JOHN GJERDE™

GUARDING YOUR VALUES

www.gjerde.com

# JOHN GJERDE

## guarding your values – when safety counts!

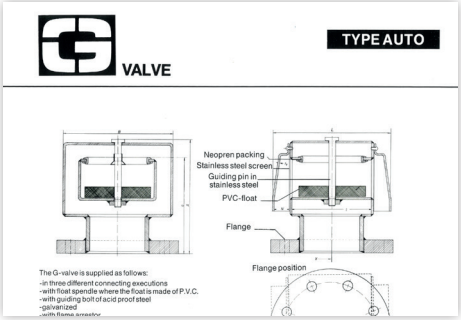
At the end of the day nothing is more important than the health and lives of the people working on board. Accidents sometimes happens and at sea and help can be far away. In those situations, tank vent check valves have one job: to guard the ship from taking in water, thus stabilizing the situation until the crew and finally the ship, can be brought safely ashore.

John gjerde is located on the west coast of Norway, in the heart of an innovative world leading maritime cluster, close to ship owners, designers, seafarers, and machinists.

The company has 45 years of experience in the market of air vent check Valves and is certified ISO 9001 – 14001 - 45001.

The HIDE-series is our new generation G-valve and the most reliable valve in the market. Its optimized design is the result of an extensive testing and development work focusing on all critical safety aspects.

That's why you should choose the G-valves!


# CONTENTS

# THE ADVANTAGES
## of -valves

1. The guiding pin, which ensures perfect performance even under tilted conditions.

The unique disc-float shaped for optimal airflow with integrated lip seal gaskets
   - Provides protection against damage from overfilling
   - Provides efficient noise suppression and "clapping" of float
   - Prevents leakage in dipping situations. The disc and pin concept protects the closing mechanism and makes the -valve the most reliable valve in the market

2. The cross-section area inside the valve is larger than the air flow area required by the regulations. This decreases the risk of "suction blocking" and structural breakdown.

3. The flame screen is of robust construction and is re-enforced to prevent breakdown due to water overfill, or debris in water. The screen is large, which minimizes pressure drop.

4. The shield protects the closing mechanism from airborne pollutants such as dirt and spray painting.

The heating solution for winterization (optional)
   - Ensures proper functioning in icing conditions down to -50°C
   - Is simple, robust and reliable

5. IECEx approved

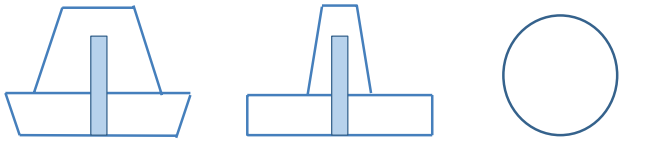
6. Can be ordered in corrosion resistant aluminum, galvanized steel, stainless steel or higher Duplex steel qualities.

7. Fulfils the important requirements of DNV-GL Ship Rules Pt.3 Ch.3 Sec.6 Openings and closing appliances: I 308, 401, 402, 403 og 404

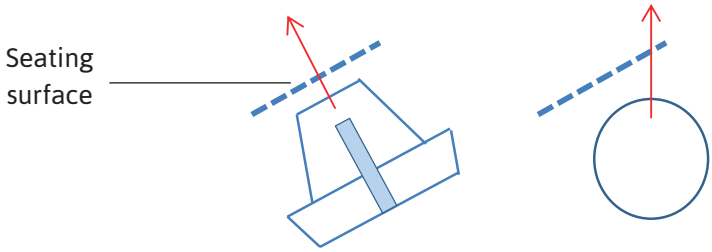
8. Approved by all major classification societies:

## Options

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment



HIDE float | AERO float | Conventional float



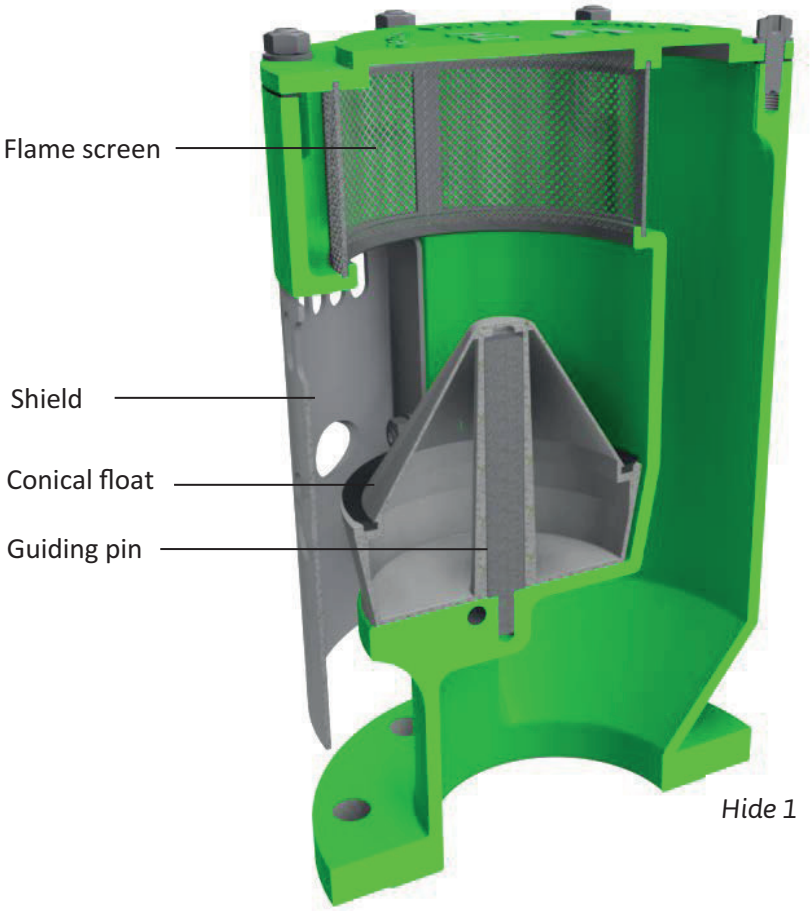

*Direction of buoyant float against seating surface in tilted configuration*

# PRODUCT RANGE

## Tank vent check valves

| Product range | Casted Aluminum | Welded Aluminum | Welded Steel * |
|---|---|---|---|
| HIDE | DN40 - DN200 | DN 200 - DN 600 | All dimensions |
| AERO | | DN 40 - DN 600 | All dimensions |

** Galvanized steel, stainless steel or higher Duplex steel qualities.*




*Hide 1*

# THE HIDE SERIES

## The new generation -valves

The most common failures due to malfunction of tank vent check valves are related to either water ingress or abnormal pressure in tank.

Water ingress typically occurs when the ship is listing heavily and the valves are completely or partially submerged. If the float is stuck, damaged or missing, the tank will take in water through the vent valve. Such a situation can rapidly become serious, especially if no pump can be activated due to electrical failure or missing machinist on board.

Abnormal tank pressure is a result of blocked or chocked air flow through the vent valve. Both over and underpressure caused by a stuck float can create significant stress levels in tanks or hull structure. In worse case, this could lead to structural breakdown due to suction blocking or overfilling of tank. Correct dimensioning of tank venting is therefore essential to avoid abnormal pressures.

The reliability of the valves is of the highest importance for safety at sea. John Gjerde AS believes in continuous innovation and our mission is to improve the safety of the crew, their vessels and the environment. We have solid in-house competence and can rely on own test facilities to study all safety aspects related to our products.

# HIDE 1 ALUMINUM

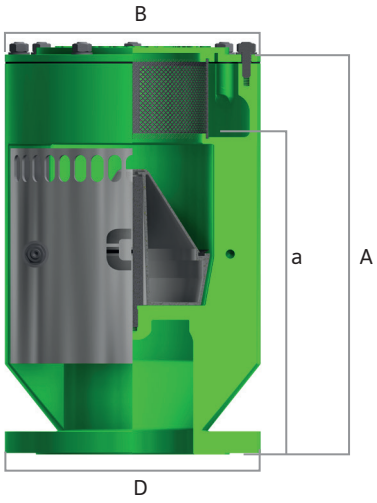
## on deck

The most commonly used air vent head for ships. The HIDE 1 Aluminum is a die-cast valve made for installation outside on-deck. Used to ventilate all tanks on board for cargo, ballast water, wastewater, fresh water, lubricating oil, fuel oil, etc. Prevents water from entering the tanks.

HIDE valves are approved by all the most common classification societies. For pressure drop and flow rate, visit our web page www.gjerde.com

Options:

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged or threaded




## Performance, weight and size

| Hide 1 Aluminium | DN – Inch | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 40 - 1 1/2" | 50 - 2" | 65 - 2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" |
| **A (mm)** | 175 | 228 | 250 | 274 | 316 | 386 | 460 | 533 | 680 | 800 |
| **B (mm)** | 120 | 140 | 160 | 180 | 210 | 250 | 285 | 360 | 430 | 520 |
| **a (mm)** | 131 | 180 | 190 | 212 | 239 | 292 | 358 | 400 | 510 | 585 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | |
| **Weight (kg)** | 2 | 3 | 3,5 | 4 | 6 | 11 | 18 | 30 | 44 | 77 |
| **Heating (Watt)** | 75 | 75 | 75 | 75 | 75 | 120 | 120 | 180 | 180 | 180 |
| **Inlet air flow in $m^3/h$[1)]** | 120 | 160 | 240 | 470 | 595 | 1060 | 1400 | 2375 | 3890 | 5600 |
| **Inlet air flow in $m^3/h$[2)]** | 125 | 185 | 240 | 540 | 595 | 1100 | 1400 | 2600 | 3710 | 5600 |

