Certificate No:
**TAP00002GT**

# 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**
This Certificate is valid until **2028-11-13** .
DNV local unit: **Hamburg – CMC North/East**

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

for **DNV**

**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
- T.2 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 |
| Lubrification 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

### 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**