TYPE APPROVAL CERTIFICATE

Certificate no.:
TAP00001WZ
Revision No:
1

This is to certify:

that the Needle Valves

with type designation(s)
Shut-off valve type series: D-K; D-S; D-W; D-M; D-F; D-H; E-K; E-S; E-W; MAV

issued to
Armaturen- und Metallwerke Zöblitz GmbH
Marienberg, **Germany**

is found to comply with
DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV class programme DNV-CP-0186 – Type approval – Valves

Application:

Products approved by this certificate are accepted for installation on all vessels classed by DNV.

Temperature range:	**see certificate**
Max. working press.:	**up to PN 400**
Sizes:	**DN 4 to DN 15**

Issued at **Hamburg** on **2024-10-18**

This Certificate is valid until **2029-10-17**.
DNV local unit: **Essen**

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

for **DNV**

Digitally Signed By:
Sven Klinger
Location: DNV Hamburg, Germany

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 USD 300 000.

Product description

Shut-off valves with or without test connection and with or without separate shut-off test connection according to recognized standards and according to WS 32024/96.

Nominal sizes: DN 4 to DN 15

Materials:

Materials Valve body[1]	Valve type	Temperature Range (°C)	Nominal Pressure (bar)
1.0460	D-K; D-H; E-K; MAV	-10 to 480	up to PN 400
1.4571; 1.4307/01	D-S; D-F; E-S; MAV	-10 to 550	up to PN 400
1.4539	D-S; E-S; MAV	up to 400	up to PN 400
1.4462	D-S; E-S; MAV	-10 to 280	up to PN 400
2.4360	D-S; E-S; MAV	-10 to 550	up to PN 400
1.5415;1.7335	D-W; E-W; MAV	-20 to 530	up to PN 400
2.0402	D-M; E-M; MAV	-10 to 250	up to PN 250
1.0038	D-K; E-K	-10 to 480	up to PN 400

Note[1]: or of equivalent material quality

Gaskets: Graphite, PTFE, Toroidal Ring

Pressure reduction factors at elevated temperatures

Temperature (°C)	C-Steel Unalloyed	Low Alloyed Steels	Stainless Steels
20	1.00	1.00	1.00
50	1.00	1.00	0.95
100	1.00	1.00	0.85
150	0.89	0.93	0.77
200	0.81	0.87	0.71
250	0.72	0.81	0.67
300	0.65	0.75	0.63
350	0.59	0.69	0.60
400	0.54	0.63	0.58
450	0.50	0.57	0.57
500	N/A	0.52	0.56
550	N/A	N/A	0.55
600	N/A	N/A	0.50

Application

The Shut-off valves are approved for installation of pressure gauges in ship piping and machinery systems.
Operating media[2]: Nonflammable gases, sea water, water, air, oil.

Note[2]:
Fuel oil, lubrication oil, hydraulic oil and thermal oil are in this context regarded as “Flammable liquids”.
See DNV Rules, Pt. 4 Ch. 1, Section 3 – Design principles

Limitation

Shut-off valves may not be used for cryogenic fluids with an operating temperature <-55°C, flammable gases and flowing media specified as dangerous and toxic fluids.

Tests carried out /Production Testing

The shut-off valves have been tested in accordance with the following standards:

Test standard: EN 12266-1 / DNV Pt.4 Ch.6 DNV CP-0186 Title	Test reference	Purpose
Shell strength	P10 and P11	To confirm the pressure containing capability of the shell against internal pressure Test pressure = 1,5 times the design pressure
Seat tightness	P12	To confirm the capability of the seat(s) to comply with the specified leakage rate. - at the time of manufacture - In the direction(s) for which the valve is designed Test pressure = 1,1 times the design pressure or 6±1 bar. Minimum test duration according to EN 12266-1 The lower value applies in each case.

Marking of product

For traceability to this type approval the products are to be marked with:
- Manufacturers name or trademark
- Valve type designation and body material grade
- Size
- Maximum design pressure and temperature
- Arrow to indicate direction of flow on one way flow valves

Type Approval documentation

TAP00001WZ Rev. 2
Type Approval Application dated on 2024-08-20
Type Approval Assessment Report dated on 2024-09-30
Letter Manufacturer Declaration dated on 2024-10-01
Qualitäts-Werkstandard WS 32-024/96 – R3-20, dated 2020-09-01
Qualitäts-Werkstandard WS 25-0009/96, rev. 4, dated 2020-09-01
ISO 9001- Auditbericht, dated 2023-09-17
DB-Mappe_AV_17_10_2019, dated 2019-09-05
Manufacture over … sheet valve types
Manufacture spec. no. VA K-024/5/02 rev. 9, dated on 2024-08-30

Periodical assessment

A condition for retention of the Type Approval Certificate in its validity period is that periodical assessments are successfully carried out.

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment after two years (+/- 90 days) and after 3.5 years (+/- 90 days) to verify that the conditions for the Type Approval are complied with. Refer to DNV-CP-0338, Sec.4.

END OF CERTIFICATE