

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Pipe Joining System

with type designation(s)

Pipe Couplings, SMLS Elbows, SMLS Tees, SMLS Reducer, SMLS Sleeves

issued to

Jinan Meide Casting Co., Ltd.
Linyi, Shandong Province, 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

Application:

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

Type:	Temperature range:	Max. working press.:	Sizes:
Pipe Couplings	-29° C to +82° C (NBR)	16 bar	1" to 16"
Pipe Couplings	-34° C to +110° C (EPDM)	16 bar	1" to 16"
SMLS Elbows	0° C to +110° C	16 bar	1" to 12"
SMLS Tees	0° C to +110° C	16 bar	1" to 12"
SMLS Reducer	0° C to +110° C	16 bar	1" to 12"
SMLS Sleeves	0° C to +110° C	16 bar	1" to 12"

Issued at **Hamburg** on **2024-11-06**

This Certificate is valid until **2029-11-05**.

for **DNV**

DNV local unit: **Qingdao NB & CMC**

Approval Engineer: **Jörg Hille**

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 pipe couplings and pipe fittings are part of a slip-on pipe joining system. They are connecting machine-grooved pipes and/or associated pipe fittings on their corresponding grooved connecting end.

Pipe couplings

The pipe couplings are designed for connecting machine-grooved pipes and/or grooved pipe fittings. They are categorised as machine-grooved slip-on connections and are equipped with an internal gasket for sealing.

Product	Model	Size
Pipe coupling	FIG#1G, FIG#1GK, FIG#1GKX, FIG#1GS, FIG#1GTS, FIG#1GX, FIG#1N, FIG#CH, FIG#INTS, FIG#1NX, FIG#3G, FIG#3GS, FIG#3J, FIG#3JS, FIG#3JX, FIG#3L, FIG#4G, FIG#4J, FIG#4JG, FIG#1N	1"-16"

Materials and components

Component	Material designation
Pipe coupling	Nodular cast iron, ASTM A536 and ASTM A395, Grades 65-45-12 and 65-45-15
Inner gasket	NBR, EPDM

Pipe fittings

Type SMLS is a grooved pipe fitting used in combination with the above-mentioned pipe couplings and/or grooved pipes.

Product	Model	Size
Pipe fitting	IG#90, FIG#90C, FIG#90S, FIG#110X, FIG#120, FIG#130, FIG#181, FIG#181RX, FIG#91R, IG#105, IG#110, FIG#RTX, FIG#130S, FIG#180, FIG#RX, FIG#CRX, FIG#CX, FIG#TX, FIG#TT, FIG#T1X, FIG#220N, FIG#230, FIG#230N, FIG#240, FIG#240N, FIG#240NX, FIG#240W, FIG#RCX, FIG#300, FIG#CP2	1"-12"

Materials and components

Component	Material designation
Pipe fitting	Nodular cast iron, ASTM A536 and ASTM A395, Grades 65-45-12 and 65-45-15

Application/Limitation

The pipe couplings of standard and flexible type are type approved for application for classes II and III of piping systems as specified in DNV-RU-SHIP Pt.4 Ch. 6 Sec. 9 Table 9 and 10, classed as slip-on joint of machine-grooved type. The pipe couplings with EPDM rubber gasket are of fire-resistant type, whereas the pipe couplings with other gasket materials are of non-fire resistant type.

The pipe couplings of standard and flexible type, are type approved for fire resistance under '**wet**' fire test condition.

The pipe fittings, are type approved for fire resistance under '**wet**' fire test condition.

Requirements depending on pipe classes and application

The material certificate requirements of pressurised parts depend on the pipe class of the intended application. The following shall be observed:

- DNV-RU-SHIP Pt.4 Ch.6 Sec.1 Table 2 (pipe classes);
- DNV-RU-SHIP Pt.4 Ch.6 Sec.2 Table 3 (material certificates acc. to pipe classes).

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 etc. 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.

