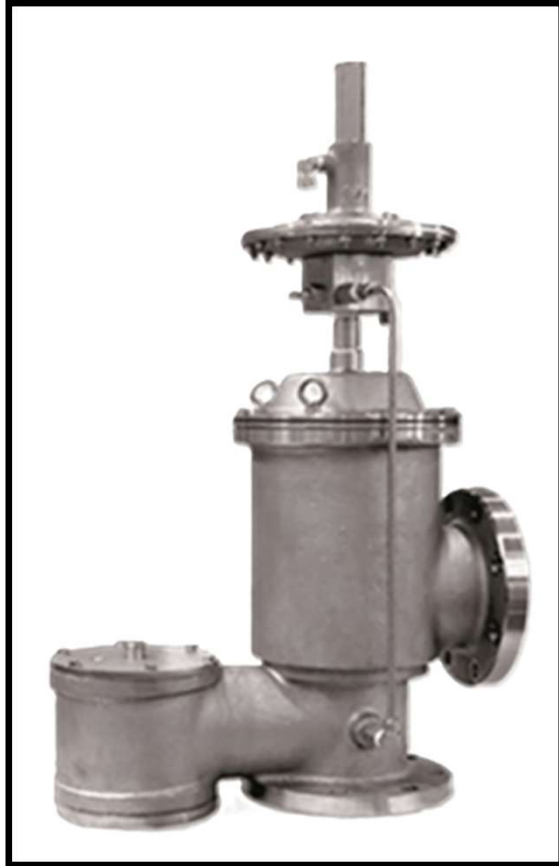
Pilot-operated Pressure/Vacuum Relief Valve is most suitable for pipe line where high or fluctuating backpressure.

Pilot operation is also recommended for equipment to be used when low accumulation rates are required or when set pressure level of valve needs to be closed to the operating pressure level of storage tanks.

- As pressure increase, the pilot maintains its seal tightly, allowing reliable operation closer to the set point, without product leakage.
- Pilot-operated Pressure/Vacuum Relief Valves can work at an operating pressure of up to **98% of set pressure**.

Although initial purchasing costs is high, there is benefits of no leakage, no evaporation loss and less maintenance costs.

Reference



- * ITEM : POV-6
- * PROJECT : -
- * Contractor : KELANDAN MAJU SBN BHD



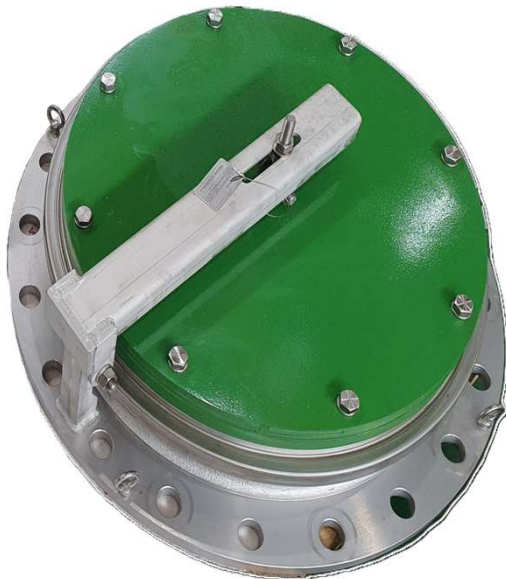
- * ITEM : POV-18X24, 8X10
- * PROJECT : PVRV for PROPANE & BUTANE TANK
- * Contractor : PETRO EQUIP

10. Emergency Vent Cover



The series **EV** is designed to provide emergency pressure relief for **storage tank** when it is exposed to overpressure that is not handled by standard tank vents.

These vents provide the capacity to meet **API standard 2000 for emergency venting** due to fire exposure if properly sized.

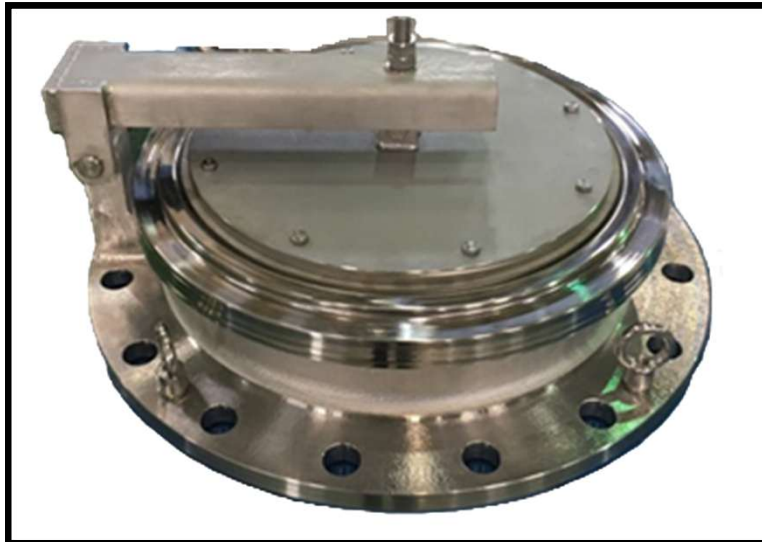


These covers also provide quick & easy access for tank inspection and maintenance

Reference



- * ITEM : EV-16 , EV-20
- * PROJECT : IGD EXPANSION PHASE II PROJECT
- * Contractor : SAP&KAPS PETROLEUM
- * Customer : ADNOC



- * ITEM : EH-16
- * PROJECT : SOUTH PARS PHASE 20&21
- * Contractor : OIEC
- * Customer : POGC

11. Gauge Hatch Cover

Gauge Hatch Cover is designed manufactured and tested according to the **API 650 standard**

It is used to **provide tank access for manual gauging, sampling and temperature gauging in a tank**

Usually the materials are available of **Aluminum, Carbon Steel, Stainless steel grade 304, 316 and 316L to meet tailor made solution**



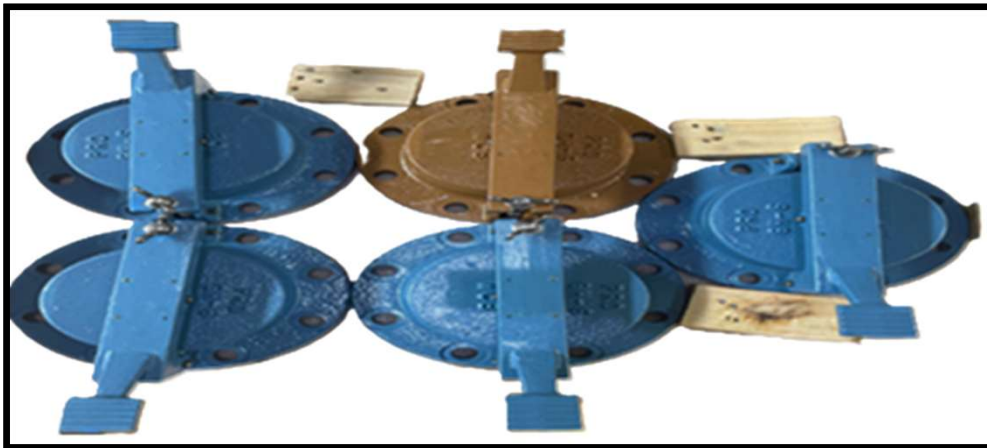
Major Advantages

- **Airtight**
- **Easy And Quick Accessibility**
- **Chemical-Resistant Materials**
- **Pressure Adjustability**