1) No screen 2) With screen

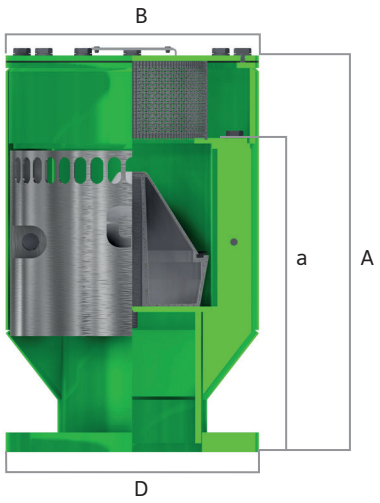
# HIDE 1 STEEL

## on deck


The most commonly used air vent head for ships. The HIDE 1 Steel is a welded valve for demanding conditions made for installation outside on-deck. Used to ventilate all tanks on board for cargo, ballast water, wastewater, fresh water, lubricating oil, fuel oil, etc. Prevents water from entering the tanks. HIDE valves are approved by all the most common classification societies. For pressure drop and flow rate, visit our web page www.gjerde.com

Options:

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, stainless steel or higher Duplex steel qualities




## Performance, weight and size

| Hide 1 Steel | DN – Inch | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40 - 1 1/2" | 50 - 2" | 65 - 2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" | 350 - 14" | 400 - 16" | 450 - 18" | 500 - 20" | 600 - 24" |
| **A (mm)** | 248 | 260 | 283 | 303 | 356 | 420 | 454 | 520 | 722 | 823 | 937 | 1003 | 1145 | 1437 | 1601 |
| **B (mm)** | 140 | 140 | 169 | 194 | 220 | 250 | 285 | 340 | 430 | 520 | 620 | 650 | 820 | 920 | 1020 |
| **a (mm)** | 195 | 195 | 200 | 222 | 258 | 308 | 335 | 372 | 546 | 607 | 704 | 745 | 857 | 1070 | 1170 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | | | | |
| **Weight (kg)** | 9 | 9,3 | 12 | 14,5 | 19,4 | 26,2 | 34,3 | 48 | 79 | 113 | 148 | 161 | 230 | 310 | 442 |
| **Heating (Watt)** | 75 | 75 | 75 | 75 | 75 | 120 | 120 | 180 | 180 | 180 | 2x180 | 2x180 | 2x180 | 2x180 | 2x180 |
| **Inlet air flow in $m^3/h$[1)]** | 120 | 160 | 240 | 470 | 595 | 1060 | 1400 | 2375 | 3890 | 5600 | 10045 | 14930 | 16600 | 18380 | 33590 |
| **Inlet air flow in $m^3/h$[2)]** | 125 | 185 | 240 | 540 | 595 | 1105 | 1400 | 2600 | 3710 | 5600 | 10045 | 14930 | 16600 | 18380 | 33590 |

1) No screen 2) With screen

# HIDE 2 STEEL

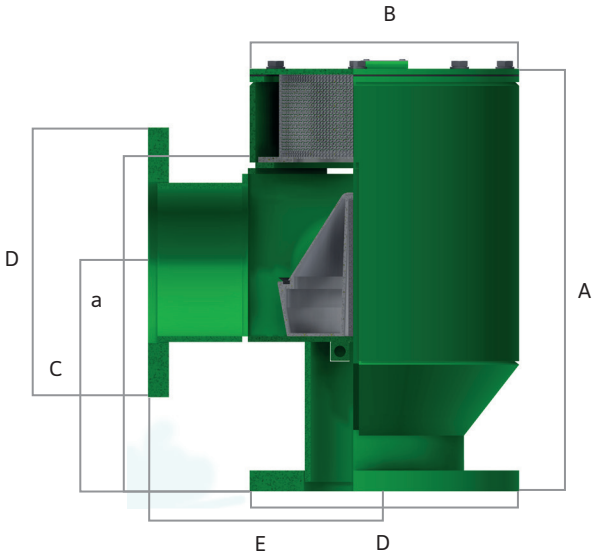
## through super structures


The HIDE 2 is a welded steel made for ventilation through superstructures. Commonly used in demanding conditions and cases with longer distances to open deck, such as passenger vessels and accommodation areas.

HIDE valves are approved by all the most common classification societies. For pressure drop and flow rate, visit our web page www.gjerde.com

Options:

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, stainless steel or higher Duplex steel qualities



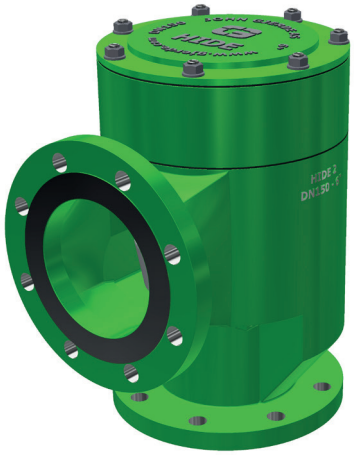

## Performance, weight and size

| Hide 2 Steel | DN – Inch | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40 - 1 1/2" | 50 - 2" | 65 -2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" | 350 - 14" | 400 - 16" | 450 - 18" | 500 - 20" | 600 - 24" |
| **A (mm)** | 248 | 260 | 283 | 303 | 356 | 420 | 454 | 520 | 722 | 823 | 937 | 999 | 1144 | 1434 | 1586 |
| **B (mm)** | 140 | 140 | 169 | 194 | 220 | 250 | 285 | 340 | 430 | 520 | 620 | 650 | 820 | 920 | 1020 |
| **C (mm)** | 130 | 130 | 150 | 180 | 200 | 220 | 250 | 260 | 350 | 420 | 474 | 523 | 547 | 712 | 768 |
| **E (mm)** | 110 | 116 | 144 | 162 | 202 | 225 | 242 | 300 | 383 | 440 | 470 | 520 | 560 | 782 | 854 |
| **a (mm)** | 195 | 195 | 200 | 222 | 258 | 308 | 335 | 372 | 546 | 607 | 710 | 745 | 848 | 1070 | 1170 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | | | | |
| **Weight (kg)** | 11 | 13 | 17 | 22 | 26 | 35 | 47 | 63 | 97 | 133 | 180 | 180 | 297 | 409 | 562 |
| **Heating (Watt)** | 75 | 75 | 75 | 75 | 75 | 120 | 120 | 180 | 180 | 180 | 2x180 | 2x180 | 2x180 | 2x180 | 2x180 |
| **Inlet air flow in $m^3/h$[1)]** | 77 | 106 | 143 | 235 | 283 | 530 | 955 | 1585 | 3005 | 3815 | 4155 | 5880 | 8590 | 11310 | 14250 |
| **Inlet air flow in $m^3/h$[2)]** | 77 | 113 | 143 | 235 | 283 | 575 | 1020 | 1245 | 3005 | 3815 | 5195 | 5880 | 8590 | 11310 | 15270 |

1) No screen 2) With screen

# HIDE 2 ALUMINUM

## through super structures

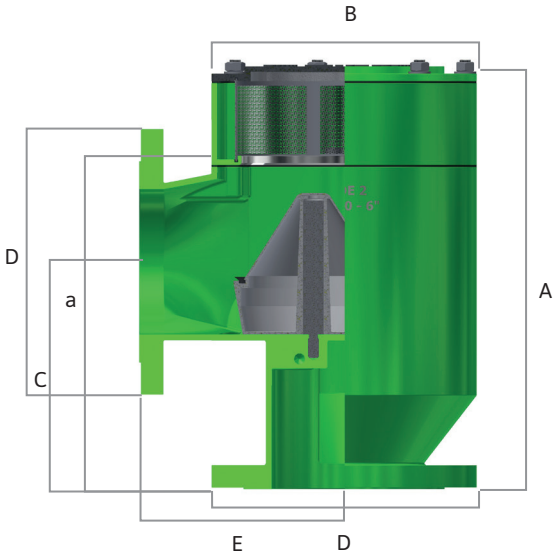


The HIDE 2 Aluminum is a die-cast valve made for ventilation through superstructures. Commonly used in demanding conditions and cases with longer distances to open deck, such as passenger vessels and accommodation areas.

HIDE valves are approved by all the most common classification societies. For pressure drop and flow rate, visit our web page www.gjerde.com

Options:

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged or threaded




## Performance, weight and size

| Hide 2 Aluminum | DN – Inch | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | DN50 - 2" | DN65 - 2 1/2" | DN80 - 3" | DN100 - 4" | DN125 - 5" | DN150 - 6" | DN200 - 8" | DN250 - 10" | DN300 - 12" |
| **A (mm)** | 234 | 277 | 307 | 354 | 420 | 454 | 518 | 728 | 847 |
| **B (mm)** | 140 | 160 | 194 | 210 | 250 | 285 | 340 | 430 | 520 |
| **C (mm)** | 116 | 144 | 162 | 202 | 225 | 242 | 260 | 383 | 440 |
| **E (mm)** | 130 | 150 | 180 | 200 | 220 | 250 | 300 | 350 | 420 |
| **a (mm)** | 179 | 208 | 243 | 270 | 315 | 354 | 370 | 550 | 663 |
| **D** | Flange connection acc. to any standard. | | | | | | | | |
| **Weight (kg)** | 5 | 6 | 8 | 11 | 14 | 19 | 32 | 52 | 75 |
| **Heating (Watt)** | 75 | 75 | 75 | 120 | 120 | 120 | 180 | 180 | 180 |
| **Inlet air flow in $m^3/h$[1)]** | 106 | 143 | 235 | 283 | 530 | 955 | 1585 | 3005 | 3815 |
| **Inlet air flow in $m^3/h$[2)]** | 113 | 143 | 235 | 283 | 575 | 1020 | 1245 | 3005 | 3815 |

1) No screen 2) With screen

# HIDE 3 STEEL

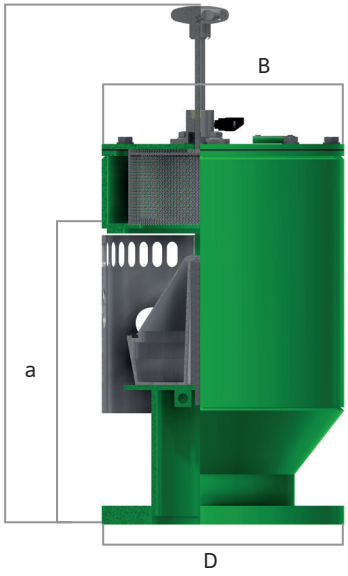
## with closing device


The HIDE 3 Steel is a welded valve most commonly used for dry cargo tanks. Equipped with a manual closing device to avoid any leakage into the dry cargo. HIDE 3 has determined flow characteristics and a robust lip seal gasket for optimal tightness.

