Certificate No:
TAM000018R

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Gas Valves Unit

with type designation(s)
GVU50ED-10A, GVU65ED-10A, GVU80ED-10A, GVU100ED-10A, GVU50ED-16A, GVU65ED-16A, GVU80ED-16A, GVU100ED-16A

Issued to
Shanghai Marine Diesel Engine Research Institute
Shanghai, **China**

is found to comply with
DNV GL rules for classification – Ships

Application :

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

Type	Inlet pressure [bar]	Size [Ø mm]	Enclosure [enclosed/open]
GVU50ED-10A	10	DN50	Enclosed
GVU65ED-10A	10	DN65	Enclosed
GVU80ED-10A	10	DN80	Enclosed
GVU100ED-10A	10	DN100	Enclosed
GVU50ED-16A	16	DN50	Enclosed
GVU65ED-16A	16	DN65	Enclosed
GVU80ED-16A	16	DN80	Enclosed
GVU100ED-16A	16	DN100	Enclosed

Issued at **Høvik** on **2021-06-10**
This Certificate is valid until **2026-06-09**.
DNV local station: **Shanghai**

Approval Engineer: **Eivind Finne Riley**

for **DNV**

Dalibor Bukarica
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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

Product description
Gas pressure control unit.

Application/Limitation

Type	Connection [mm]		Inlet pressure [bar]
	Inlet (DN)	Outlet (DN)	
GVU50ED-10A	50	65	10
GVU65ED-10A	65	65	10
GVU80ED-10A	80	80	10
GVU100ED-10A	100	100	10
GVU50ED-16A	50	65	16
GVU65ED-16A	65	65	16
GVU80ED-16A	80	80	16
GVU100ED-16A	100	100	16

Requirements for fabrication and testing according to DNV Rules Pt.6 Ch.2 Sec.5 11.2, 11.3 and 11.4 shall be followed for each unit.

Type Approval documentation

Dwg/Doc No./Date	***Rev.***	***Title***
GDS-0013	V3.0	Detail materials in pipes assembly (GVU Type A)
G50-G100-10/16-AM	V4.0	GVU Type A Approved Master Drawing
G803-00	V4.0	GVU Type A Assembly
GDS-0014	V2.0	GVU Type A Calculation Sheet of Purging and Ventilation
G803-01-01-00	V4.0	GVU Type A Enclosure
GDS-0015	V3.0	GVU Hazardous Area Division
G50-G100-10/16-PID	V2.0	PID Diagram of GVU
Date: 2019-07-25	V1.0	GVU Series Type and Certification List
Date: 2019-12-19	V1.0	GVU Wall Thickness Calculation Sheet of Pipes
Date: 2020-02-25	V1.0	Installation Instruction
Date: 2020-02-20	V2.0	Operation Manual of the Gas Valves Unit (GVU)
G803-02-00	V4.0	Pipes Assembly(80)
Date: 2020.09.07	V2.0	Risk Analysis Report of the Gas Valves Unit (GVU)
GDS-0085	V1.0	Type Test Program of the Gas Valves Unit (GVU Type A)-Machine

Places of production

Tests carried out
Type Approval tests for complete unit carried out March 23rd 2021, document ID: GDS-0085

Marking of product
For traceability the following marking is to be carried out on each product:
- Manufacturers name or mark
- Type designation (Serial Number)
- Additional marking at manufacturer’s option.

Periodical assessment

DNV's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Program DNV-CP-0338, Section 4.

Other conditions

The Gas Valves Unit control and monitoring systems, including sensors and actuators are covered by a separate approval with certificate number TAA00002WY and later revisions.

Electric cables and installation of this is not covered by this approval and must be verified to comply with the requirement of DNV Rules for Ships Pt.4 Ch.8 - Electrical Installation.