Reference

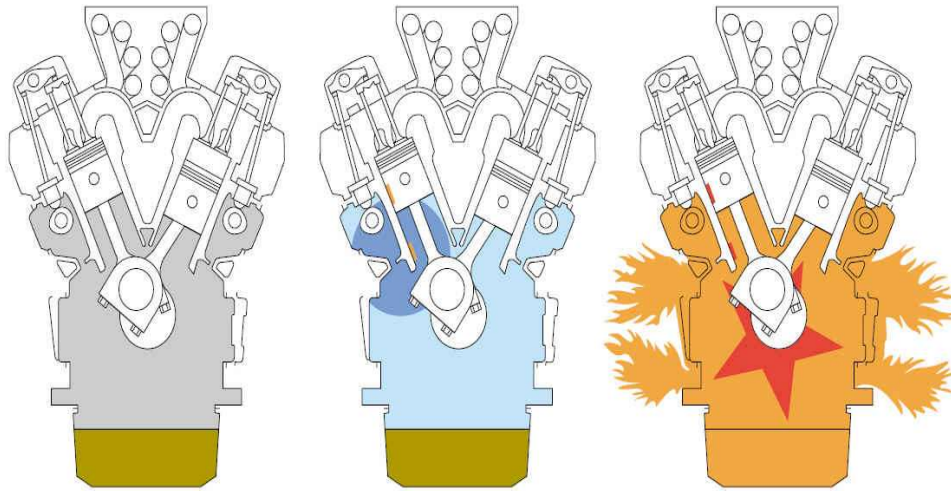


- * ITEM : GH-6
- * PROJECT : IGD EXPANSION PHASE II
- * Contractor : SAP&KAPS PETROLEUM
- * Customer : ADNOC



- * ITEM : GH-6
- * PROJECT : SAMCHEOK THERMAL POWER
- * Contractor : DOOSAN HEAVY INDUSTRIES
- * Customer : KOREA SOUTHERN POWER CO.,LTD

12. Crankcase Explosion Relief Valve

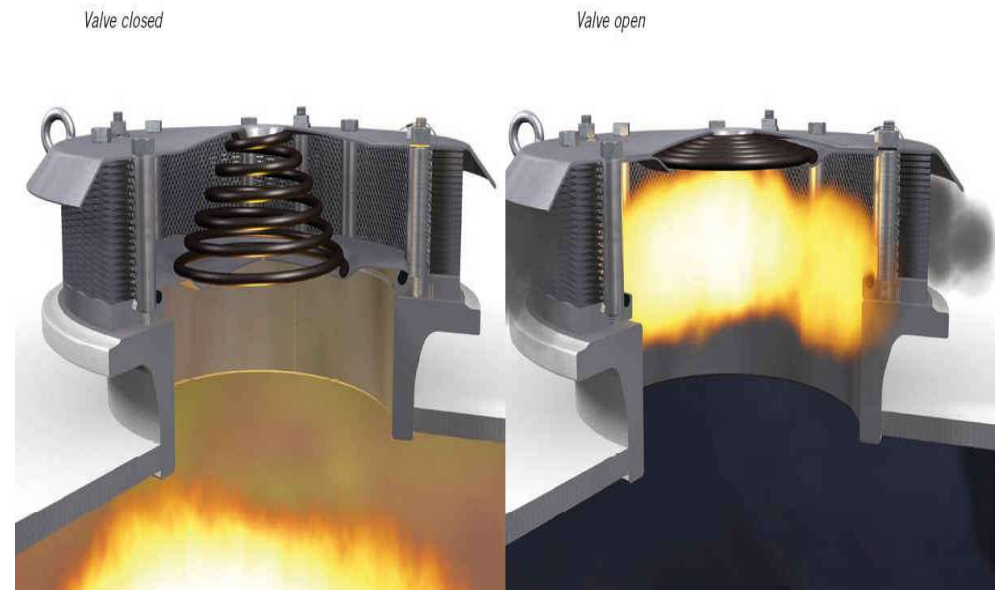


- If a piston of diesel engine is abraded, a diesel engine can be exploded by leakage oil mist into crankcase
- According to rule of IACS M9, M66, Crankcase Explosion Relief Valve is to be installed as mandatory

If an explosion is occurred in the crankcase at overpressure and flammable gas relieves through flame arrester, the flame is arrested by flame arrester.

Immediately, disk is closed by spring and prevent secondary explosion.

Because flame is not transferred to outside, explosion at the outside is prevented.



Reference



- * ITEM : ERV-224
- * ENGINE MODEL : SHI2220 (DF ENGINE)
- * Customer : WARTSILA HYUNDAI



- * ITEM : ERV-735
- * ENGINE MODEL : 11S90ME-C10.5
- * Customer : MITSUI ENGINEERING & SHIPBUILDING CO., LTD.

13. Explosion Relief Valve for DF or Gas Engine

Applied to new IACS UR M78



<EVDM SERIES FOR INLET/EXHAUST MANIFOLD
OF DF OR GAS ENGINES>

EVDM Series is mounted on the inlet manifold of the DF ENGINE or GAS ENGINE.

If the explosion occurs during the movement of the gaseous fuel from the inlet manifold to the inside of the cylinder, explosion pressure can be discharged, and flame can be blocked and automatically distinguished by flame arrester element for prevention of the man and important facilities.