HIDE valves are approved by all the most common classification societies. For pressure drop and flow rate, visit our web page www.gjerde.com

Options:

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, stainless steel or higher Duplex steel qualities.




## Performance, weight and size

| Hide 3 Steel | DN – Inch | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DN40 - 1 1/2" | DN50 - 2" | DN65 - 2 1/2" | DN80 - 3" | DN100 - 4" | DN125 - 5" | DN150 - 6" | DN200 - 8" | DN250 - 10" | DN300 - 12" | DN350 -14 " | DN400 - 16" | DN450 - 18" | DN500 - 20" | DN600 - 24" |
| **A (mm)** | 343 | 343 | 398 | 422 | 486 | 570 | 608 | 714 | 931 | 1110 | 1200 | 1265 | 1450 | 1650 | 1750 |
| **B (mm)** | 140 | 140 | 169 | 194 | 220 | 250 | 285 | 340 | 430 | 520 | 620 | 650 | 820 | 920 | 1020 |
| **a (mm)** | 195 | 195 | 200 | 222 | 258 | 308 | 335 | 372 | 546 | 607 | 704 | 745 | 857 | 1070 | 1170 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | | | | |
| **Weight (kg)** | 9 | 9 | 14 | 18 | 23 | 28 | 38 | 50 | 81 | 112 | 150 | 165 | 235 | 315 | 447 |
| **Heating (Watt)** | 75 | 75 | 75 | 75 | 120 | 120 | 120 | 180 | 180 | 180 | 180*2 | 180*2 | 180*2 | 180*2 | 180*2 |
| **Inlet air flow in $m^3/h^{1)}$** | 122 | 162 | 240 | 470 | 595 | 1060 | 1400 | 2375 | 3890 | 5600 | 10050 | 14930 | 16600 | 18380 | 33590 |
| **Inlet air flow in $m^3/h^{2)}$** | 127 | 184 | 240 | 545 | 595 | 1105 | 1400 | 2600 | 3710 | 5600 | 10050 | 14930 | 16600 | 18380 | 33590 |

1) No screen 2) With screen

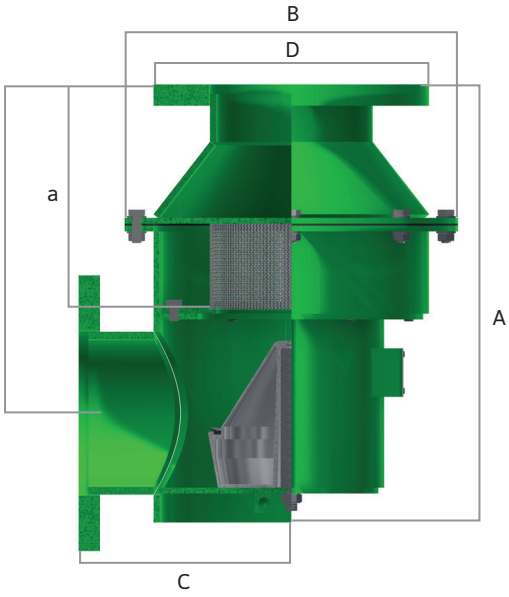
# HIDE 6 STEEL

## Inverted mounted

The HIDE 6 Steel is a welded vent check valve for venting through superstructures, made for inverted mounting with inlet at the top.
All HIDE valves are self-draining, which prevents leakage into the tank.
HIDE valves are approved by all the most common classification societies.
For pressure drop and flow rate, visit our web page www.gjerde.com

Options:

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, stainless steel or higher Duplex steel qualities.




## Performance, weight and size

| Hide 6 Steel | DN – Inch | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 40 - 1 1/2" | 50 - 2" | 65 - 2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" |
| **A (mm)** | 247 | 247 | 299 | 315 | 357 | 418 | 453 | 558 | 684 | 810 |
| **B (mm)** | 179 | 179 | 219 | 244 | 270 | 300 | 345 | 410 | 490 | 600 |
| **C (mm)** | 130 | 130 | 140 | 160 | 170 | 190 | 220 | 250 | 300 | 360 |
| **E (mm)** | 190 | 190 | 230 | 240 | 270 | 320 | 340 | 420 | 520 | 620 |
| **a (mm)** | 118 | 118 | 158 | 160 | 196 | 223 | 231 | 283 | 348 | 425 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | |
| **Weight (kg)** | 10 | 12 | 16 | 20 | 24 | 34 | 41 | 61 | 88 | 123 |
| **Heating (Watt)** | 75 | 75 | 75 | 75 | 120 | 120 | 120 | 180 | 180 | 180 |
| **Inlet air flow in $m^3/h^{1)}$** | 240 | 105 | 109 | 290 | 370 | 620 | 1145 | 1700 | 2825 | 4330 |
| **Inlet air flow in $m^3/h^{2)}$** | 210 | 115 | 200 | 255 | 370 | 620 | 1145 | 1700 | 2475 | 4330 |

1) No screen 2) With screen

# HEATING / WINTERIZATION

## a simple and robust solution

John Gjerde's heating element ensures fully operational functions in icing conditions down to -50°C thanks to its location directly close to the guiding pin. The heating solution is simple, robust and optimized to reduce the total power consumption by 80% compared to conventional solutions.

- Easy installation
- All casted valves are prepared for heating element and are easy to upgrade
- ATEX and IECEx approved

### Technical data, typical vessel configuration with 80 off valves

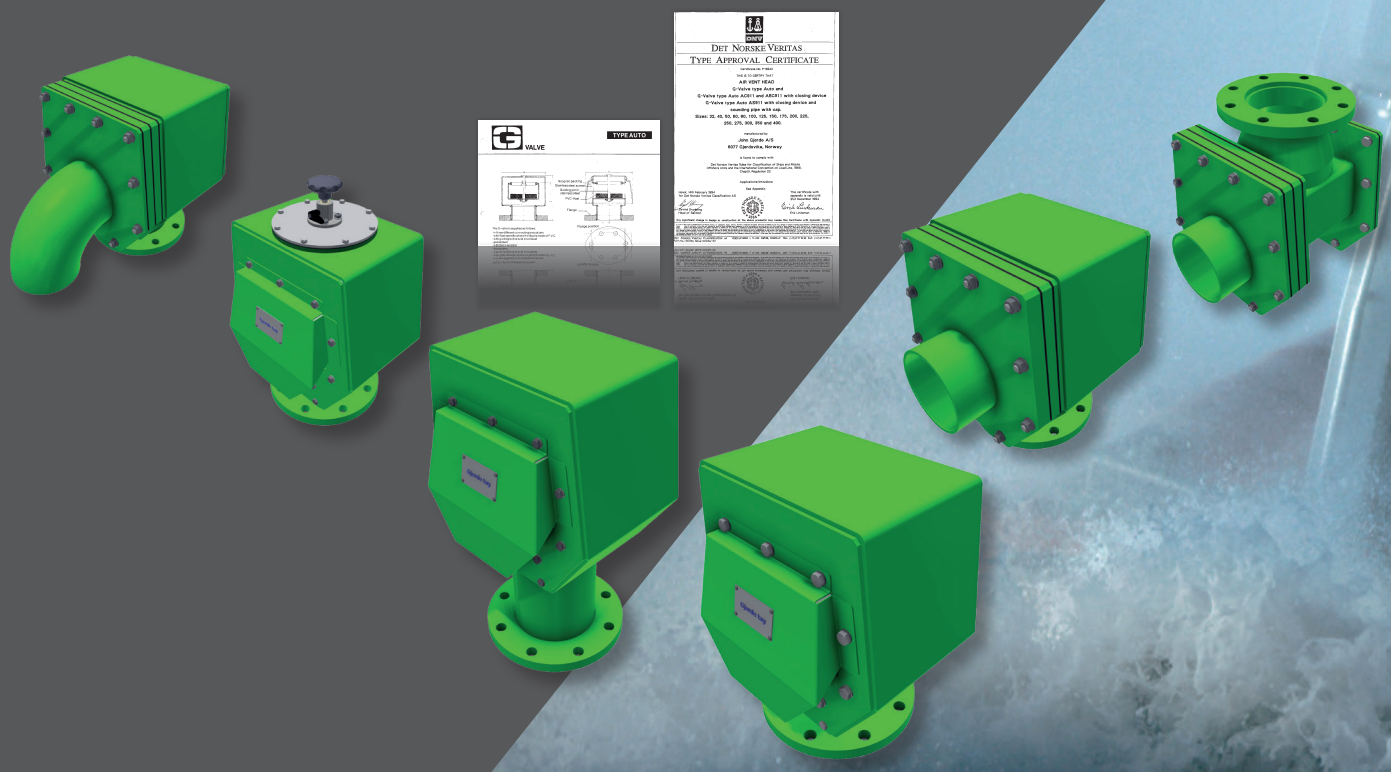
| | Max startup effect (W) | Oper. effect (W) | Max HIDE per cable / MCB *) (no) | Ship set (QTY) | Ship set (start up effect) (W) |
|---|---|---|---|---|---|
| DN 65 | 100 | 75 | 36 | 16 | 1600 |
| DN 80 | 100 | 75 | 36 | 14 | 1400 |
| DN 150 | 190 | 120 | 19 | 20 | 3800 |
| DN 200 | 250 | 190 | 14 | 10 | 2500 |
| DN 300 | 250 | 190 | 14 | 16 | 4000 |
| DN 350 | 500 | 380 | 7 | 4 | 2000 |
| Total ship set | | | | 80 | 15300 |
| *) 16A MCB 230 V | 3680 | | | No of cables | 4 |

# THE AERO SERIES

The AERO Series is our basic range of tank vent check valves produced as standard in carbon steel. Six different models, all with the same basic design and basic operational principle.

