

TYPE APPROVAL DESIGN CERTIFICATE

This is to certify:

That the Manual Remote Control of Valves

with type designation(s)
tramistec®

Issued to

Armaturen-Wolff Friedrich H. Wolff GmbH & Co. KG
Hamburg, Germany

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021
DNV class programme DNV-CP-0165 – Type approval – Cable and pipe penetrations

Application :

Product approved by this certificate is acceptable for installation on vessel classed by DNV.

Issued at **Hamburg** on **2023-11-14**

for **DNV**

This Certificate is valid until **2028-11-13** .

DNV local unit: **Hamburg – CMC North/East**

Approval Engineer: **Ana Cristina Do Carmo Insfran**

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Sven Klinger
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

The Flexible Reach Rod - tramistec® consist of the following main components:

- T0. Flexible Reach Rod
- T1. Operating Unit
- T2. Operating Device
- T3. Penetration
- T4. Gear
- T5. Adapter
- T6. Mount/Guide
- T7. Rigid Extension

Technical Data:

Reach rod core: 16 mm
 Protective hose: 29 mm
 End bushing: 30 mm
 End pieces: 18 mm
 Weight: ca. 2,5kg/m + ca. 1 kg (End bushings)

Maximum distance between two holding points:

Bending Radius	max. Torque	
	up to 25 Nm	25-65 Nm
400-600 mm	500 mm	400 mm
601-1000 mm	600 mm	400 mm
>1000 mm	800 mm	600 mm

Materials:

Flexible Rod	Materials
Shaft core	1.4310
Flexible steel jacket	Spring steel
Protection jacket	Textile rubber
Set screw	8.8
Bushing, screwed	1.4305
Bushing, pressed	1.4305
Hexagonal nut	1.4571
Washer	1.4305
Securing ring	Spring steel
Connection	1.4305
Lubrication nipple	1.4305

Application/Limitation

The Flexible Reach Rod - tramistec® is designed for remote operation of valves installed in places difficult to access or in dangerous environment.

Penetration of watertight bulkheads and decks and tanks boundaries

Test pressure 4 [bar].

Approve pressures:

Watertight bulkheads and decks: 2,7 [bar].

Tank boundaries: 1,6 [bar].

This Type Approval covers design(s) only i.e. the Type Approval is not valid for the final product, but may be used as basis for obtaining a product certificate.

This Type Approval Design Certificate is not valid for designs, components, equipment, systems, or products which are subject to classification by DNV.

Type Approval documentation

TAP00002GT

- Type Approval Application dated on 2022-0110
- Type Approval Assessment Report dated on 2023-09-23
- Prüfbericht -Type Approval Design – für tramistec® Flexible Reach Rod – (DNV Reference: DKUE /A1156584), 2023-11-02
- Technical Information tramistec® – Flexible Reach Rods”, 09.23
- Manual and Instruction of Manufacturer – with drawings dated on 2023-09
- Table of calculation - Design of Flexible reach Rods – Torques, 2023-09-07.
- ISO 9001:2015 – Certificate number: GM2931 - QAS International valid until 2024-06-19
- Drawings number: 025021-1000 a
(Wellenseele, Technische Dated zur Biegsamen Welle 025021 - Länge) Wellenseele table.
- Test Certificate – Certificate number: 2023-60293.01.01, 2023-02-22
- Fertigungskarte – Artikelnr.: 80T254220000, 2023-09-22
- Prüfanweisung Fertigungs freigabe

Tests carried out


Visual inspection, torque test, water tightness test of bulkhead penetration type T3.2 Penetration.

Installation

For selection and installation, the “Technical Information tramistec® – Flexible Reach Rods” are to be observed.

Marking of product

For traceability to this type approval design the products are to be marked in particular with:

- Manufacturer's name or trademark 

Periodical assessment

Not applicable.

END OF CERTIFICATE