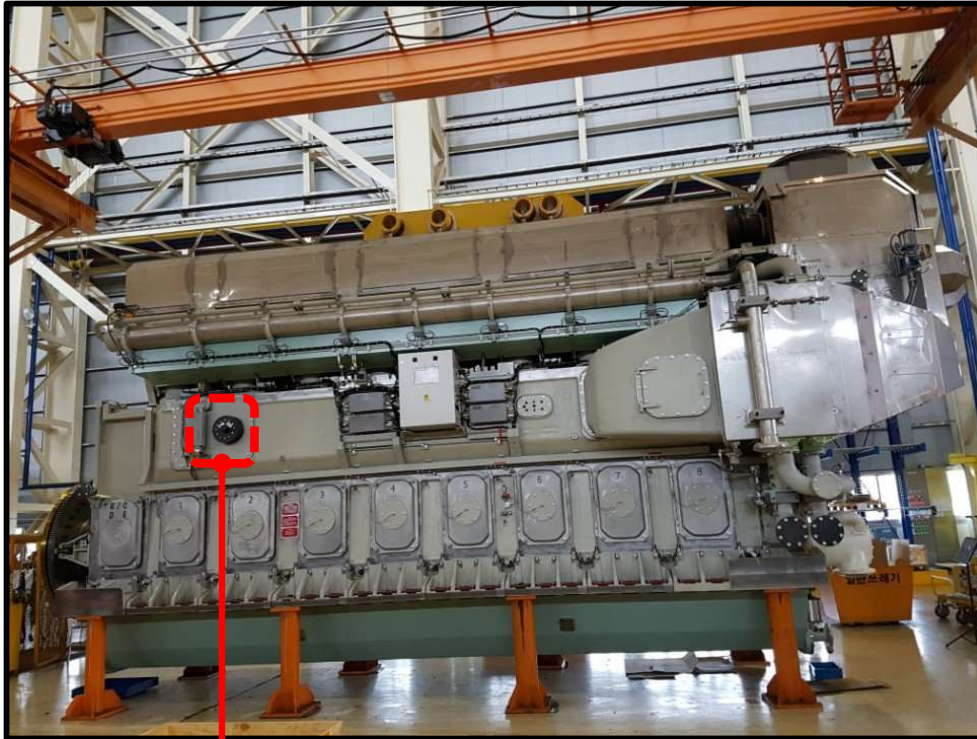


<EVDD SERIES FOR EXHAUST DUCT
OF DF OR GAS ENGINES>

EVDD Series is mounted on the exhaust duct of DF ENGINE or GAS ENGINE.

When an explosion occurs by unburned gas fuel in the exhaust lines, explosion pressure can be discharged by EVDD, and flame can be blocked and automatically distinguished by flame arrester element for prevention of the man and important facilities.

13. Explosion Relief Valve for DF or Gas Engine



- Automatic re-closing structures against rupture disc (non re-closing devices)
- No need engine shut-down.
- Very high seat tightness
- Available continuous engine operation
- Prevention of secondary explosion
- Protection of people and key components due to explosion
- Discharging protection of unfired and/or burned mist, gas, ashes and dust, into engine
- Protection devices for Health, Safety and Environment
- Available IoT options

Reference (MAJOR CUSTOMER)

FOR INLET/EXHAUST MANIFOLD OF DF OR GAS ENGINES	EXHAUST DUCT OF DF OR GAS ENGINES
EVDM	EVDM / EVDE
HANWHA ENGINE	CSSC ENGINE
HYUNDAI HEVY INDUSTRY.CO.,LTD	CSSC-MES DIESEL CO., LTD(CMD)
STX ENGINE	HANWHA OCEAN
NARWAL INTERNATIONAL	SAMSUNG HEAVY INDUSTRY CO., LTD
YUNGPU HEAVY MACHINERY CO., LTD	HYUNDAI HEAVY INDUSTRY CO., LTD
	HYUNDAI SAMHO HEAVY INDUSTRIES CO., LTD
	HANTONG SHIPYARD
	JINLING SHIPYARD
	KEPPEL NANTONG SHIPYARD
	DAIHATSU DIESEL MFG. CO., LTD
	WEIHAI SHIPYARD
	WUHU SHIPYARD

 Hanwha Engine

 Hanwha Ocean

 **HYUNDAI**
HEAVY INDUSTRIES CO.,LTD.

 **HYUNDAI**
SAMHO HEAVY INDUSTRIES

 SAMSUNG

SAMSUNG HEAVY INDUSTRIES

 **stx** 엔진



上海中船三井造船柴油机有限公司
CSSC-MES Diesel Co., Ltd.

 **DAIHATSU**
DAIHATSU DIESEL MFG.CO.,LTD.

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14. High Velocity Pressure/Vacuum Relief Valve



Reliable operations reduces vapor losses

Suitable and compact design ensures long-term maintenance free life cycle

Meet new IMO & MED requirements for cargo vapor flammability – MESG 0.9 & 0.65 mm

Non-oscillating performance

Full lifting and high flow capacity

Flexible application for diverse installation vent pipe length and flow capacity range

No peak pressure over opening pressure

No need inside maintenance

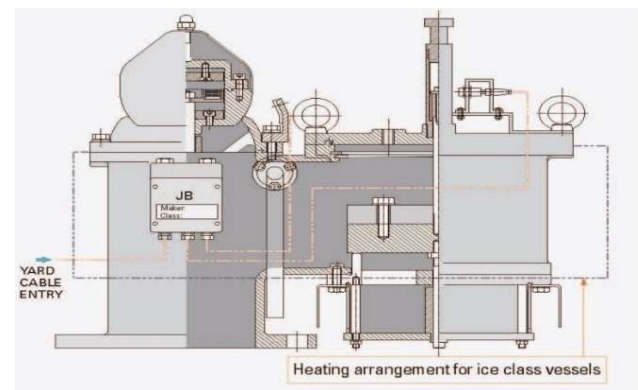
Available outside inspection, cleaning and maintenance without disassembling

Adjustable outside opening and closing pressure without exhausting vapor gas

New IMO Regulation for Product & Chemical carriers, MSC./1Circ, 1324

New Regulation for ISO 15364:2021, ISO 16852:2021

New MED Regulation for Directive 2014/90/EU of 23 July 2014 on marine equipment & Commission Implementing Regulation (EU) 2021/1158 of 22 June 2021



14. High Velocity Pressure/Vacuum Relief Valve (Applications)

1. Oil Tanker

Installed in tanks that transport crude oil, petroleum products, and other liquid cargoes.

Essential for regulating gas pressure within the tank and preventing fire hazards.

2. Chemical Tanker

Used to protect tanks that transport hazardous or corrosive chemical products.

Operates in conjunction with specially coated tanks for chemical handling.

3. LNG/LPG Carrier

Vessels transporting liquefied natural gas (LNG) and liquefied petroleum gas (LPG).

Ensures the safe release of gases in cryogenic conditions while protecting the tanks.

4. Bulk Carrier

Can be installed in cases where specific liquid cargo is transported.

Additionally used for regulating tank pressure.

5. FPSO/FSO (Floating Production, Storage, and Offloading Unit)

Facilities for storing or offloading crude oil at sea.

Used for managing pressure and vacuum in storage tanks.

6. Offshore Supply Vessel (OSV)

Vessels supplying chemicals, fuel, and other materials to offshore platforms.