- All valves have the flat float principle, ensuring low leakage
- Sturdy design to withstand severe conditions
- Protection against corrosion, both on the in- and outside, hot dipped galvanized
- High performance, technical data available on request
- Optional materials: galvanized steel, aluminum, stainless Steel 316L higher Duplex steel qualities

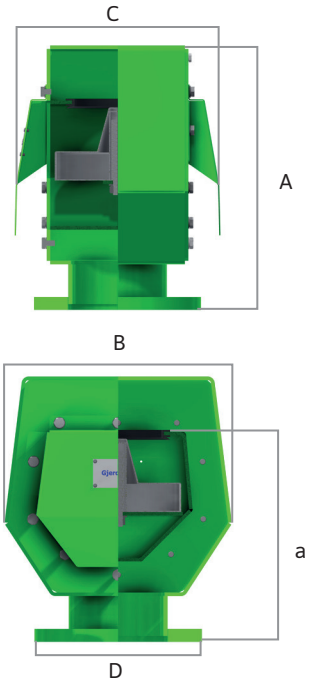
The AERO Series is 2nd generation valve after our iconic TYPE AUTO developed in the 1970's. Type Auto obtained Type Approval certification by DNV in 1993 and is since that an internationally accepted standard in the maritime industry.



# AERO 1.1
## on deck

This Aero valve is the most commonly used air vent head for ships, ventilating all tanks on board for cargo, ballast water, wastewater, fresh water, lub. oil, fuel oil, etc. The Areo 1.1 version is made for on-deck mounting - outside. AERO valves are approved by all the most common classification societies.

Options:
- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, aluminum, stainless steel or higher Duplex steel qualities



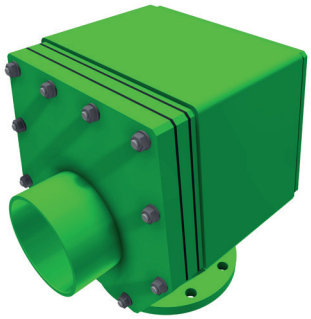

## Performance, weight and size

| Aero 1.1 Steel | DN – Inch | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40-1 1/2" | 50 - 2" | 65 - 2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" | 350 - 14" | 400 - 16" | 450 - 18" | 500 - 20" | 600 - 24" |
| **A (mm)** | 263 | 263 | 263 | 310 | 310 | 335 | 448 | 517 | 660 | 731 | 887 | 887 | 1100 | 1100 | 1100 |
| **B (mm)** | 216 | 216 | 216 | 273 | 273 | 305 | 385 | 475 | 590 | 685 | 885 | 885 | 1115 | 1115 | 1215 |
| **C (mm)** | 223 | 223 | 223 | 252 | 252 | 304 | 405 | 463 | 530 | 697 | 760 | 760 | 838 | 838 | 938 |
| **a (mm)** | 210 | 210 | 210 | 243 | 243 | 273 | 354 | 420 | 528 | 584 | 700 | 700 | 897 | 897 | 897 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | | | | |
| **Weight (kg)** | 13 | 14 | 15 | 20 | 21 | 26 | 41 | 63 | 97 | 121 | 175 | 205 | 384 | 395 | 416 |
| **Heating (Watt)** | 51 | 51 | 51 | 71 | 71 | 86 | 135 | 175 | 234 | 504 | 756 | 756 | 1185 | 1185 | 1565 |
| **Inlet air flow in $m^3/h^{1)}$** | 100 | 130 | 190 | 380 | 480 | 885 | 1080 | 1925 | 3000 | 4325 | 6930 | 6790 | 11450 | 14845 | 16285 |
| **Inlet air flow in $m^3/h^{2)}$** | 105 | 150 | 190 | 450 | 480 | 885 | 1080 | 2035 | 3000 | 4325 | 5890 | 7240 | 10880 | 14845 | 16285 |

1) No screen 2) With screen

# AERO 1.2

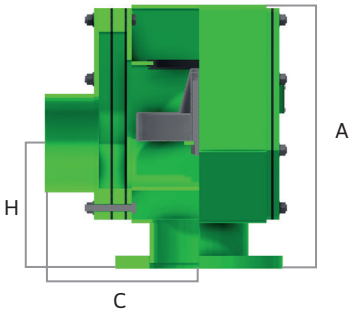
## through superstructures

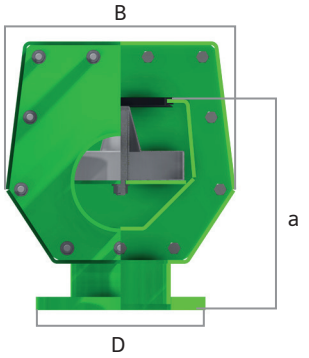


This air vent head is made for venting through superstructures.
Commonly used in cases of longer distances to open deck, such as passenger vessels and accommodation areas.
Aero valves are approved by all the most common classification societies.

Options:

- Flame/Bug/Rat screen
- Heating /Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, aluminum, stainless steel or higher Duplex steel qualities.



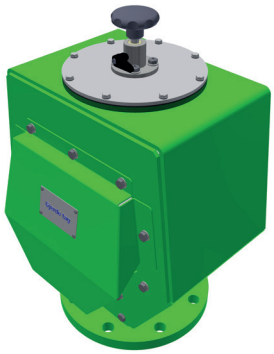

## Performance, weight and size

| Aero 1.2 Steel | DN – Inch | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40 - 1 1/2" | 50 - 2" | 65 - 2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" | 350 - 14" | 400 - 16" |
| **A (mm)** | 263 | 263 | 263 | 310 | 310 | 335 | 448 | 517 | 660 | 731 | 887 | 887 |
| **B (mm)** | 216 | 216 | 216 | 273 | 273 | 305 | 385 | 475 | 590 | 685 | 885 | 885 |
| **C (mm)** | 189 | 189 | 189 | 216 | 216 | 246 | 261 | 292 | 319 | 357 | 394 | 394 |
| **H (mm)** | 126 | 132 | 139 | 144 | 156 | 178 | 215 | 247 | 290 | 341 | 397 | 422 |
| **a (mm)** | 210 | 210 | 210 | 243 | 243 | 273 | 354 | 420 | 528 | 584 | 700 | 700 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | |
| **Weight (kg)** | 26 | 26 | 27 | 40 | 41 | 53 | 84 | 122 | 191 | 248 | 392 | 398 |
| **Heating (Watt)** | 51 | 51 | 51 | 71 | 71 | 86 | 135 | 175 | 234 | 504 | 756 | 756 |
| **Inlet air flow in $m^3/h^{1)}$** | 80 | 100 | 130 | 235 | 280 | 530 | 955 | 1810 | 2830 | 3565 | 4155 | 6785 |
| **Inlet air flow in $m^3/h^{2)}$** | 80 | 130 | 145 | 235 | 280 | 575 | 1020 | 2035 | 3000 | 3820 | 4155 | 5000 |

1) No screen 2) With screen

# AERO 1.3

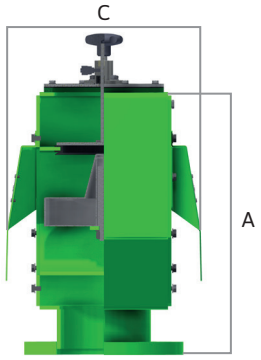
## with closing device

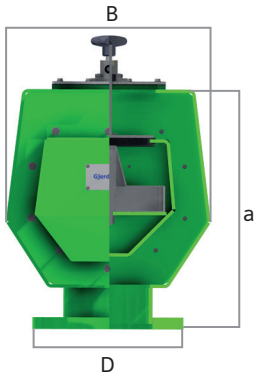


This air vent is most commonly used for dry cargo tanks. Equipped with a manual closing device to avoid any leakage into the dry cargo. Aero 1.3 has determined flow characteristics and a robust lip seal gasket for optimal tightness.
Aero valves are approved by all the most common classification societies.

Options:

- Flame/Bug/Rat screen
- Heating /Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, stainless steel or higher Duplex steel qualities




## Performance, weight and size

| Aero 1.3 Steel | DN – Inch | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | DN40 - 1 1/2" | DN50 - 2" | DN65 - 2 1/2" | DN80 - 3" | DN100 - 4" | DN125 - 5" | DN150 - 6" | DN200 - 8" | DN250 - 10" | DN300 - 12" | DN350 - 14" | DN400 - 16" | DN450 - 18" | DN500 - 20" | DN600 - 24" |
| **A (mm)** | 263 | 263 | 263 | 310 | 310 | 335 | 448 | 517 | 660 | 731 | 887 | 887 | 1100 | 1100 | 1100 |
| **B (mm)** | 216 | 216 | 216 | 273 | 273 | 305 | 385 | 475 | 590 | 685 | 885 | 885 | 1115 | 1115 | 1215 |
| **C (mm)** | 223 | 223 | 223 | 252 | 252 | 304 | 405 | 463 | 530 | 697 | 760 | 760 | 838 | 838 | 938 |
| **a (mm)** | 210 | 210 | 210 | 243 | 243 | 273 | 354 | 420 | 528 | 584 | 700 | 700 | 897 | 897 | 897 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | | | | |
| **Weight (kg)** | 19 | 20 | 21 | 27 | 29 | 34 | 49 | 72 | 112 | - | - | - | - | - | - |
| **Heating (Watt)** | 51 | 51 | 51 | 71 | 71 | 86 | 135 | 175 | 234 | 504 | 756 | 756 | 1185 | 1185 | 1565 |
| **Inlet air flow in $m^3/h$[1)]** | 100 | 130 | 190 | 380 | 480 | 885 | 1080 | 1925 | 3000 | 4325 | 6930 | 6785 | 11450 | 14840 | 16280 |
| **Inlet air flow in $m^3/h$[2)]** | 105 | 150 | 190 | 450 | 480 | 885 | 1080 | 2035 | 3000 | 4325 | 5890 | 7240 | 10880 | 14840 | 16280 |

1) No screen 2) With screen

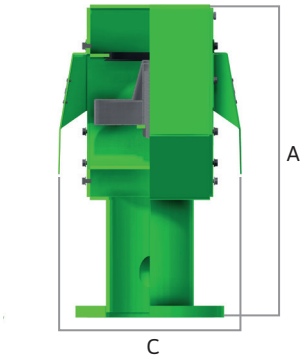
# AERO 1.4

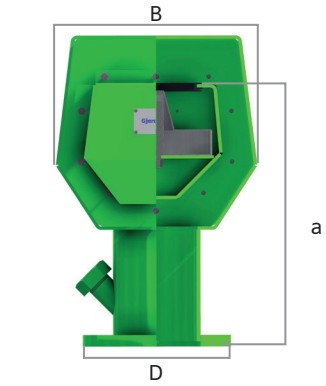
## with sounding pipe

This air vent head is most commonly used for fuel tanks. It is equipped with a sounding pipe. Aero 1.4 has determined flow characteristics and good tightness performance.
Aero valves are approved by all the most common classification societies.

