Certificate no.:
TAP00002Y5

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Safety Valve and Pressure Reducing Valve

with type designation(s)
AWA41; AWA42; AWA47; AWA48, CB/T3656-94

issued to
Jingjiang Aowei Marine Valve Fty
JINGJIANG, Jiangsu, China

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:

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

Type:	K. factor:
AWA41; AWA42; AWA47; AWA48	0.75
CB/T3656-94	0.75

Issued at **Hamburg** on **2024-11-06**
This Certificate is valid until **2029-11-05**.
DNV local unit: **Jiangyin NB & CMC**

for **DNV**

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

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

Safety Valve type: AWA41, AWA42, AWA47, AWA48 for relief of fresh water, sea water, air, oil, ≤350°C steam and non - flammable gas and non - boiling liquids.

The design and manufacture of the valve: GB/T12243-2005

Valve test and inspection: GB/T12242-2005

The general requirements of safety valves: GB/T12241-2005

Steel valve general requirements: GB/T12224-2005 provisions

The connection size of the flange is specified in HG20592-1997

Structure length: GB/T12221-2005

Supply requirements: JB/T7928-1999

Technical Data:

Safety valve type	Nominal Diameter [mm]	Nominal pressure [MPa]	Temperature [°C]	Medium
AWA41	15 - 300	1.6; 2.5; 4.0; 6.4	≤300	Fresh water, see water, air, oil
AWA42	15 - 400	1.6; 2.5		
	20 - 250	4.0; 6.4		
AWA47	15- 300	1.6; 2.5; 4.0; 6.4	≤350	Fresh water, see water, air, ≤350°C steam
AWA48	15 - 400	1.6; 2.5; 4.0; 6.4		

Discharge coefficient for each type: 0.75

Materials:

Type: AWA41, AWA42, AWA47, AWA48

Valve part	Material[1]	Standard
Body	WCB/304/304L/316/316L	ASTM A216/ ASTM A351
Seat	2Cr13/304/304L/316/316L	GB/T1220 / ASTM A351
Disc		
Stem		
Bonnet	HT250/304/304L/316/316L	GB9439 / ASTM A351
Gasket	XB350	GB/T5574

Selection of materials

Note[1]
It shall be noted that the selection of the materials considers the applicable service condition with respect to type of media, flow velocity, media temperature and installation area of the piping system or pressure vessel.
In particular, the resistance to corrosion, erosion, oxidation, and other deterioration during projected service life are to be taken into account.

Reference is made to DNV Rules Pt.4, Ch.6 – Section 2 – Materials.

Pressure Reducing Valve type: CB/T3656-94 to be used for regulating the flow of media within in piping systems.[2]

Adjust the spring according to the working pressure required by the order, and perform the performance test: CB/T3396-92

The technical conditions of design, manufacture and test: GB/T600-1991 and CB/T3656-94

According to CB/T3396-1992, the performance test of pressure reducing valve
(Including static and dynamic sealing test, pressure regulation test, flow characteristic test, pressure characteristic test and life test)

Technical Data:

Nominal Diameter: 32 - 100 [mm]
Nominal Pressure: 3.0 – 1.0; 1.0-0.7; 1.0-0.5 [MPa]
Applicable medium: ship compressed air pipeline
Temperature : ≤70°C

Materials:

Valve part	Material[1]	Standard
Body	ZCuZn16Si4	GB/T1176 / ASTM216
	ZG230-450	GB/T12229
Bonnet	ZG230-450	GB/T12229
Spring	60Si2Mn	GB5218

Note[2]
Selection of process valve types for specific service conditions and operating media shall be carried out with suitable materials according to the relevant DNV Rules and according to the instructions of manufacturer.

Application

The safety valve type series: AWA41, AWA42, AWA47 and AWA48 and pressure reduce valve type CB/T3656-94 are type approved for application in piping systems and on pressure vessels as specified in the Rules Pt.4 Ch.6 - Piping Systems and Pt.4 Ch.7 - Pressure equipment.
Operating media: Steam, liquids, water, air, gases, and vapors.

Note [1]
The selection of the safety valves for the corresponding service and the right installation under consideration of the materials and media used shall be in compliance with the instructions of manufacturer.

Note [2]
The installation of safety valves in pressurized systems has to be observed under consideration of the specific operating conditions, type of flowing media and observation of the applicable DNV Rules as well as Pipe Classes and Pressure Vessel Classes.

Limitation

Safety valve and pressure reducing valves to be fabricated of copper and copper alloys shall not be used for media having temperature above the following limits:

See DNV Rules Pt. 4 Ch.6 – Piping systems, Section 2 – Materials:
- copper and aluminum brass: 200°C
- copper nickel: 300°C.

Safety valve and pressure reducing valve to be fabricated of copper and copper alloys are NOT permitted for installation within LNG fuel systems on board of liquefied gas tankers and ship's LNG fuel systems.

For valves to be installed on board of ships the following limitations apply:

Valves for installation in systems operating with flammable gases are to be classed within Pipe Class I, see DNV Rules Pt. 4 Ch. 6 - Piping systems.

For safety valves fabricated of grey cast iron and nodular cast iron the requirements provided in DNV Rules Pt. 4 Ch.6 – Piping systems, Section 2 – Materials are to be observed.

Type Approval documentation

Tests carried out

Production testing

Each relief valve is subject to production testing according to applicable DNV Rules as follows:
- Machinery piping systems: Pt.4, Ch 6, Section 9 [3] - Valves

Application in machinery piping systems

Valves intended to be installed in piping systems listed in DNV Rules Pt.4 Ch.6 – Section 1 shall be certified according to
DNV Rules Pt.4 Ch.6 – Piping systems, Section 1, Table 3 Compliance documents – piping components

Valve nominal size / Pressure rating	Type of certificate / Issued by
DN > 100 mm / PN > 16 bar	Product Certificate (PC) / DNV
DN ≤ 100 mm / PN ≤ 16 bar	Product Declaration (PD) / Manufacturer

Material certificates (valve bodies)
In accordance with DNV Rules Pt.4 Ch.6 – Piping systems, Section 2, Table 3 – Material certificates

Marking of product

For traceability to this type approval certificate each valve is to be provided with a name plate with at least the following data:

	Example
Manufacturer's name or trademark	Jingjiang Aowei Marine Valve Factory
Type designation	AWA41
Nominal pressure rating Inlet	1.6 MPa
Diameter d_0 [mm]	200 [mm]
Set pressure [bar]	1.6 MPa
Coefficient of discharge K_D / Media	0,75

Periodical assessment

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.

The certificate is only valid if required periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com

END OF CERTIFICATE