Installed in fuel and chemical storage tanks.

7. Industrial Cargo Ship

Ships transporting specialized cargo where tank pressure protection is required.

Reference



* ITEM : SMART-12

* PROJECT : FSO BENCHAMAS 2

* Customer : MMHE



* ITEM : SMART-4

* PROJECT : MOHO NORD FPU PJT

* Customer : TOTAL

PROSAVE – Your choice for Safety

15. Vapor Emission Control System



- Remote controlled opening/closing from CCR (Cargo Control Room)
- Setting value
 - Opening pressure & Closing pressure : 1,700mmW.G ~ 1,500mmW.G (adjustable)
 - Opening vacuum & Closing vacuum : -200mmW.G ~ -100mmW.G (adjustable)
- Adjustable of open/close pressure from CCR (Cargo Control Room)
 - Opening setting and closing pressure are programmable
- Manual venting function
- Full open/close remote by manual operation
- Operable from CCR (Cargo Control Room)
- The emission of VOC can be automatically controlled during the voyage
- Emitted VOC flow rate can be recorded and printed
- Explosion proof approved electric actuator (EX d IIB T4)
- Electric power source : AC 220V, 1Ph, 60Hz
- PLC unit adjustable for opening / closing pressure
- Signal : 4~20mA DC input
- Hydraulic or electric actuator on request
- Local Hydraulic Power Unit (LPU)

**Applied to SOLAS 74 Chapter II-2 Reg. 59/ IMO MSC/Circ. 731
IMO MSC/Circ. 680/ USCG CFR 46 Part 39/ ISO 15364:2007**

16. ERH(Emergency Relief Hatch)

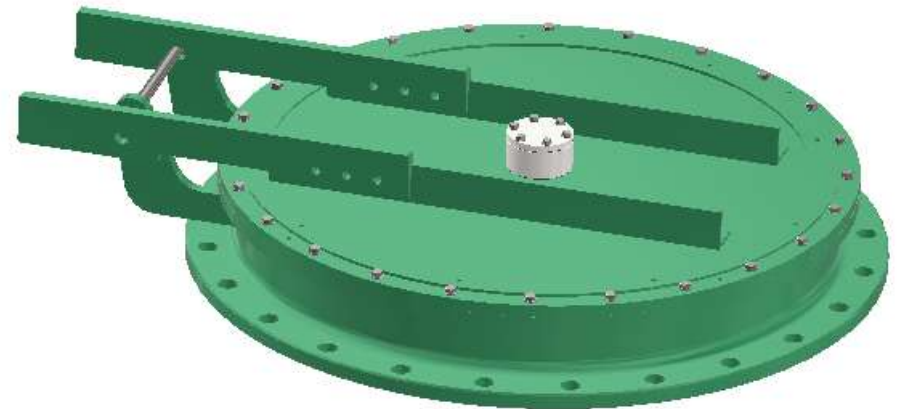
- **ERH** is a valve that releases pressure in an emergency and has an emergency discharge capacity greater than that provided by the tank's normal operating **Pressure Relief Valve**.

- **Specification**

- **SIZE : 900 A(36inch)**
- **PRESSURE SETTING : 0.25 bar**
- **Material : Carbon Steel, Stainless Steel**
- **Certified : DNV, BV, LR, ABS, NK**

- **Feature**

- Opens at the correct SETTING PRESSURE with **Rupture Pin Type**
- When installed on a tank, it does not close after being fully opened, causing continuous pressure to be released. However, our **ERH can be easily installed after being opened**.



Certificate of Approval & Registration

QUALITY MANAGEMENT SYSTEM

- ISO 9001:2015 / 14001:2015 / 45001:2018

KOREAN REGISTER

Certificate of Approval

Certificate No. : A 1144

PROSAVE CO.,LTD.

Head Office : 115-22, Tekeunobaelli 1-ro, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, Korea

KR hereby certifies that the Quality Management System of the above organization has been audited and found to be in compliance with the requirements of the Management System standard and scope of certification detailed below.

MANAGEMENT SYSTEM STANDARD
KS Q ISO 9001:2015 ISO 9001:2015

SCOPE OF CERTIFICATION
Design, Development and Manufacture of Valves, Valve Control Systems and Flame Arresters for Onshore and Offshore Plants and Vessels

Locations : Head Office
Auditor : KIM Yangsun, KIM Mujung, NA Jongshin
Date of Issue : 2024.01.31

This certificate valid from 2024.01.31 to 2027.02.19 and remains valid subject to satisfactory surveillance audits.

 KAB-QC-08   **KOREAN REGISTER**
MEMBER OF INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES

KOREAN REGISTER

The KAB Accreditation Mark proved that this certification body has been accredited by Korea Accreditation Board(KAB-QC-08)
KR Certification Center : 36, Myeonggi-ro, Gangseo-gu, Busan, Korea 46762 / tel : 070-8799-4508, fax : 070-8799-8913, <https://ko.krc.go.kr/>

KOREAN REGISTER

Certificate of Approval

Certificate No. : B 1144

PROSAVE CO.,LTD.

Head Office : 115-22, Tekeunobaelli 1-ro, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, Korea

KR hereby certifies that the Environmental Management System of the above organization has been assessed and found to be in compliance with the requirements of the Management System standard and scope of certification detailed below.

MANAGEMENT SYSTEM STANDARD
KS I ISO 14001 : 2015 ISO 14001 : 2015

SCOPE OF CERTIFICATION
Design, Development and Manufacture of Valves, Valve Control Systems and Flame Arresters for Onshore and Offshore Plants and Vessels

Locations : Head Office
Auditor : KIM Yangsun, KIM Mujung, NA Jongshin
Date of Issue : 2024.01.31

This certificate valid from 2024.01.31 to 2027.02.19 and remains valid subject to satisfactory surveillance audits.

 KAB-EC-19   **KOREAN REGISTER**
MEMBER OF INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES

KOREAN REGISTER

The above Accreditation Mark proved that this certification body was accredited by Korea Accreditation Board(KAB-EC-19)
KR Certification Center : 36, Myeonggi-ro, Gangseo-gu, Busan, Korea 46762 / tel : 070-8799-4508, fax : 070-8799-8913, <https://ko.krc.go.kr/>

KOREAN REGISTER

Certificate of Approval

Certificate No. : C 1144

PROSAVE CO.,LTD.

Head Office : 115-22, Tekeunobaelli 1-ro, Jillye-myeon, Gimhae-si, Gyeongsangnam-do, Korea

KR hereby certifies that the Occupational Health and Safety Management System of the above organization has been assessed and found to be in compliance with the requirements of the Management System standard and scope of certification detailed below.