Options:

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, stainless steel or higher Duplex steel qualities



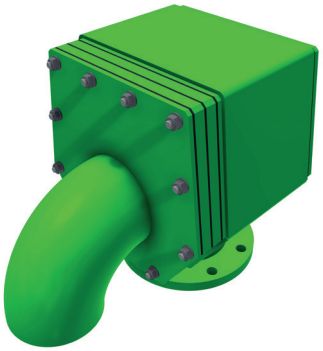




## Performance, weight and size

| Aero 1.4 Steel | DN – Inch | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40 - 1 1/2" | 50 - 2" | 65 - 2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" | 350 - 14" | 400 - 16" |
| **A (mm)** | 419 | 419 | 419 | 456 | 456 | 510 | 599 | 669 | 814 | 877 | 1056 | 1056 |
| **B (mm)** | 216 | 216 | 216 | 273 | 273 | 305 | 385 | 475 | 590 | 685 | 885 | 885 |
| **C (mm)** | 223 | 223 | 223 | 252 | 252 | 304 | 405 | 463 | 530 | 697 | 760 | 760 |
| **a (mm)** | 366 | 366 | 366 | 389 | 389 | 448 | 505 | 572 | 682 | 730 | 869 | 869 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | |
| **Weight (kg)** | 14 | 15 | 16 | 22 | 22 | 29 | 45 | 68 | 103 | 129 | 185 | 215 |
| **Heating (Watt)** | 51 | 51 | 51 | 71 | 71 | 86 | 135 | 175 | 234 | 504 | 756 | 756 |
| **Inlet air flow in $m^3/h^{1)}$** | 100 | 130 | 190 | 380 | 480 | 885 | 1080 | 1925 | 3000 | 4325 | 6930 | 6785 |
| **Inlet air flow in $m^3/h^{2)}$** | 105 | 150 | 190 | 450 | 480 | 885 | 1080 | 2035 | 3000 | 4325 | 5890 | 7240 |

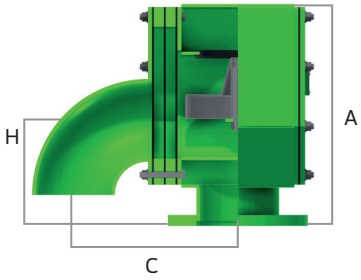
1) No screen 2) With screen

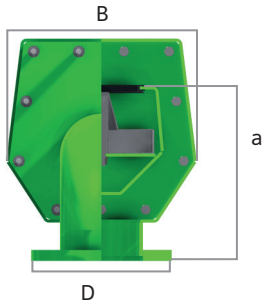
# AERO 1.5
## with directed pipe



This vent check valve type, is made with a directed overflow. This is useful if venting is required from a specified location / tank / room.
Aero valves are approved by all the most common classification societies.

Options:
- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, stainless steel or higher Duplex steel qualities.



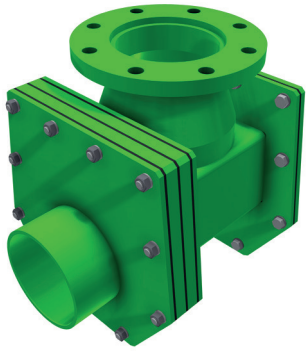

## Performance, weight and size

| Aero 1.5 Steel | DN – Inch | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40 - 1 1/2" | 50 - 2" | 65 - 2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" | 350 - 14" | 400 - 16" |
| **A (mm)** | 263 | 263 | 263 | 310 | 310 | 335 | 448 | 517 | 660 | 731 | 887 | 887 |
| **B (mm)** | 216 | 216 | 216 | 273 | 273 | 305 | 385 | 475 | 590 | 685 | 885 | 885 |
| **C (mm)** | 324 | 349 | 376 | 438 | 488 | 573 | 661 | 841 | 1008 | 1165 | 1347 | 1449 |
| **H (mm)** | 132 | 132 | 139 | 144 | 156 | 178 | 215 | 247 | 290 | 341 | 397 | 422 |
| **a (mm)** | 210 | 210 | 210 | 243 | 243 | 273 | 354 | 420 | 528 | 584 | 700 | 700 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | |
| **Weight (kg)** | 26 | 26 | 27 | 40 | 41 | 53 | 84 | 122 | 191 | 248 | 392 | 398 |
| **Heating (Watt)** | 51 | 51 | 51 | 71 | 71 | 86 | 135 | 175 | 234 | 504 | 756 | 756 |
| **Inlet air flow in $m^3/h$[1)]** | 80 | 100 | 130 | 235 | 280 | 530 | 955 | 1810 | 2830 | 3565 | 4155 | 6785 |
| **Inlet air flow in $m^3/h$[2)]** | 80 | 130 | 145 | 235 | 280 | 575 | 1020 | 2035 | 3000 | 3820 | 4155 | 5000 |

1) No screen 2) With screen

# AERO 1.6

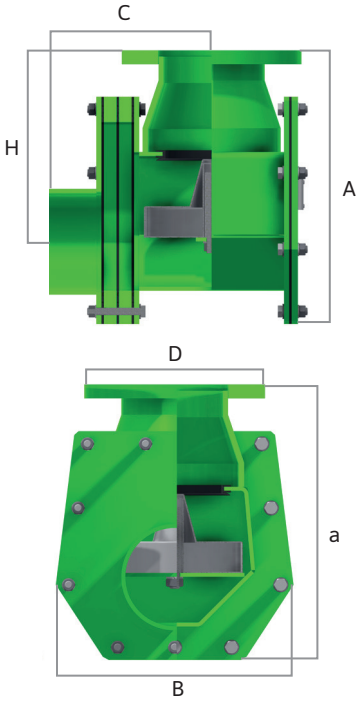
## Inverted mounted



Vent check valve for venting through superstructures, made for inverted mounting with inlet at the top. All AERO valves are self-draining, which prevents leakage into the tank.
Aero valves are approved by all the most common classification societies.

Options:

- Flame/Bug/Rat screen
- Heating/Winterization
- Additional mud chamber preventing mud from entering the valve (see page 29)
- Painting
- Mounting alternatives: flanged, threaded or weldment
- Can be ordered in galvanized steel, stainless steel or higher Duplex steel qualities




## Performance, weight and size

| Aero 1.6 Steel | DN – Inch | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 40 - 1 1/2" | 50 - 2" | 65 - 2 1/2" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" | 350 - 14" | 400 - 16" |
| **A (mm)** | 279 | 273 | 266 | 336 | 327 | 365 | 445 | 540 | 670 | 846 | 961 | 961 |
| **B (mm)** | 209 | 209 | 209 | 264 | 264 | 300 | 375 | 466 | 578 | 675 | 875 | 875 |
| **C (mm)** | 189 | 189 | 189 | 216 | 216 | 246 | 261 | 292 | 319 | 357 | 394 | 394 |
| **H (mm)** | 206 | 200 | 193 | 249 | 236 | 257 | 311 | 370 | 460 | 592 | 651 | 626 |
| **a (mm)** | 210 | 210 | 210 | 243 | 243 | 273 | 354 | 420 | 528 | 584 | 700 | 700 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | |
| **Weight (kg)** | 24 | 24 | 25 | 36 | 38 | 47 | 76 | 111 | 182 | 221 | 221 | 221 |
| **Heating (Watt)** | 75 | 75 | 75 | 75 | 120 | 120 | 120 | 180 | 180 | 180 | 180 | 180 |
| **Inlet air flow in $m^3/h$[1)]** | 240 | 185 | 145 | 255 | 280 | 530 | 700 | 680 | 2830 | 4070 | 4850 | 7280 |
| **Inlet air flow in $m^3/h$[2)]** | 320 | 320 | 155 | 255 | 280 | 530 | 700 | 1360 | 2830 | 4070 | 4850 | 7280 |

