

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Vent Head for Tank**with type designation(s)
Box Type (Disc/Half Ball/Ball)

Issued to

G.S. High-Techer Co., Ltd.
Miryang-si, Gyeongsangnam-do, Republic of Korea

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018
DNV GL class programme DNVGL-CP-0187 – Type approval – Air vent heads**Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.****Sizes: DN50 to DN500**Issued at **Høvik** on **2019-02-25**This Certificate is valid until **2024-02-24**.for **DNV GL**DNV GL local station: **Gimhae Station**Approval Engineer: **Adel Samiei**

Marianne Spæren Marveng
Head of Section

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.



Product description

Air vent heads of box type with three different floats: Disc, Half Ball and Ball

Material

Body/Chamber/Guide bar/Top Cover: SS400 hot dip galvanized

Disc: SS400 (zink flake) / Duplex Stainless Steel (ASTM A240-UNS S31803)

Rubber seat/Packing: NBR

Application/Limitation

The certificate covers design assessment of air vent heads. Installation and other additional requirements related to installation are out of scope of this certificate.

The air vent heads are not considered as devices to prevent the passage of flame into cargo tanks. They shall not be installed on oil tanks (flash point < 60°C).

Size	80% of blocking velocity at Discharge test (m/s)			Dynamic coefficient resulted from flow characteristic tests					
				$\Delta P(\text{mbar})$		ζ		$\Delta P(\text{mbar})$	
	Disc	Half Ball	Ball	Disc		Half Ball		Ball	
DN50	18.6	21.2	13.3	250	1.28	289	5.10	238	4.88
DN65	18.7	18.6	11.2	254	2.47	227	6.73	252	6.33
DN80	22.2	18.5	12.4	258	2.32	287	7.03	257	8.32
DN100	19.4	18.0	15.4	245	2.43	219	5.13	253	5.65
DN125	20.5	18.7	21.3	224	3.82	265	6.21	287	6.25
DN150	24.2	21.2	20.5	220	4.35	201	4.68	250	5.87
DN200	25.6	23.8	22.4	250	6.23	224	5.66	242	5.63
DN250	24.5	21.3	21.4	175	9.00	246	7.56	223	7.03
DN300	16.1	26.6	19.0	88	9.53	298	6.56	222	7.18
DN350	18.7	22.1	22.5	52	10.17	268	7.20	276	8.42
DN400	-	26.3	18.2	Not covered		257	7.03	239	7.54
DN450	22.9	20.7	13.3	252	4.64	241	4.18	246	7.74
DN500	18.2	18.6	15.0	254	6.95	240	6.56	252	6.87

Type Approval documentation

Tests carried out

Flow Characteristics test, leakage test, discharge/reverse flow test, float impact test.

Marking of product

For traceability to this type approval the products are to be marked:

- Manufacturer's name or trade mark
- Type designation
- Size

Periodical assessment

For retention of the Type Approval, a DNV GL Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the approval are complied with. Reference is made to DNVGL-CP-0338.