MANAGEMENT SYSTEM STANDARD
KS Q ISO 45001:2018 ISO 45001:2018

SCOPE OF CERTIFICATION
Design, Development and Manufacture of Valves, Valve Control Systems and Flame Arresters for Onshore and Offshore Plants and Vessels

Locations : Head Office
Auditor : KIM Yangsun, KIM Mujung, NA Jongshin
Date of Issue : 2024.01.31

This certificate valid from 2024.01.31 to 2027.01.30 and remains valid subject to satisfactory surveillance audits.

 KAB-OC-05   **KOREAN REGISTER**
MEMBER OF INTERNATIONAL ASSOCIATION OF CLASSIFICATION SOCIETIES

KOREAN REGISTER

The above Accreditation Mark proved that this certification body was accredited by Korea Accreditation Board(KAB-OC-05)
KR Certification Center : 36, Myeonggi-ro, Gangseo-gu, Busan, Korea 46762 / tel : 070-8799-4508, fax : 070-8799-8913, <https://ko.krc.go.kr/>

Certificate of Approval & Registration

CERTIFICATE OF APPROVAL

- AMERICAN BUREAU OF SHIPPING (ABS)
- LLOYD'S REGISTER OF SHIPPING (LR)
- DET NORSKE VERITAS (DNV)
- NIPPON KAIJI KYOKAI (NK)
- KOREA REGISTER (KR)
- BUREAU VERITAS (BV)
- REGISTRO ITALIANO NAVALE (RINA)
- CHINA CLASSIFICATION SOCIETY (CCS)
- RUSSIAN MARITIME REGISTER OF SHIPPING (RS)
- NSF/ANSI/CAN 61 and 372 (Drinking Water System)
- KC (For Water Supply)



Certificate of Approval

AIR RELEASE & VACUUM BREAKER VALVE

KC (For Water Supply)

NSF/ANSI/CAN 61 and 372(Drinking Water System)

위생안전기준 인증서

1. 인증 번호 : KCW-2020-0227

2. 제조 업체명 : 프로세이브

3. 대표 자 : 김영만

4. 본 사 주 소 : 경상남도 김해시 진례면 테크노밸리1로 115-22 프로세이브

5. 공장 소재지 : 경상남도 김해시 진례면 테크노밸리1로 115-22 프로세이브



6. 제 품 명 : 릴리프 밸브

7. 종류, 등급 또는 호칭 : 불지 참조

8. 용 도 : 일반수도용지체

「수도법」 제14조제1항 및 「수도용 자재와 제품의 위생안전기준 인증 등에 관한 규칙」 제8조제1항에 따라 인증서를 발급한 제품입니다.

2020년 10월 30일

  한국물기술인증원

NSF International

789 N. Dixboro Road, Ann Arbor, MI 48105 USA

RECOGNIZES

Prosave Co., Ltd.

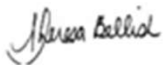
Korea, Republic of

AS COMPLYING WITH NSF/ANSI/CAN 61, 372 AND ALL APPLICABLE REQUIREMENTS.

PRODUCTS APPEARING IN THE NSF OFFICIAL LISTING ARE AUTHORIZED TO BEAR THE NSF MARK.



This certificate is the property of NSF International and must be returned upon request. This certificate remains valid as long as this client has products in NSF's Official Listings for the referenced standards. For the most current and complete listing information, please access NSF's website (www.nsf.org).



December 6, 2024
Certificate# C0817254 - 01

Theresa Bellish
Senior Director Municipal Water Systems and NA Region

PROSAVE – Your choice for Safety

Certificate of Approval

HIGH VELOCITY PRESSURE/VACUUM RELIEF VALVE



This is to certify:
That the High Velocity Pressure Relief Valve
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, Republic of Korea
is found to comply with
DNV GL rules for classification – Ships Pt.5 Ch.5 Oil tankers
DNV GL rules for classification – Ships Pt.5 Ch.6 Chemical tankers
Application :
Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.

Design: High Velocity vents and vacuum relief valve with integrated gas freeing cover
Sizes: DN80, 100, 125, 150, 200, 250, 300
Issued at Høvik on 2020-09-02
This Certificate is valid until 2025-09-01.
DNV GL local station: Gimhae Station
Approval Engineer: Maheshraja Venkatesan

Form code: TA 251
Revision: 2020-02
www.dnvgl.com
Page 1 of 4
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TYPE APPROVAL CERTIFICATE
This certificate is issued to
PROSAVE CO., LTD
Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)
for the type of product
PRESSURE / VACUUM RELIEF VALVES
SMART-HV-Series with Gas Free Cover

Requirements:
- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units
- IMO MSC/Circ.677 as amended by MSC/Circ.1009 and MSC.1/Circ.1324
- ISO 15364:2021
- ISO 16852:2021
This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.
This certificate will expire on: 07 Aug 2028
For Bureau Veritas Marine & Offshore,
At BV PUSAN, on 07 Aug 2023,
Won-jun JANG
This certificate was created electronically and is valid without signature

This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) listed to be re-approved prior to fitting being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.
The electronic version is available at: <http://www.veristarpm.com/veristarmb/jsp/viewPublicPdfTypepec.jsp?dw=2eimgsg7gh>
BV Mod. Ad.E 530 June 2017
This certificate consists of 4 page(s)



Confirmation of Product Type Approval
Company Name: PROSAVE CO., LTD.
Address: 115-22, TEKEUNOBAELLI 1-ROJILLYE-MYEON Korea, Republic of
Product: Valve, High Velocity Pressure-Vacuum Relief
Model(s): SMART-HV-3S, SMART-HV-3L, SMART-HV-4S, SMART-HV-4L, SMART-HV-5S, SMART-HV-5L, SMART-HV-6S, SMART-HV-6L, SMART-HV-8S, SMART-HV-8L, SMART-HV-10S, SMART-HV-10L, SMART-HV-12S, SMART-HV-12L
Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	22-2319596-PDA	28-OCT-2022	27-OCT-2027
Manufacturing Assessment (MA)	22-5206451	04-APR-2022	11-APR-2027
Product Quality Assurance (PQA)	NA	NA	NA

- Tier
3 - Type Approved, unit certification not required
- Intended Service
Device to relieve over-pressure in cargo tanks of oil tanker, product tanker, combination carrier and chemical tanker and to prevent the passage of flame into the cargo tank. This product may be combined with gas free cover.
- Description
1. Disc cap / Disc cover / Cap nut, S/W / Pressure stem / Bolt / Bolt S/W / Lift bush / Bolt, Nut / Gas free screen / Stop ring / Eye bolt, S/W / Pressure disc / Wrench bolt / Bush / Check lift / Lift handle / Vacuum stem / Vacuum disc / Guide / Post / Flame screen : SUS316
2. Open adjuster / Vacuum weight / Vacuum cover / Close adjuster / Screen plate : SS400
3. O-Ring : Viton
4. Set pressure adjuster : SUS316/magent
5. Pressure seat : SC480/SUS316
6. Vacuum seat : SC480/SCS14A

