

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Butterfly Valves**

with type designation(s)
ExVHH, ExYLH, ExYLL, ExVLL

Issued to

K.K. O K M (Okumura Engineering Corp.)
Gamo-Gun, Shiga Pref., Japan

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
Offshore Standard DNV-OS-D101, Marine and Machinery Systems and Equipment
DNV GL class programme DNVGL-CP-0186 – Type approval – Valves

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
ExVHH	0-550 °C	3.5 bar	80A-1600A (see certificate)
ExYLH	0-550 °C	9 kPa	250A-750A (see certificate)
ExYLL	0-450 °C	9 kPa	250A-750A (see certificate)
ExVLL	0-450 °C	9 kPa	250A-750A (see certificate)

Issued at **Høvik** on **2019-01-28**

This Certificate is valid until **2024-01-27**.

for **DNV GL**

DNV GL local station: **Kobe**

Approval Engineer: **Mehdi Rowshan**

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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.



Product description

Self cleaning function wafer type butterfly valves with metal seats
Design Standard: JIS B8265

Materials:

Type: ExVHH, ExVLL, ExYLH and ExYLL

Part	Material acc. JIS
Body Stainless Steel	SCS13A or SCS14A
Disc Stainless Steel	SCS13A, SCS14A
Stem Stainless Steel	SUS 316 or SUS316L or SUS329J1
Seat Stainless Steel	SUS316

Application/Limitation

The approval is valid for exhaust gas piping for NOx Tier III emission reduction system onboard DNV GL classed ships and mobile offshore units.

The valve minimum body thicknesses are considered based on the strength calculations referred in document no: R&D 20180314-01 and R&D 20180314-02.

The valves are not approved to be "fire safe".

The valves are considered self-cleaning according to the requirements of DNVGL Rules for ships Pt.4 Ch.6 Sec.8 [3.3.11] (07-2018)

The maximum output torque from actuators used on butterfly valves must not exceed the limit at which the valve spindle or disc can be damaged if the disc is restrained in any position.

The approval does not include any operating gear for remote control of the valves.

Type Approval documentation

Document Number	Document Name	Rev	Status
R&D20180314-03	ExVHH drawing list	-	Approved
R&D20180314-04-A	ExYLH drawing list	-	Approved
R&D 2018314-05-A	ExYLL drawing list	-	Approved
R&D 2018314-06	ExVLL drawing list	-	Approved
R&D20180314-02	ExVLL_ExYLH_ExYLL calculation sheet	-	For Information
R&D20180314-01	ExVHH calculation sheet	-	For Information

20180608-1	Type Test record by (OKM) for type test record for butterfly valves with self-cleaning function signed by DNVGL on 28.06.2018	-	For Information
RD-20180223-01	Type approval test procedure for self-cleaning function	-	For Information
RD-180213-00	Exhaust Gas Valve "OKM ExV Series" Self-Cleaning Function dated 13.02.2018	-	For Information
16P-0077	Test Report - Performance Verification after durability test of SCR system butterfly valve model No. ExYLL 300A		For Information

Production Tests

All valve bodies shall be subjected by the manufacturer to a hydrotest at a pressure equal to 1.5 times the nominal pressure (The nominal pressure is the maximum allowable working pressure at room temperature).

All valves assembly shall be subjected to seat leakage test at 1.1 times maximum working pressure at closed position.

Production Testing and acceptance criteria shall be in accordance with EN12266-1, with the leakage rate.A.

Certification

Valve bodies shall be delivered with material certificates in accordance with DNV GL Ship Pt.4 Ch.6 Sec.2 Table 3. Materials with VL and W certificates shall be manufactured in a foundry approved by the society.

The valves are accepted to be delivered with manufacturer's product certificate.

Tests carried out

Type approval test was carried out on 2018-06-08 as shown in Doc.No: 20180608-1 "Type test record for butterfly valves with self cleaning function". Self cleaning function was verified on 2018-11-12 as shown in Doc. No 16P-0077 "Test Report - Performance Verification after durability test of SCR system butterfly valve model No. ExYLL 300A".

Marking of product

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

- Manufacturer's name
- Type designation
- Design Pressure

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.