

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Vent Head for Tank

with type designation(s)

CB/T3594-94 FS, CB/T3594-94 DS, CB/T3594-94 ES

Issued to

Taixing Haixing Marine Machinery Co.Ltd.
TAIXING JIANGSU, China

is found to comply with

Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"
Det Norske Veritas' Standards for Certification 2.9 No. 5-793.10-1

Application :

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

Type:

CB/T3594-94 FS
CB/T3594-94 DS
CB/T3594-94 ES

Sizes:

DN50, 65, 80, 100, 125, 150, 200, 250, 300 and 450
DN50, 65, 80, 100, 125, 150, 200, 250, 300, 350 and 450
DN50, 65, 80, 100, 125, 150, 200, 250, 300, 350 and 450

This Certificate is valid until **2019-06-30**.

Issued at **Høvik** on **2015-10-21**

for **DNV GL**

DNV GL local station: **Jiangyin**

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

- Three types of air vent heads: CB/T3594-94 DS, ES, FS.
 - Types DS & ES: metallic disc float made of SS31803/SAF2205
 - Type FS: non-metallic ball float made of PE
- Material:
 - Body: QT400-15
 - Cover: Q235 (DS & ES) / Q235-A (FS)
 - Side Cover: Q235 (DS & ES) / Q235-A (FS)
 - Seal: NBR (DS & ES) / Neoprene (FS)
 - Protection Screen: SS31803/SAF2205
 - Bolt: SS31803/SAF2205
 - Gasket: NBR

Application/Limitation

- The air vent heads are approved for use on pipes from tanks according to DNV ship Rules Pt.4, Ch.6, Sec.4K and the International Convention on Load Line 1966, Ch.II, Reg. 20.
- 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 of tankers and combination carriers carrying crude oil and petroleum products having a flashpoint of 60°C (closed cup) or less, and a Reid vapor pressure below atmospheric pressure and other products having a similar fire hazard and shall not be installed on oil tanks (flash point>60°C).
- the inner / outer surface of the body and the bolt shall be coated with Jotun Jotacote Universal
- Product certificate is not required for air vent heads installed in ship class vessels.
- Average blocking velocity resulted from Discharge/Reverse test are as follows:

Size	Type DS/ES			Type FS		
	Flow rate at blocking condition (m³/h)	Average blocking velocity (m/s)	80% of Blocking velocity (m/s)	Flow rate at blocking condition (m³/h)	Average blocking velocity (m/s)	80% of Blocking velocity (m/s)
DN50	63	11,23	8,98	201	35,52	28,4
DN65	126	13,16	10,53	298	31,22	24,98
DN80	31,2	21,57	17,25	440	30,40	24,32
DN100	324	14,32	11,46	582	25,74	20,59
DN125	630	17,82	14,26	955	27,03	21,63
DN150	2369	46,57	37,25	2199	43,22	34,58
DN200	3339	36,92	29,54	3449	38,14	30,51
DN250	4891	34,62	27,69	5192	36,75	29,40
DN300	2918	14,34	11,47	5502	27,04	21,63
DN350	4945	17,86	14,29	-	-	-
DN450	6010	13,13	10,50	6358	13,98	11,11

Type Approval documentation

Tests carried out

Flow characteristics test, Discharge reverse test, Tightness test, impact test on metallic float (DS/ES types), impact test and compression loading test (on FS test)

Marking of product

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

- Manufacturer's name or trade mark

Job Id: **262.1-012111-2**
Certificate No: **TAP0000047**

- Type designation
- Size

Periodical assessment

For retention of the Type Approval, a DNV GL surveyor shall perform periodical assessment every second year and before the expiry date of this certificate. The scope of the periodical assessment survey, is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

The main elements of the certificate retention survey are:

- Review of Type Approval documentation
- Review of possible changes in design, materials and performance
- Ensure traceability between manufacturer's product type marking and Type Approval Certificate.