Ratings
High Velocity Pressure/Vacuum Valves; Type(Pressure setting, Max. pipe length, Min. pipe size, Pressure Min. MESG Value / Vacuum setting, Vacuum Min. MESG Value):
SMART-HV-3S(1400~2100mmAq, 30m, DN80, 0.65mm / -350~700mmAq, 0.65mm); 80A

Certificate of Approval

FLAME ARRESTER

Page 1 / 3



Physical-Technical Testing Institute
Ostrava - Radvanice



(1) **Supplementary EU - Type Examination Certificate No.2**

(2) **Equipment or Protective Systems Intended for Use
in Potentially Explosive Atmospheres
(Directive 2014/34/EU)**

(3) EU - Type Examination Examination Certificate number:

FTZÚ 14 ATEX 0132X

(4) Product: **Design series of deflagration in-line flame arrester for short time burning types:
FA-02; FA-03; FA-04; FA-05; FA-06; FA-08; FA-10; FA-12**

(5) Manufacturer: **PROSAVE CO., LTD**

(6) Address: **115-22, Tekeunobaelli 1-ro, Gimhae-si, Gyeongsangnam-do, Republic of Korea**

(7) This supplementary certificate extends EC - Type Examination Certificate No. FTZÚ 14 ATEX 0132X to apply to products designed and constructed in accordance with the specification set out in the Schedule of the said certificate but having any variations specified in the Schedule attached to this certificate and the documents therein referred to.

(8) The Physical-Technical Testing Institute, Notified Body number 1026, in accordance with Articles 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26.02.2014, certifies that this product, as modified by this supplementary certificate, has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.

(9) In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20.04.2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20.04.2016.

(10) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN ISO 16852:2016

(11) The marking of the product shall include the following:



(12) The certificate is valid till: **23.10.2024**

Responsible person:

Lukáš Martinák
Dipl. Ing. Lukáš Martinák
Head of Certification Body



Date of issue: 23.10.2019

Page: 1/2

This certificate is granted subject to the general conditions of the FTZÚ, s.p.
This certificate may only be reproduced in its entirety and without any change, schedule included.
Physical-Technical Testing Institute, s.p., Pkárská 1337/7, 716 07 Ostrava - Radvanice, The Czech Republic.
tel +420 595 223 111, fax +420 596 232 672, ftzu@ftzu.cz, www.ftzu.cz



Marine & Offshore

Certificate number: 64393/A0 BV

File number: .

Product code: 23421

This certificate is not valid when presented without the full attached schedule composed of 7 sections

www.veristar.com

TYPE APPROVAL CERTIFICATE

This certificate is issued to:

PROSAVE CO., LTD

Gimhae (Gyeongsangnam) - KOREA (REPUBLIC OF)

for the type of product:

IN-LINE FLAME ARRESTERS

In-line Flame Arrester Type FA-01

Requirements:

Bureau Veritas Rules for the Classification of Steel Ships
Bureau Veritas Rules for the Classification of Offshore Units
IMO MSC/Circ.677 as amended by MSC.1/Circ. 1324
ISO 16852:2016

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 21 May 2026

For Bureau Veritas Marine & Offshore,

At BV PUSAN, on 21 May 2021,

Chang Uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) shall be re-approved prior to any being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of error or omission which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristar.com/veristar/bv/viewPublicPdfType.asp?id=ng0a7owk3>
BV Mod. Ad.E 530 June 2017

This certificate consists of 3 page(s)

PROSAVE – Your choice for Safety

Certificate of Approval

CRANKCASE EXPLOSION RELIEF VALVE

Page 1 / 4



Marine & Offshore

Certificate number: 21522/D0 BV
File number: ACM 168/1606/01
Product code: 02201

This certificate is not valid when presented without the full attached schedule composed of 7 sections

www.veristar.com

TYPE APPROVAL CERTIFICATE

This certificate is issued to
PROSAVE CO., LTD
Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)
for the type of product
CRANKCASE EXPLOSION RELIEF VALVES
N-ERV-valve series

Requirements:

- BUREAU VERITAS Rules for the Classification of Steel Ships
- BUREAU VERITAS Rules for the Classification of Offshore Units
- BUREAU VERITAS Rules for the Classification of High Speed Crafts

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 02 Oct 2029

For Bureau Veritas Marine & Offshore,
At BV PUSAN, on 02 Oct 2024,
Dong-hyok SHIN

This certificate was created electronically and is valid without signature



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

The electronic version is available at: <http://www.veristarm.com/veristarmbjsp/viewPublicPdfType.jsp?d=czkxj8ddj>
BV Mod. Ad.E 530 June 2017 This certificate consists of 4 page(s)



Confirmation of Product Type Approval

Company Name: PROSAVE CO., LTD.

Address: 115-22, TEKEUNOBAELLI 1-ROJILLYE-MYEON GIMHAE-SI Korea, Republic of

Product: Crankcase Relief Valves

Model(s): N-ERV-98/122/162/173/204/224/266/320/345/420/480/565/645/735

Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	24-2513819-PDA	14-FEB-2024	13-FEB-2029
Manufacturing Assessment (MA)	22-5206451	04-APR-2022	11-APR-2027
Product Quality Assurance (PQA)	NA	NA	NA

Tier

3 - Type Approved, unit certification not required

Intended Service

Relief for crankcase explosion of internal combustion engine.

Description

Material contents are shown below:

1. Base Flange / Cover / Disc / Stud Bolt, P / Washer(MB) / Nut / S, P/Washer(MB) / Plug Screw, P/Washer: SS400
2. Element: SPCC/SWRM5
3. Spring: SWC
4. Pipe: SUS304
5. O-Ring: NBR

Ratings

1. Maximum Working Pressure (bar): 0.1
2. Maximum Working Temperature (Degree C): 80
3. Opening Pressure (bar): 0.05~0.1, 0.05+20%, 0.05-20%
4. Relief Area (cm2): 59.4, 95, 177, 201, 284, 346, 499, 732, 829, 1260, 1665, 2300, 2990, 3905
5. Fluid: Air, Gas

32/14/2024 12:40:14 AM

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Page 1 of 3



TYPE APPROVAL CERTIFICATE

This is to certify:
that the Crankcase Explosion Relief Valve

with type designation(s)
N-ERV-98, N-ERV-122, N-ERV-162, N-ERV-173, N-ERV-204, N-ERV-224, N-ERV-266, N-ERV-320, N-ERV-345, N-ERV-420, N-ERV-480, N-ERV-565, N-ERV-645, N-ERV-735

issued to

Prosave Co.,Ltd.
Gimhae-si, Gyeongsangnam-do, Korea, Republic of

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.3 Sec.1 Reciprocating internal combustion engines

Application:

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Issued at Hamburg on 2023-11-17

This Certificate is valid until 2028-09-02.

