DNV·GL

Certificate No:
TAP000001G

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Vent Head for Tank

with type designation(s)
WIN2000 HIAS, WIN2000 type 1, WIN2000 type 1-B, WIKO5000 type 1-A, WIKO5000 type 1, WIKO5000 Gooseneck type 1-B

Issued to
Winteb B.V.
WINSCHOTEN, Netherlands

is found to comply with
Det Norske Veritas' Standards for Certification 2.9 No. 5-793.10-1
Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment

Application :

The air vent heads are approved for use on pipes from tanks according to DNV Rules Pt.4, Ch.6, Sec.4K and the International Covention on Load Line 1966, Ch.II, Reg. 20.

Type:	Sizes:
WIN2000 HIAS	**DN 50,65,80,100,125,150,200,250,300,350,400,450,500**
WIN2000 type 1	**DN 50,65,80,100,125,150,175,200,250**
WIN2000 type 1-B	**DN 50,65,80,100,125**
WIKO5000 type 1-A	**DN 50,65,80,100,125,150,200,250,300,350,400**
WIKO5000 type 1	**DN 300,350,400**
WIKO5000 Gooseneck type 1-B	**DN 50,65,80,100,125,150,175,200,250**

This Certificate is valid until **2018-06-30**.
Issued at **Høvik** on **2015-10-12**

DNV GL local station: **Rotterdam**

Approval Engineer: **Adel Samiei**

for **DNV GL**

Digitally Signed By: Marveng, Marianne Spæren
Location: DNV GL Høvik, Norway
Signing Date: 14.10.2015

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.

Job Id: **262.1-010349-5**
Certificate No: **TAP000001G**

Product description

- 7 types of Air vent heads with PE-float ball.
- Material:
  - Housing: AlMg3Si/AlMg5Si/AlMg7Si according to DIN1725
  - Float: PE
  - Sealing: NBR
  - Screen: duplex stainless steel DMV 22.5 & DMV 25.7
- Vent heads may be provided with anti-icing protection (heating element) based on an external ambient temperature of t_w named as winterization temperature.

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 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. Therefore they shall not be installed on oil tanks (flash point<60°C).

- Product certificate is not required for air vent heads installed in ship class vessels.

- Air vent heads certified according to DNV-OS-D101 shall be delivered with product certificate.

- Heating elements functionality is not a part of this approval.

- 80% of blocking velocity resulted from Discharge/Reverse test are as follows:

Size	WIN2000 HIAS with Screen	WIN2000 HIAS without Screen	WIN2000 Type 1 with Screen	WIN2000 Type 1-B with Screen	WIKO5000 type 1 with Screen	WIKO5000 type 1-A with Screen	WIKO5000 Gooseneck Type 1-B with Screen
DN50	15,12	15,76	8,24	7,52	-	13,52	13,20
DN65	14,64	14,96	7,68	7,84	-	8,48	13,52
DN80	29,04	32,72	8,16	8,32	-	5,68	17,12
DN100	50,72	50,72	6,32	5,60	-	8,40	18,00
DN125	43,84	48,00	7,76	6,80	-	7,20	17,76
DN150	34,96	34,40	8,40	-	-	11,04	18,00
DN175	-	-	6,64	-	-	-	-
DN200	20,08	22,40	8,00	-	-	10,80	10,88
DN250	12,48	12,56	7,68	-	-	9,20	18,00
DN300	32,96	32,32	-	-	9,68	11,84	-
DN350	28,80	28,72	-	-	7,28	7,76	-
DN400	22,00	21,68	-	-	7,20	8,00	-
DN450	27,04	26,72	-	-	-	-	-
DN500	24,48	24,40	-	-	-	-	-

Type Approval documentation

- Drawings:
  - General arrangement drawing for WIN2000 type 1 & type 1-B WIN2000-01 rev.04 dated 2005-06-28
  - General arrangement drawing for WIKO5000 type 1-A (sizes DN50, 65, 80, 100, 125, 150) 50-150-01-A rev.01 dated 2004-08-05
  - General arrangement drawing for WIKO5000 type 1-A (sizes DN200, 250, 300, 350, 400) & WIKO5000 type-1 (sizes DN300, 350, 400) 200-400-01-A rev.01 dated 2005-08-10

- General arrangement drawing for W5GN rev.D dated 2011-01-10 for WIKO5000 Gooseneck type 1 & type 1-B
- General arrangement drawing for WIN2000 HIAS WIN2000-01 rev.T

- Test reports:
  - Test report WINTEB 2005/1 dated 2005-05-31 done by Hochschule BREMEN UNIVERSITY of APLIED Sciences (for WIN2000 type 1, WIN2000 type 1-B, WIKO5000 type 1-A & WIKO5000 type 1):
    - Annex 1 and annex 3: flow characteristics test data
    - Annex 2: Tightness test reports
  - Discharge/Reverse test report for WIN2000 HIAS done by TECHNISCHE UNIVERSITAT DRESDEN dated April 2014
  - Tightness/leakage test reports for WIN2000 HIAS:
  - For DN65/80/100/125/150/200/250: report no. WINTEB 2014/IR1 dated 2014-06-18
  - For sizes 300/350/400/450/500: report no WINTEB 2014/IR2 dated 2014-11-06
  - Flow characteristic test report for WIN2000 HIAS:
    For sizes 50/65/80/100/125/150/200/250/300/350: report no. WINTEB 2014/3 dated 2015-04-13
    For sizes 350/400/450/500: Test reports done by Nijhuis Pompen BV dated 2014-05-12
  - Impact test and compression loading test (on PE float ball) report no. 22 0440 5 96-01 dated 1996-04-26
  - WIN2000 HIAS Flow areas (document no. WIN2000-FA rev.0 dated 2015-06-08)
  - Report no. WINTEB 2009/1 dated 2009-12-18 done by Hochschule BREMEN UNIVERSITY of APLIED Sciences containing tightness and flow characteristic test reports for WIKO5000 Gooseneck type 1 & 1-A
  - Discharge/Reverse test report for WIN2000 (type 1 & type 1-B), WIKO5000 (type 1 & type 1-A) & WIKO5000 Gooseneck types done by TECHNISCHE UNIVERSITAT DRESDEN dated March 2011
  - Flow characteristics test data for tests dated 2009-11-30 & 2009-12-01 done by Norit Nijhuis for WIKO5000 type-1
  - Tightness test report on WIN2000 HIAS – DN300 done by Hochschule BREMEN UNIVERSITY of APLIED Sciences dated 2015-09-14.

Tests carried out

Flow Characteristics test, leakage test, discharge/reverse flow test, compression test of float, 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 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.

END OF CERTIFICATE