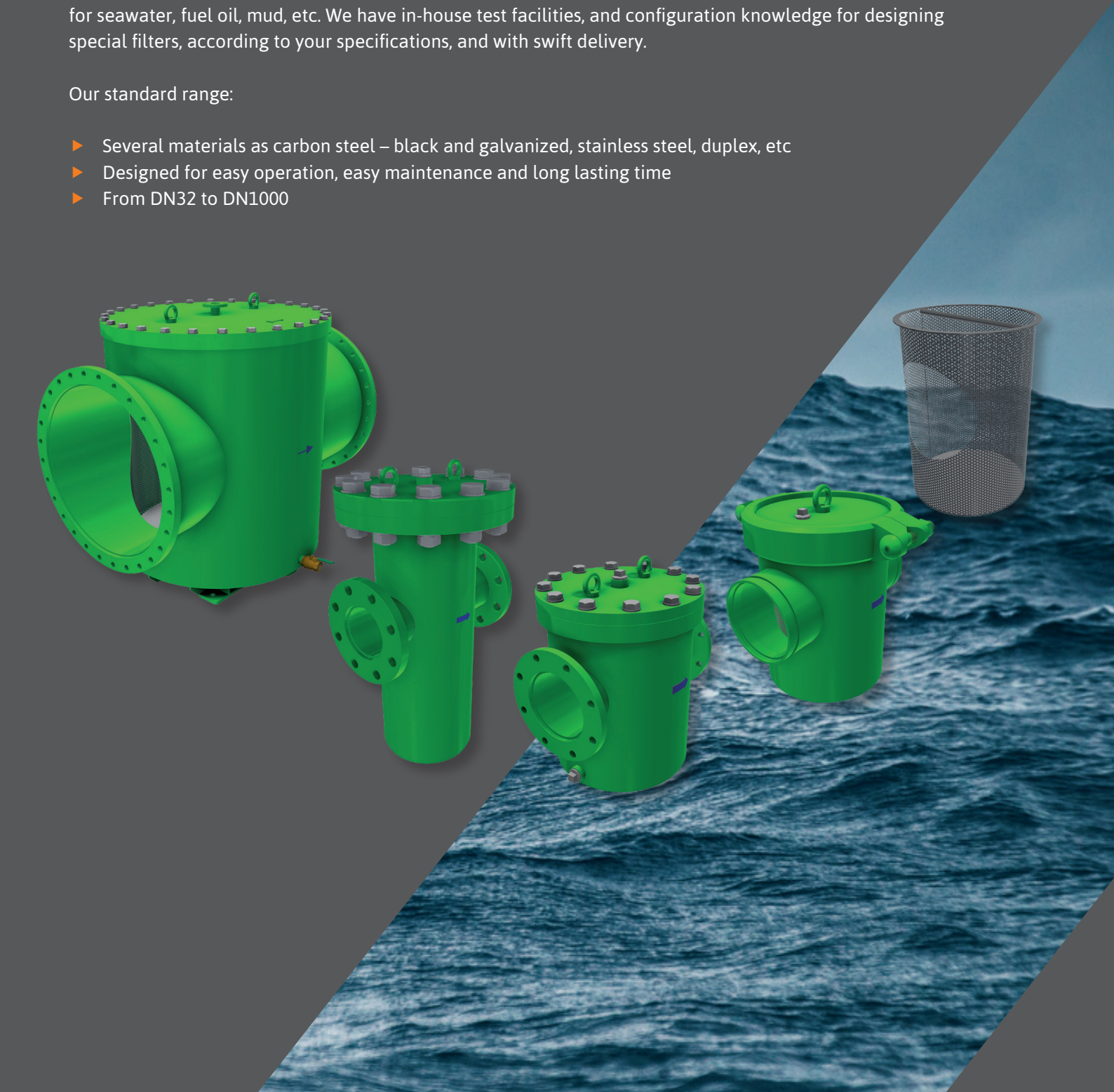
1) No screen 2) With screen

# G-STRAINERS

John Gjerde have more than 45 years of experience in special design and production of reliable and robust filters for seawater, fuel oil, mud, etc. We have in-house test facilities, and configuration knowledge for designing special filters, according to your specifications, and with swift delivery.

Our standard range:

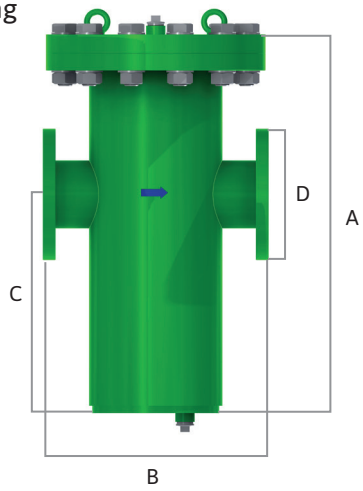
- Several materials as carbon steel – black and galvanized, stainless steel, duplex, etc
- Designed for easy operation, easy maintenance and long lasting time
- From DN32 to DN1000



# MUD STRAINER

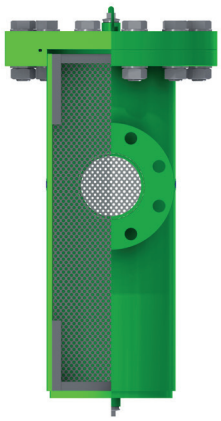
Application area: mainly used for liquid mud filtration.
Function: separates coarse particles from mud, such as stone, etc.
The coarse fragments remain at the bottom of the filter.
Features to simplify supervision and maintenance, and to increase lifetime:

- Inlet connection at the top for installation of pressure gauge, or possibly flushing
- Outlet valve for drainage at the bottom
- Flange opening in the top of the filter for easy inspection
- Option: Zinc anode installed in the bottom of the filter
- Option: Custom specified in- and outlet solutions




Performance:

- Size: DN 100 to DN 250
- Operation pressure: up to 64 bar (High pressure)
- Standard filter perforations: D=10mm. (Can also supply other perforations)
- Materials: Carbon steel, SS316, Duplex, Super Duplex, others on request
- Surface treatment: painting or galvanization



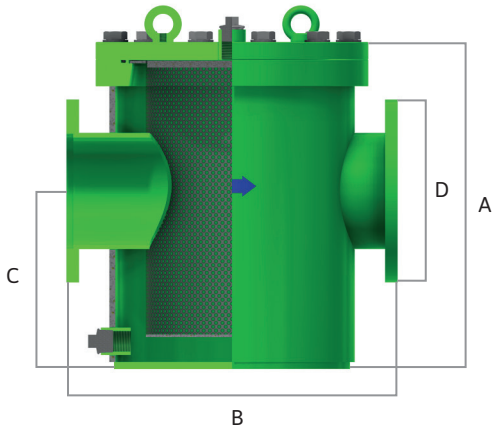
## Weight and size

| Plate strainer | DN – Inch | | | | |
|---|---|---|---|---|---|
| | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" |
| **A (mm)** | 871 | 871 | 871 | 871 | 871 |
| **B (mm)** | 463 | 463 | 463 | 463 | 463 |
| **a (mm)** | 450 | 450 | 450 | 450 | 450 |
| **D** | Flange connection acc. to any standard. | | | | |
| **Weight (kg)** | 155 | 161 | 183 | 192 | 211 |

# LIQUID STRAINER

Application area: mainly used for filtering sea water cooling systems. Can also be used for other types of liquids, such as fuel oil. Function: Separation of particles from liquids. The particles remain inside the bottom of the basket filter insert. Features to simplify supervision and maintenance, and to increase the lifetime of the strainer:

- Inlet connection at the top for installation of pressure gauge, or possibly flushing
- Outlet valve for drainage at the bottom
- Flange opening in the top of the filter for easy inspection
- The basket insert can easily be removed and cleaned
- Option: Zinc anode installed in the bottom of the filter
- Option: Custom specified in- and outlet solutions




Performance /size:

- Size: DN 320 to DN 1000
- Operation pressure: up to 64 bar (High pressure)
- Standard filter perforations: D=10mm
- Materials: Carbon steel, SS316, Duplex, Super Duplex, others on request
- Surface treatment: painting or galvanization

## Weight and size

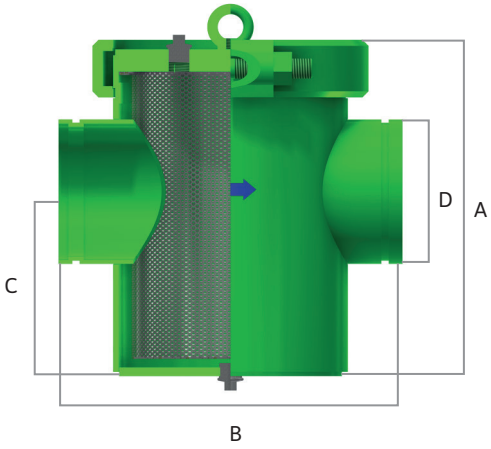
| Basket strainer | DN – Inch | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 32 - 1 1/4" | 40 - 1 1/2" | 50 - 2" | 65 - 2 2/5" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" | 350 - 14" | 400 - 16" | 450 - 18" | 500 - 20" |
| **A (mm)** | 250 | 260 | 260 | 260 | 310 | 352 | 450 | 474 | 593 | 609 | 609 | 790 | 790 | 1100 | 1100 |
| **B (mm)** | 200 | 290 | 290 | 290 | 310 | 350 | 400 | 480 | 600 | 600 | 600 | 740 | 740 | 1000 | 1080 |
| **C (mm)** | 91 | 110 | 110 | 110 | 130 | 195 | 275 | 258 | 340 | 340 | 340 | 400 | 400 | 610 | 610 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | | | | | | |
| **Weight (kg)** | 26 | 31 | 36 | 40 | 49 | 53 | 97 | 103 | 179 | 195 | 210 | 460 | 490 | 760 | 790 |

For bigger sizes, please contact us.

# LIGHT LIQUID STRAINER

Application area: a smaller and lighter liquid strainer. Mainly used for filtering sea water cooling systems. Can also be used for other types of liquids, such as fuel oil. Function: separation of particles from liquids. The particles remain inside the bottom of the basket filter insert. Features to simplify supervision and maintenance, and to increase the lifetime of the strainer:

- Inlet connection at the top for installation of pressure gauge, or possibly flushing
- Outlet valve for drainage at the bottom
- Easy access through a grooved end coupling opening in the top of the filter for inspection
- The basket insert can easily be removed and cleaned
- Option: Zinc anode installed in the bottom of the filter
- Option: Custom specified in- and outlet solutions




Performance /size:

- Size: DN 320 to DN 250
- Operation pressure: up to 64 bar (High pressure)
- Standard filter perforations: Ø3, Ø5 or Ø8mm
- Materials: Carbon steel, SS316, Duplex, Super Duplex, others on request
- Surface treatment: painting or galvanization

## Weight and size

| Basket strainer light | DN – Inch | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 32 - 1 1/4" | 40 - 1 1/2" | 50 - 2" | 65 - 2 2/5" | 80 - 3" | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" |
| **A (mm)** | 159 | 180 | 213 | 233 | 283 | 313 | 339 | 392 | 443 | 480 |
| **B (mm)** | 160 | 180 | 200 | 250 | 280 | 300 | 350 | 400 | 500 | 540 |
| **C (mm)** | 75 | 90 | 105 | 125 | 155 | 185 | 185 | 215 | 241 | 256 |
| **D** | Flange connection acc. to any standard. | | | | | | | | | |
| **Weight (kg)** | 4 | 5 | 8 | 11 | 15 | 17 | 33 | 48 | 72 | 94 |

For bigger sizes, please contact us.