DNV local unit: Gimhae Station

Approval Engineer: Sven Neddenien



This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Revision: 2023-09

www.dnv.com

Page 1 of 3

PROSAVE – Your choice for Safety

Certificate of Approval

FLAMELESS EXPLOSION RELIEF VALVE for DF or GAS ENGINE

Page 1 / 3



Marine & Offshore

Certificate number: 53408/A0 BV
File number: .
Product code: 02221

This certificate is not valid when presented without the full attached schedule composed of 7 sections

www.veristar.com

TYPE APPROVAL CERTIFICATE

This certificate is issued to
PROSAVE CO., LTD
Gimhae (Gyeongnam) - KOREA (REPUBLIC OF)

EXPLOSION RELIEF VALVE FOR INLET AND EXHAUST LINES OF DUAL-FUEL AND GAS ENGINES

Explosion Relief Valves series EVDD with flame arrester

Requirements:
Bureau Veritas Rules for the Classification of Steel Ships
NR 529

This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.

This certificate will expire on: 29 Jan 2026

For Bureau Veritas Marine & Offshore,
At BV PUSAN, on 29 Jan 2021.
Chang-Uk HONG



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) shall be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site www.veristar.com. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

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BV Mod. Ad.E 530 June 2017 This certificate consists of 3 page(s)



Confirmation of Product Type Approval

Company Name: PROSAVE CO., LTD.

Address: 115-22, TEKEUNOBAELLI 1-ROJILLYE-MYEON Korea, Republic of
Product: Explosion Relief Valve with Flame Arrester

Model(s): Explosion Venting Devices for in Charging Air Chamber (EVD-98/122/173/224/226)
Explosion Venting Devices for in the Exh. Duct (EVDD-173/320/420/565/735)

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	20-2015223-PDA	30-JUL-2020	29-JUL-2025
Manufacturing Assessment (MA)	17-BK3313999	12-APR-2017	11-APR-2022
Product Quality Assurance (PQA)	NA	NA	NA

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3

Intended Service

To be installed in charging air chamber & exhaust pipe downstream dual fuel and gas engines used for propulsion and auxiliary services.

Description

PROSAVE explosion relief valves are to be used for the protection of charge air chamber/exhaust duct of dual fuel and gas engines.

EVDM/EVDD valves are able to prevent the flame passage when the explosion occurs in the charging air chamber/exhaust duct. The valve disc is immediately closed by the spring after the first explosion in order to prevent the secondary explosion that occurs by mixing inflow air from outside and unburned gas in the charging air chamber/exhaust duct exhaust duct.

Ratings

EVDM-98: Relief Area (58 cm²) & Open Pressure (3.7 ~ 6.3 bar)
EVDM-122: Relief Area (95 cm²) & Open Pressure (3.7 ~ 6 bar)
EVDM-173: Relief Area (201 cm²) & Open Pressure (3.7 ~ 6.3 bar)
EVDM-224: Relief Area (346 cm²) & Open Pressure (3.7 ~ 6.3 bar)
EVDM-266: Relief Area (499 cm²) & Open Pressure (3.7 ~ 6.3 bar)
EVDD-173: Relief Area (201 cm²) & Open Pressure (0.18 ~ 0.22 bar)
EVDD-320: Relief Area (732 cm²) & Open Pressure (0.18 ~ 0.22 bar)

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TYPE APPROVAL CERTIFICATE

Certificate no.:
TAM000002U
Revision No.:
3

This is to certify:
that the Explosion relief valve for engine intake manifold and exhaust line

with type designation(s)
EVDM-98, EVDM-122, EVDM-173, EVDM-224, EVDM-266
EVDD-173, EVDD-320, EVDD-420, EVDD-565, EVDD-735

issued to
Prosave Co., Ltd.
Gimhae-si, Gyeongsangnam-do, Korea, Republic of

is found to comply with
DNV GL rules for classification - Ships

Application:

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at Hamburg on 2023-11-03

This Certificate is valid until 2028-11-02.
DNV local unit: Gimhae Station

Approval Engineer: Sven Neddenien

for DNV
Digitally Signed By: Drenes, Olaf
Location: DNV GL SE Hamburg, Germany
Signing Date: 2023-11-03

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.



