

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Vent Head for Tank**with type designation(s)
BAC; FKM

Issued to

Shanghai Kangni Marine Electric Equipment Co., Ltd.
SHANGHAI SHANGHAI, China

is found to comply with

DNV GL class programme DNVGL-CP-0187 – Type approval – Air vent heads
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems**Application :****Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.****Sizes: BAC: DN50 up to DN400 mm; FKM: DN50 up to DN450 mm**Issued at **Hamburg** on **2017-03-22**This Certificate is valid until **2022-01-11**.for **DNV GL**DNV GL local station: **Shanghai CMC**Approval Engineer: **Peter Gierhan**

Olaf Drews
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

Design:

BAC: Welded air pipe head with duplex stainless steel float, ball type.

Opening protected by a duplex stainless steel screen

FKM: Cast air pipe head with duplex stainless steel float. Opening protected by a duplex stainless steel screen

Materials:

Part	Material	
	BAC	FKM
Body and cover	Steel Q235-B	Cast iron or nodular cast iron, HT200 or QT400-15
Float	Duplex stainless steel*	Duplex stainless steel*
Screen	Duplex stainless steel*	Duplex stainless steel*

* Duplex 2205 (EN 1.4462), ASTM A240 (EN 1.4435)

Application/Limitation

Velocity test Data for each types are as follows:

Item No.	80% of flow rate at blocking point(m ³ /h)	80% of air velocity at blocking point(m/s)	Flow resistance coefficient (*)
BAC-DN50	205.32	29.01	5.56
BAC-DN65	265.17	22.21	8.46
BAC-DN80	238.01	13.16	10.19
BAC-DN100	562.18	19.90	9.17
BAC-DN125	681.18	15.42	12.70
BAC-DN150	1284.76	20.21	6.19
BAC-DN200	1884.50	16.67	5.77
BAC-DN250	3691.25	20.90	9.76
BAC-DN300	4576.51	17.99	5.55
BAC-DN350	5362.18	15.49	4.17
BAC-DN400	6337.91	14.02	3.64

Item No.	80% of flow rate at blocking point(m ³ /h)	80% of air velocity at blocking point(m/s)	Flow resistance coefficient (*)
FKM-DN50	134.90	19.10	3.25
FKM-DN65	128.66	10.78	7.87
FKM-DN80	167.77	9.27	7.94
FKM-DN100	299.52	10.60	8.29
FKM-DN125	455.83	10.32	10.11
FKM-DN150	596.64	9.38	7.59
FKM-DN200	1378.30	12.19	7.87
FKM-DN250	2860.00	16.19	6.61
FKM-DN300	5140.58	20.21	4.71
FKM-DN350	5392.92	15.58	5.43
FKM-DN400	5588.78	12.36	5.61
FKM-DN450	6453.60	11.28	4.90

Note: (*) Flow resistance coefficients are calculated at a pressure drop equal to 250mbar.

Job Id: **262.1-001824-6**
Certificate No: **TAP00000UK**

Type Approval documentation

Manufacturer's drawings:

BAC-2013-ML, BAC-2013-00, BAC-2013-01, BAC-2013-02, BAC-2013-03 and BAC-2013-04, all drawings dated 2013-05-14

FKM-2013-ML, FKM-2013-00, FKM-2013-01, FKM-2013-02, FKM-2013-03, FKM-2013-04, FKM-2013-05 and FKM-2013-06, all drawings dated 2013-05-14

Manufacturer's compression load test drawing of float and float ball

Manufacturer's test report WT-064 dated 2006-07-10, witnessed by DNV

Manufacturer's compression load test dated 2007-01-02, witnessed by DNV

Manufacturer's test report WT-0152 dated 2013-07-3, witnessed by DNV

Retention survey report from DNV Shanghai, dated 2013-01-28

Tests carried out

Tightness test, flow resistance test, impact test, compression load test, discharge/reverse flow 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 every 30 months 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.

END OF CERTIFICATE