# MUD BOX

## Long lifetime ceramic reinforced coating

### Mud box

Body carbon steel S235JR, produced acc. to DNV-GL OS 101

- Basket aisi 316, 100% isolated with rubber on connection surfaces to the body
- Straight and angle sizes from DN 32 to DN 1000

### Coating

Internal paint in filters:

Ceramic reinforced coating
Brush-Roll-Spray Grade, Ceramic-Reinforced Erosion Resistant Coating
100% solids, ceramic reinforced thin film coating to protect filters against erosion, abrasion, and corrosion. The industrial coating is designed to:

- Protect against corrosion and erosion
- Provide improved material flow characteristics

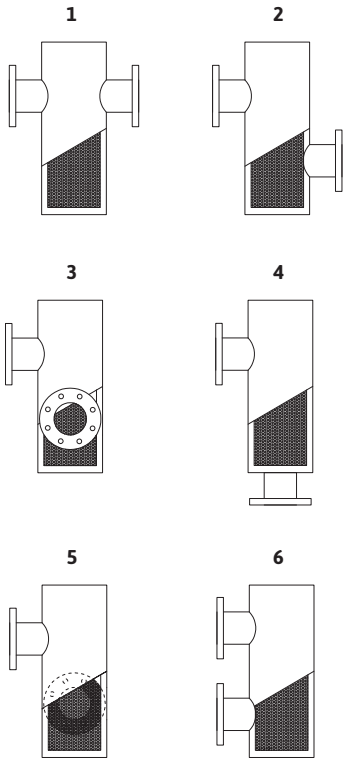
External paint in filters:

NORSOK M-501 Surface preparation and protective coating, sys.1-
Applicable for carbon steel with max operating temperature < 120$^{0}$(
The NORSOK standards are developed by the Norwegian petroleum industry to ensure adequate safety, value adding and cost effectiveness for petroleum industry developments and operations. Furthermore, NORSOK standards are as far as possible intended to replace oil company specifications and serve as references in the authorities' regulations.

# CUSTOM MADE STRAINERS

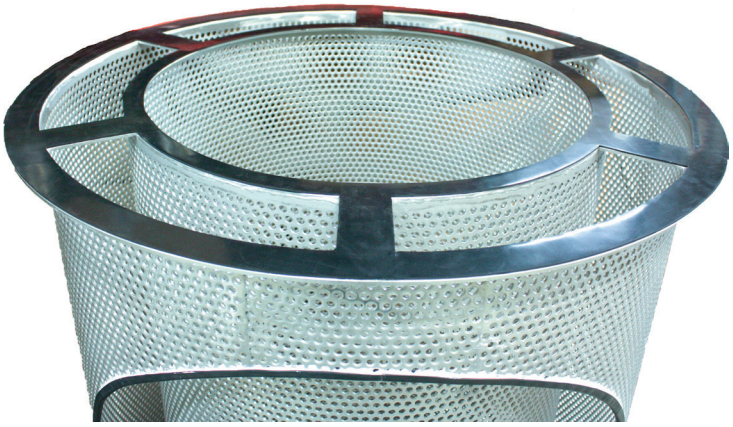
-strainers can be manufactured according to customer requirements for special applications: e.g. limited space, abnormal pressures, need for extraordinary sizes or capacity. Please contact our Sales Department for more information about custom products. We deliver robust quality products acc. to specification, with short delivery time.

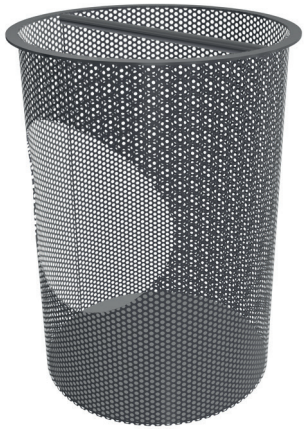
- Materials: Carbon steel, SS316, Duplex, Super Duplex, others on request
- Surface treatment: painting or galvanization
- Documentation: pressure drop calculation and testing on order request
- Configurations: acc. to customer specification, se examples beside



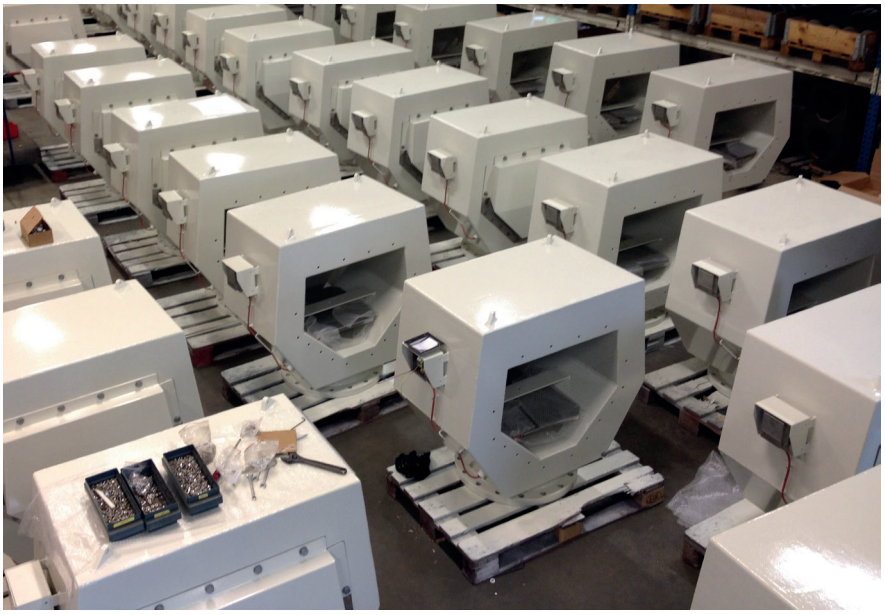

# CUSTOM MADE BASKETS

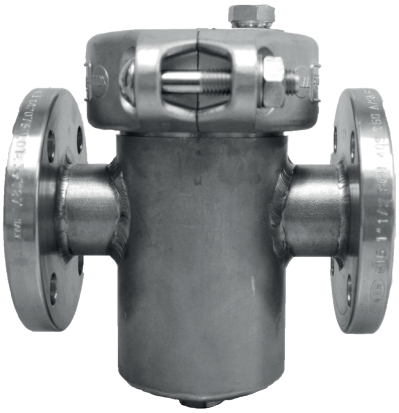
The strainers are available in all kind of perforations and materials such as SS316, Duplex, Super Duplex, Monel, etc.
All customer-specific strainer baskets can be delivered with pressure drop documentation.





# OTHER CUSTOM MADE SOLUTIONS





Do you have limited time or capacity in your project? Everything is possible – just ask us!
John Gjerde have more than 45 years of experience in the design of customized solutions on request. We contribute to the improvement of production efficiency for our customers.

- Tanks, valve boxes
- Fume Hoods, galley equipment, chutes
- Drain chutes
- Door linings
- Prefabrication of pipe-modules. We install Pipes, tanks, valves and fitting install on a foundation frame. The modules may be installed directly into the client project

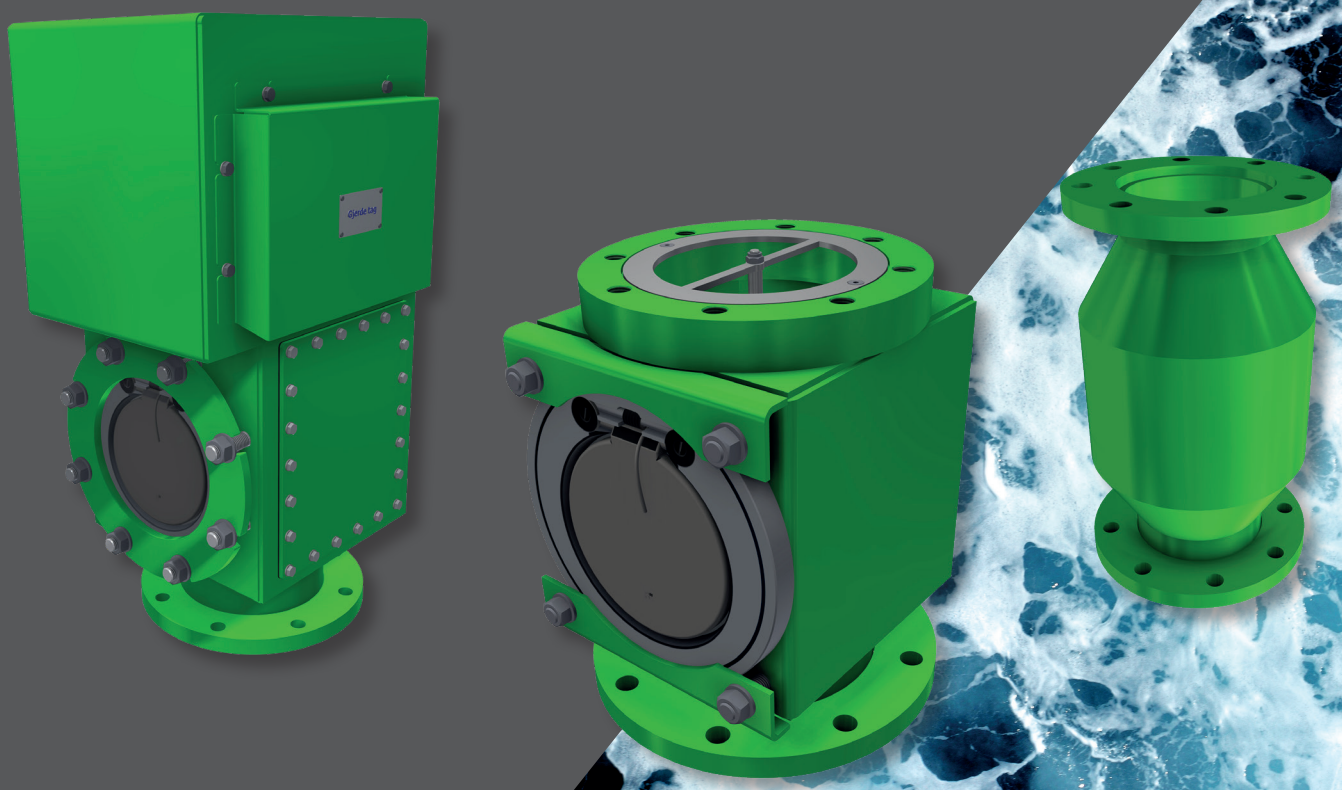
John Gjerde has extensive knowledge of design and pipe configuration. Thanks to in-house production and own test facilities, the company can offer custom designs with documented performance, robust quality and short lead time.