Form code: TA 251

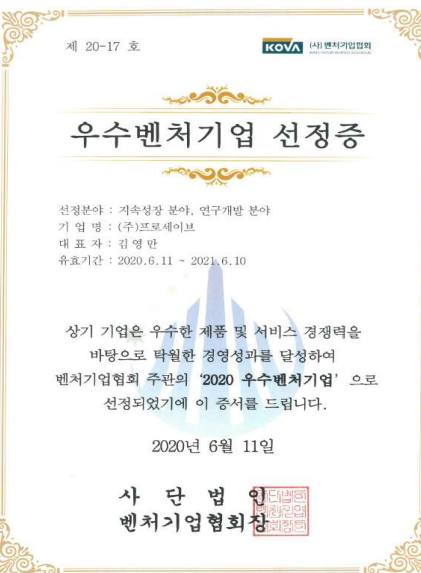
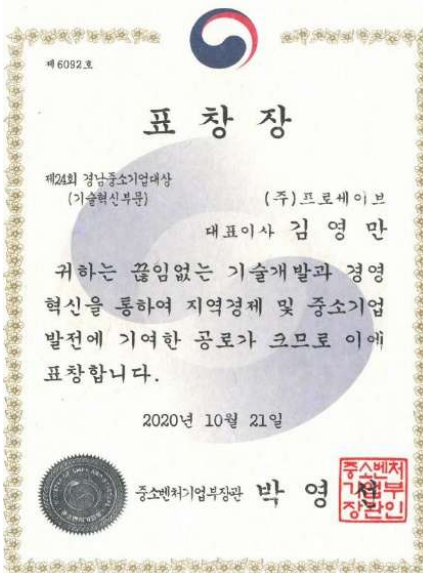
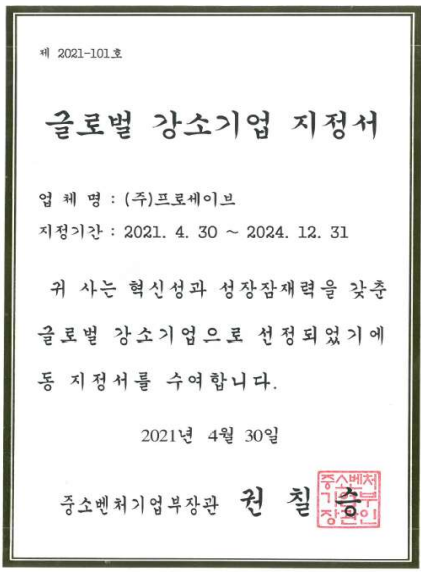
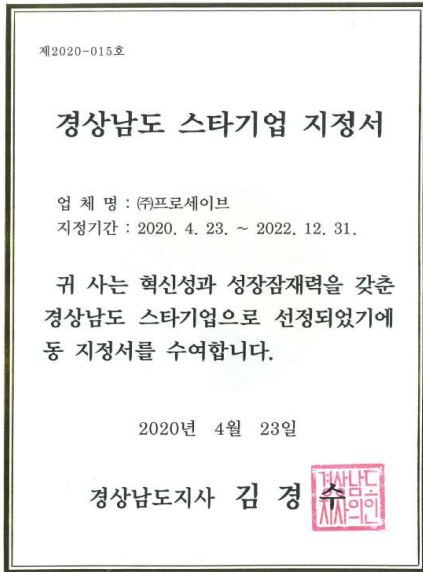
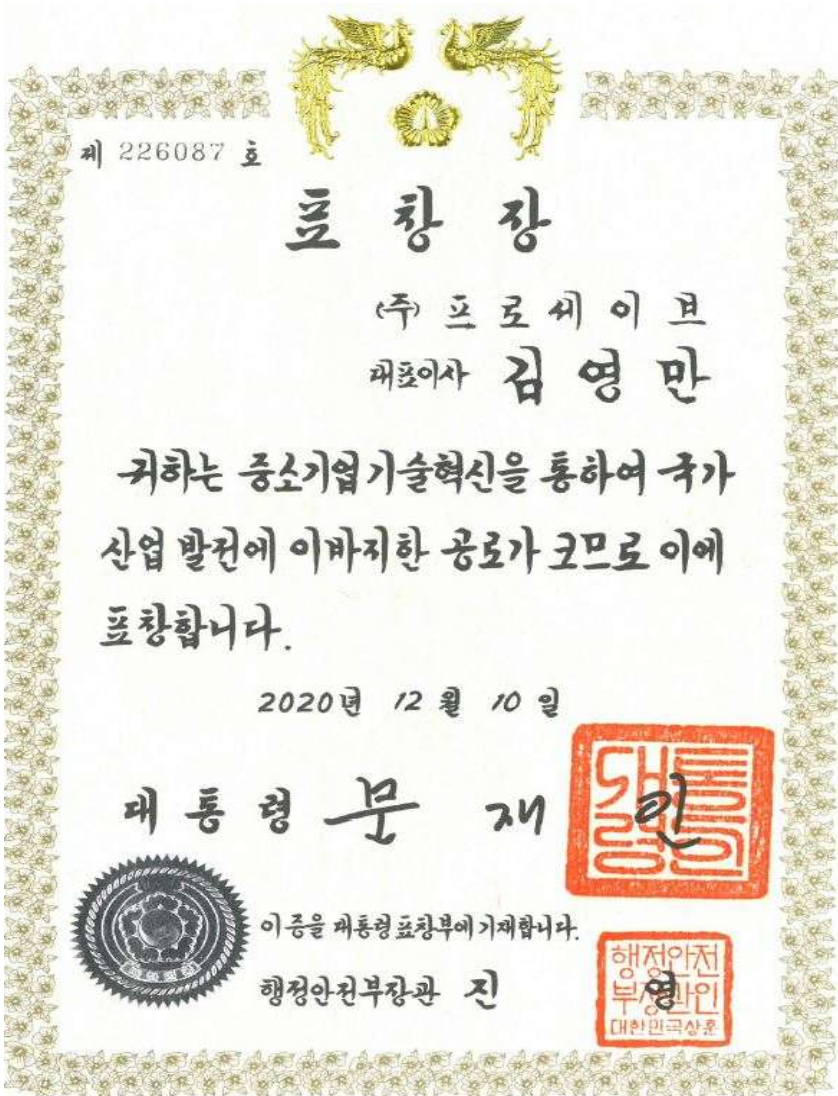
Revision: 2023-09

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PROSAVE – Your choice for Safety

Certificate of Approval(Domestic)



MAJOR CUSTOMER

POWER PLANT	PETROCHEMICAL PLANT	MARINE & OFFSHORE PLANT	WATERWORKS
DOOSAN HEAVY INDUSTRIES	DAEWOO E&C	HYUNDAI HEAVY INDUSTRIES HYUNDAI SAMHO HEAVY INDUSTRIES HYUNDAI MIPO DOCKYARD	DOOSAN HEAVY INDUSTRIES
HYUDAI E&C	DL E&C	SAMSUNG HEAVY INDUSTRIES	HYUNDAI HEAVY INDUSTRIES TURBO MACHINERY
HANWHA E&C	GS ENGINEERING & CONSTRUCTION	HANWHA OCEAN	KRC
DAEWOO E&C	SAMSUNG ENGINEERING CO., LTD	HSD ENGINE	SAPURA ENERGY
SK E&C	HYUDAI E&C	STX HEAVY INDUSTRIES , STX ENGINE	T7 GLOBAL BERHAD
POSCO E&C	HANWHA E&C	TECHNIP ENERGY	Torishima Pump Mfg. Co., Ltd
SAMSUNG C&T CORPORATION	KOGAS	MODEC OFFSHORE	DMW CORPORATION
KOREA SOUTH EAST POWER	TOTAL	MMHE	MHPS
BHI CORPORATION	CHEVRON	CNOOC / COOEC	CHIYODA
GS DEP	SHELL	BW OFFSHORE, SBM OFFSHORE	SWCC
SAIPEM S.p.A	PTTEP	SAPURA ENERGY	
CHIYODA	BP	PETRONAS	
UTE TSGI	PETRONAS	SEMBCORP MARINE	
HITACHI ZOSEN	MAIRE TECNIMONT	DUBAI DRY DOCKS	
CPP / CPPMEC	SAPURA ENERGY	MAN Energy Solutions SE	
CB&I	ARAMCO	MITSUBUSHI HEAVY INDUSTRIES	
TECNICAS REUNIDAS	CPECC	JAPAN ENGINE	
MHPS	ADCO, ADNOC GROUP	SHAANXI DIESEL & MARINE	
SEPCO III	KOC, KNPC	DIESEL UNITED	
Qatar Energy	PDO	CSE(DMD, QMD, YMD), CMP	

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***Safety is the First & Most Important !
Enjoy your work with PROSAVE Safety & Environment Protection Devices.***

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