



Certificate no.:
TAP00002ZW

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Pipe Couplings, Bite and Compression Type

with type designation(s)
Double Ferrule Bite Type

issued to

Brennan Industries (Shanghai) Co., Ltd.
Shanghai, China

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV class programme DNV-CP-0185 – Type approval – Mechanical joints
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021

Application:

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

Temperature range: -40°C to +120°C
Max. working press.: 345 bar / 34.5 MPa
Sizes: 1.58 mm to 25.4 mm O.D.

Issued at **Hamburg** on **2025-09-01**

This Certificate is valid until **2030-08-31**.

for **DNV**

DNV local unit: **Shanghai**

Approval Engineer: **Christian Kaemmer**

.....

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

The Brennan mechanical joints are double ferrule pipe couplings, bite type, designed in accordance with ISO 8434-1.

The mechanical joints consist of the components: body, nut, front- and back ferrule (cutting-ring).

Component:	Type Designation:
Tube to tube fittings	
00NN	Double Ferrule Straight Fitting
90NN	Double Ferrule Right-angle fitting (Elbow)
NNN	Double Ferrule Tee fitting

Materials:

Front- and back-ferrule, nut:	Stainless Steel	AISI 316L
Connector body:	Stainless Steel	AISI 316L

Application/Limitation

The Brennan mechanical joints are type approved for application in pipe class I, II and III-piping systems.

Classified as Compression-coupling – “Bite type” - listed in DNV-Rules “Ships” Pt. 4, Ch. 6, Sec. 9 Table 8, 9 & 10.

The mechanical joints with metallic sealing (without rubber sealings) are classified as fire-resistant.

Type-tested for fire endurance test-condition “**wet**”. Type approved for classification of pipe systems “wet, dry/wet & dry

Classification and fire endurance according to DNV-Rules “Ships” Pt. 4, Ch. 6, Sec. 9 Table 9.

In general, mechanical joints are not approved for application in high pressure fuel injection systems of combustion engines.

Selection of materials

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. In particular, the resistance to corrosion, erosion, oxidation and other deterioration during projected service life are to be considered.

References: DNV Rules “Ships” Pt.4 Ch.6 – Section 2 – Materials.

Sea water application

The term sea water application includes sea water piping systems and installation of piping systems on open deck. Stainless steel materials 1.4571 (AISI 316Ti) are approved for sea water systems with operation mode “flowing seawater” but not for application in piping systems with operation mode “stagnant seawater”.

Service Pressure range

Series	Straight fitting	Right-angle fitting	Tee	Tube O.D. [mm]	Design Pressure [MPa]
Double Ferrule	00NN-01-01-316L	90NN-01-01-316L	NNN-01-01-01-316L	1.58	34.5
	00NN-02-02-316L	90NN-02-02-316L	NNN-02-02-02-316L	3.17	
	00NN-04-04-316L	90NN-04-04-316L	NNN-04-04-04-316L	6.35	
	00NN-06-06-316L	90NN-06-06-316L	NNN-06-06-06-316L	9.525	
	00NN-08-08-316L	90NN-08-08-316L	NNN-08-08-08-316L	12.7	
	00NN-10-10-316L	90NN-10-10-316L	NNN-10-10-10-316L	15.87	
	00NN-12-12-316L	90NN-12-12-316L	NNN-12-12-12-316L	19.05	
	00NN-16-16-316L	90NN-16-16-316L	NNN-16-16-16-316L	25.4	
	00NN-4mm-4mm-316L	90NN-4mm-4mm-316L	NNN-4mm-4mm-4mm-316L	4	
	00NN-6mm-6mm-316L	90NN-6mm-6mm-316L	NNN-6mm-6mm-6mm-316L	6	
	00NN-8mm-8mm-316L	90NN-8mm-8mm-316L	NNN-8mm-8mm-8mm-316L	8	
	00NN-10mm-10mm-316L	90NN-10mm-10mm-316L	NNN-10mm-10mm-10mm-316L	10	
	00NN-12mm-12mm-316L	90NN-12mm-12mm-316L	NNN-12mm-12mm-12mm-316L	12	
	00NN-14mm-14mm-316L	90NN-14mm-14mm-316L	NNN-14mm-14mm-14mm-316L	14	
	00NN-15mm-15mm-316L	90NN-15mm-15mm-316L	NNN-15mm-15mm-15mm-316L	15	
	00NN-16mm-16mm-316L	90NN-16mm-16mm-316L	NNN-16mm-16mm-16mm-316L	16	
	00NN-18mm-18mm-316L	90NN-18mm-18mm-316L	NNN-18mm-18mm-18mm-316L	18	
	00NN-20mm-20mm-316L	90NN-20mm-20mm-316L	NNN-20mm-20mm-20mm-316L	20	
	00NN-22mm-22mm-316L	90NN-22mm-22mm-316L	NNN-22mm-22mm-22mm-316L	22	
	00NN-25mm-25mm-316L	90NN-25mm-25mm-316L	NNN-25mm-25mm-25mm-316L	25	

Pressure reduction factor:

For service temperatures above 20°C the operating pressure is to be reduced with the pressure reduction factors:

20°C up to 50°C:	- 5 %
up to 100°C:	-15 %
up to 200°C:	-29 %

A tube grade suitable for cold bending and flaring is to be used.

The wall thickness of the tubes is to be selected acc. to DNV Rules "Ships" Part 4 Chapter 6 Section 9 Table 3.

Assembling and Installation

To ensure the performance of the mechanical joint connection the assembly instructions specified in Brennan - datasheets and installation instructions are to be observed.

Responsibility

Brennan Industries (Shanghai) Co., Ltd., China takes the responsibility that both design and production follow the Rules, Standards and/or Regulations listed on page 1 of this certificate.

Type Approval documentation

Tests carried out

Manufactured by:

Brennan Industries (Shanghai) Co., Ltd., China

Marking of product

For traceability to this Type Approval, the tube fittings are to be marked with:

- Manufacturer's name or trade-mark
- Design temperature
- Design pressure
- Test pressure
- Size
- Manufacturing date

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNV - CP-0338, Section 4.

In addition, burst pressure testing on selected sizes to be carried out in the course of renewal of the certificate. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>