Materials: Galvanized carbon steel, SS316, Duplex, Super Duplex, others on request.

# OPTIONS

Three more models:

- Mud 1
- Mud Chamber
- Water Trap

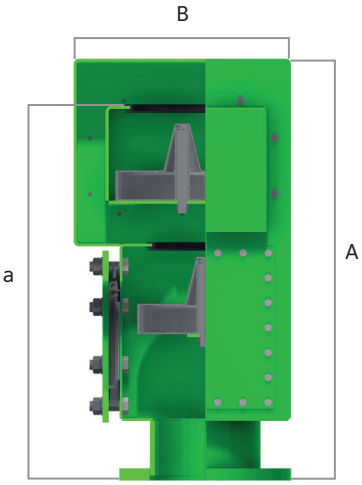


# MUD 1
## liquid mud valve

Integrated Mud Chamber for installation with an air vent head.
Commonly used for ventilating liquid mud tanks on offshore supply vessels.

If mud enters the Mud Chamber due to overpressure or overfilling, a one-way flap valve open to release pressure and mud. This is how the mud chamber prevents mud from entering the air vent head. Can be delivered with several types of air vent heads valves.
Mud 1 has documented flow characteristics.

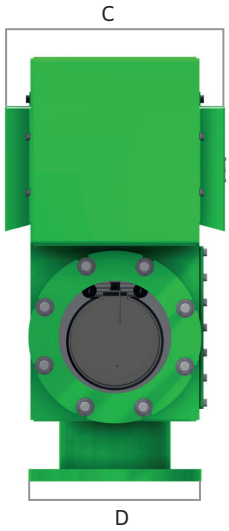
Options:
- Heating/ Winterization
- Connection alternatives: Custom specified in and oulet solutions
- Materials: Carbon steel, SS316, Duplex, Super Duplex, others on request
- Surface treatment: painting or galvanization




## Weight and size

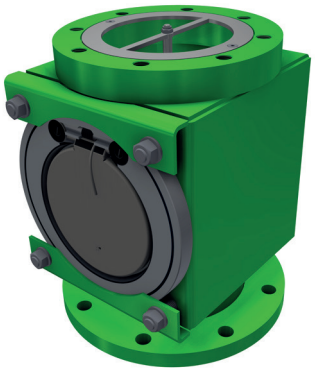
| Mud MUD 1 | DN – Inch | | | |
|---|---|---|---|---|
| | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" |
| **A (mm)** | 820 | 840 | 860 | 890 |
| **B (mm)** | 305 | 340 | 432 | 482 |
| **C (mm)** | 335 | 345 | 435 | 585 |
| **a (mm)** | 760 | 760 | 760 | 760 |
| **D** | Flange connection acc. to any standard. | | | |
| **Weight (kg)** | 41 | 66 | 95 | 125 |

For bigger sizes, please contact us.



# MUD CHAMBER

## liquid mud chamber

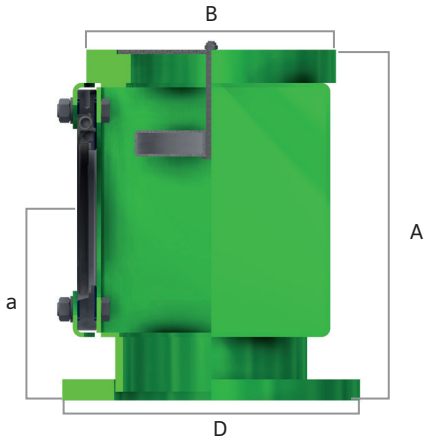


Separate Mud Chamber for installation with an air vent head.
Commonly used for ventilating liquid mud tanks on offshore supply vessels.

If mud enters the Mud Chamber due to overpressure or overfilling, a one-way flap valve open to release pressure and mud. This is how the mud chamber prevents mud from entering the air vent head. Can be delivered with several types of air vent heads valves.

Options:

- Developed for retrofit and combination with HIDE and AERO tank vents.




### Weight and size

| Mud chamber | DN 125/150 | DN 150/200 | DN 200/250 |
|---|---|---|---|
| **A (mm)** | 335 | 400 | 510 |
| **B (mm)** | 318 | 346 | 430 |
| **a (mm)** | 195 | 217 | 280 |
| **D** | Flange connection acc. to any standard. | | |
| **Weight (kg)** | 32 | 37 | 65 |

Example of venting configurations with AERO and HIDE valves on Mud Chamber.

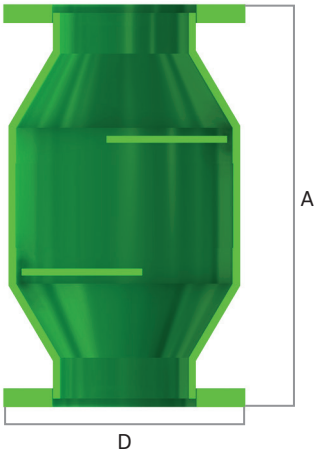
# WATER TRAP

## liquid water trap

The John Gjerde water trap has been designed to prevent water leakage from stability tanks, preventing thus any stability loss of the ship.
In severe weather conditions, roll and pitch motions of the ship imply high level of filling in the stability tanks. The John Gjerde water trap will in such conditions prevent accidental discharge of water through the air pipe heads.

Water traps are designed to be placed under a -valve. The same configuration can be used for ballast water tanks or any tank where similar discharge situations can occur.

Another positive effect of the John Gjerde water trap is that it eliminates *suction blocking* at extremely high inlet air speeds (i.e. vacuuming of the float) when combined with our AERO and HIDE valves.




### Weight and size

| Water trap Steel | DN – Inch | | | | | |
|---|---|---|---|---|---|---|
| | 100 - 4" | 125 - 5" | 150 - 6" | 200 - 8" | 250 - 10" | 300 - 12" |
| **A (mm)** | 424 | 424 | 476 | 576 | 900 | 1300 |
| **D** | Flange connection acc. to any standard. | | | | | |
| **Weight (kg)** | 13 | 16 | 19 | 27 | 75 | 100 |

Example of applications with AERO and HIDE valves on Water Trap.

# INERT ADAPTER

## for tanks that are inerted, to keep the inert gas contained

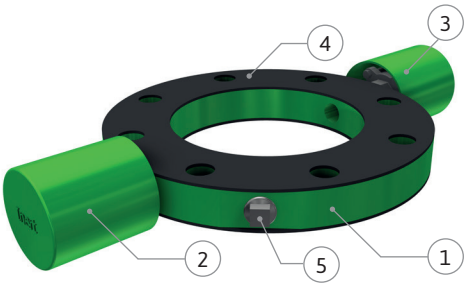
The challenge with inerting cofferdams and cargo tanks is to ensure proper tank ventilation in both inert and normal mode. With our new Inert Adapter this problem is solved.

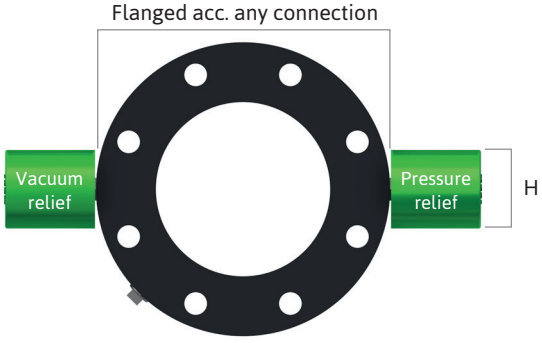
The adapter can be used with any automatic closing device,

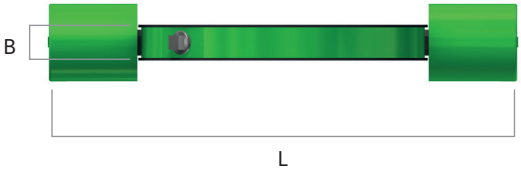
Options:

- Inerted tank: after closing the main ventilation head, pressure and vacuum relief is secured by the Inert Adapter.
- Normal mode: the main ventilation head is open and the valve functions normally

The opening settings for the pressure and vacuum relief valves is 200 mm water column (0.2 bar).




## Performance, weight and size

| Dim | L | H | B | Weight/kg |
|---|---|---|---|---|
| 40 | 326 | 76 | 35 | 5.5 |
| 50 | 341 | 76 | 35 | 5.9 |
| 65 | 361 | 76 | 35 | 6.9 |
| 80 | 376 | 76 | 35 | 7.3 |
| 100 | 396 | 76 | 35 | 7.9 |
| 125 | 426 | 76 | 35 | 9.4 |
| 150 | 461 | 76 | 35 | 10.9 |
| 200 | 516 | 76 | 35 | 13.7 |
| 250 | 571 | 76 | 35 | 15.9 |
| 300 | 621 | 76 | 35 | 18.1 |

| Pos | Qua | Description | Material |
|---|---|---|---|
| 1 | 1 | Flange | Aisi SS316 |
| 2 | 1 | Vacuum relief valve | Aisi SS316 |
| 3 | 1 | Pressure relief valve | Aisi SS316 |
| 4 | 2 | Gasket | Rubber |
| 5 | 1 | Plug. (Option position for relief valve) | Aisi SS316 |

JOHN GJERDE™

GUARDING YOUR VALUES

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Version 1