

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

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.

Type:

WIN2000 HIAS
WIN2000 type 1
WIN2000 type 1-B
WIKO5000 type 1-A
WIKO5000 type 1
WIKO5000 Gooseneck type 1-B

Sizes:

DN 50,65,80,100,125,150,200,250,300,350,400,450,500
DN 50,65,80,100,125,150,175,200,250
DN 50,65,80,100,125
DN 50,65,80,100,125,150,200,250,300,350,400
DN 300,350,400
DN 50,65,80,100,125,150,175,200,250

Issued at **Høvik** on **2018-07-26**

for **DNV GL**

This Certificate is valid until **2023-06-30**.

DNV GL local station: **Rotterdam**

Approval Engineer: **Adel Samiei**

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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: **262.1-010349-7**
 Certificate No: **TAP000001G**
 Revision No: **1**

Product description

Air vent heads with PE-float balls (totally 7 types)

Material:

- Housing: AlMg3Si/AlMg5Si/AlMg7Si according to EN 1706
- 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).

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).

Heating elements functionality is not a part of this approval.

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
80% of blocking velocity resulted from Discharge/Reverse test:							
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	-	-	-	-	-
Dynamic coefficient resulted from flow characteristic tests ($\Delta P=250$ mbar)							
DN50	8.2	7.0	7.1	7.9	-	3.0	3.5
DN65	12.0	9.5	6.5	7.0	-	7.2	3.8
DN80	10.2	8.6	5.7	6.4	-	12.9	1.6
DN100	9.5	8.2	6.8	8.2	-	7.6	2.0
DN125	10.6	8.5	7.1	7.9	-	16.5	2.2
DN150	8.1	6.9	5.8	-	-	8.8	2.4
DN175	-	-	8.8	-	-	-	-
DN200	9.7	7.1	8.2	-	-	9.6	1.1
DN250	9.8	8.8	8.9	-	-	22.1	1.0
DN300	7.8	6.2	-	-	9.1	12.4	-
DN350	7.0	5.8	-	-	17.9	23.4	-
DN400	7.4	6.2	-	-	29.1	38.7	-
DN450	9.3	7.5	-	-	-	-	-
DN500	6.9	5.6	-	-	-	-	-

Product certificate is not required for both ship and offshore installations.

Job Id: **262.1-010349-7**
Certificate No: **TAP000001G**
Revision No: **1**

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 for WIKO5000 type-1A WIKO5000-1A dated 2015-01-19
- 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
- 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.
- Impact and compression test report on PE floats dated 2018-04-12 witnessed by DNV GL surveyor

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 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.