

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Check Valve**

with type designation(s)

Liquid mud valve - LMV

Issued to

Winteb B.V.

Winschoten, Netherlands

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems

Application :

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

Sizes: DN125, 150, 200, 250, 300

This Certificate is valid until **2020-12-31**.

Issued at **Høvik** on **2017-11-01**

DNV GL local station: **Rotterdam**

Approval Engineer: **Adel Samiei**

for **DNV GL**

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

Float check valve to be used in-line with approved winteb air vent head type WIN2000 on liquid mud tanks. The valve consist of a housing with a disc float and a bypass pipe to discharge any mud in the pipeline. The opening pressure of the bypass is adjustable by magnets. Flanged connections PN10 (according to EN1092) or #150 (ANSI)

Materials:

Housing	Standard	Float	Gasket
AlMg3Si / AlMg5Si/ AlMg7Si	EN 1706	Polyethylen	Neoprene rubber
GG-25	EN 1561		
GGG-40	EN 1563		
G-CuAl10Ni	EN 573		
CuNi10Fe/ G-CuSn10Zn/ G-CuZn33Pb	EN 1982		

Application/Limitation

The certificate covers design assessment of LMV valves. Installation and other additional requirements related to installation are out of scope of this certificate.

Flow characterisc curves for each size have been obtained from the test performed on LMV vlaves in-line with Winteb 2000 HIAS air vent heads and by clean water.

Blocking velocity obtained from discharge/reverse test:

Nominal size	80% of blocking velocity		
	Without Mesh	Mesh18	Mesh30
DN125	16,4	16,6	17,4
DN150	15,7	15,4	16,5
DN200	15,8	15,8	15,8
DN250	14,3	14,5	15,3
DN300	20,0	17,8	17,4

Product is to be delivered with manufacturer's certificate.

Type Approval documentation

Drawings: LMV125-01 Rev.D dated 2016-01-04, LMV150-01 Rev.H dated 2016-01-04, LMV200-01 Rev.E dated 2016-01-05, LMV250-01 Rev.E dated 2016-01-05, LMV300-01 Rev.A dated 2016-01-08

Test reports:

- Flow characteristic and tightness test report no. WINTEB 2012-2 dated 2012-07-25 (Done by laboratory for hydraulic machinery of the Hochschule Bremen, University of applied science) – Sizes DN125-150-200-250
- Test report_Winteb_LMV300 Rev.0 performed on the test shop of Fairbanks Nijhuis in Winterswijk on 2015-09-21 size DN300
- Flow test report ILR-EAD VB 15-542 dated November 2016 performed on LMV with WIN2000 air vent head.

Tests carried out

Flow characteristic, tightness test, discharge/reverse 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.