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

Application of mechanical joints

Systems		Slip-on joints	Classification and fire endurance	
			Classification of pipe system	Fire endurance test condition ⁷⁾
Flammable fluids (flash point ≤ 60°C)				
1	Cargo oil lines ¹⁾	+	dry	30 min dry (*)
2	Crude oil washing lines ¹⁾	+	dry	
3	Vent lines ³⁾	+	dry	
Inert gas				
4	Water seal effluent lines	+	wet	30 min wet (*)
5	Scrubber effluent lines	+	wet	
6	Main lines ^{1),2)}	+	dry	30 min dry (*)
7	Distributions lines ¹⁾	+	dry	
Flammable fluids (flash point > 60°C)				
8	Cargo oil lines ¹⁾	+	dry	30 min dry (*)
9	Fuel oil lines ^{2),3)}	+	wet	30 min wet (*)
10	Lubricating oil lines ^{2),3)}	+	wet	
11	Hydraulic oil ^{2),3)}	+	wet	
12	Thermal oil ^{2),3)}	+	wet	
Seawater				
13	Bilge lines ⁴⁾	+	dry/wet	8 min dry + 22 min wet (*)
14	Water filled fire extinguishing systems, e.g. sprinkler systems ³⁾	+	wet	30 min wet (*)
15	Non water filled fire extinguishing systems, e.g. foam, drencher systems ³⁾	+	dry/wet	8 min dry + 22 min wet (*). For foam systems FSS Code Ch.6 to be observed
16	Fire main (not permanently filled) ³⁾	+	dry/wet	8 min dry + 22 min wet (*)
17	Ballast system ⁴⁾	+	wet	30 min wet (*)
18	Cooling water system ⁴⁾	+	wet	
19	Tank cleaning services	+	dry	Fire endurance test not required
20	Non-essential systems	+	dry, dry/wet, wet	
Fresh water				
21	Cooling water system ⁴⁾	+	wet	30 min wet (*)
22	Condensate return ⁴⁾	+	wet	
23	Non-essential system	+	dry, dry/wet, wet	Fire endurance test not required

Systems	Slip-on joints	Classification and fire endurance
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		Classification of pipe system		Fire endurance test condition ⁷⁾
Sanitary/drains/scuppers				
24	Deck drains (internal) ⁵⁾	+	dry	Fire endurance test not required
25	Sanitary drains	+	dry	
26	Scuppers and discharge (overboard)	-	dry	
Sounding/vent				
27	Water tanks/dry spaces	+	dry/wet	Fire endurance test not required
28	Oil tanks (f.p. > 60°C) ^{2),3)}	+	dry	
Miscellaneous				
29	Starting/control air ⁴⁾	-	dry	30 min dry (*)
30	Service air (non- essential)	+	dry	Fire endurance test not required
31	Brine	+	wet	
32	CO2 system (outside protected space)	-	dry	30 min dry (*)
33	CO2 system (inside protected space)	-	dry	Mechanical joints shall be constructed of materials with melting point above 925°C. See FSS Code Ch.5
34	Steam	+ ⁶⁾	wet	Fire endurance test not required

+ = application is allowed.

- = application is not allowed.

* = fire endurance test as specified in IACS UR P2.11.5.5.6.

Footnotes - Fire resistance capability

If mechanical joints include any components which may readily deteriorate in case of fire, they shall be of an approved fire resistant type under consideration of the following footnotes:

- 1) Fire endurance test shall be applied when mechanical joints are installed in pump rooms and open decks.
- 2) Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery spaces provided the joints are located in easily visible and accessible positions.
- 3) Approved fire resistant types except in cases where such mechanical joints are installed on exposed open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines.
- 4) Fire endurance test shall be applied when mechanical joints are installed in machinery spaces of category A.

Footnotes - General:

- 5) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.
- 6) May be used for pipes on deck with a design pressure of 10 bar or less.
- 7) If a connection has passed the '30 min dry' test, it is considered suitable also for applications for which the '8 min

Installation

Pipe couplings are in general not approved for:

- Pipelines arranged in cargo holds, tanks and other spaces which are not easily accessible. Application of these joints inside tanks may be permitted only for the same media that is in the tanks.
- Piping sections directly connected to sea openings or tanks containing flammable liquids which in the event of damage could cause flooding or fire.

The joints are to be assembled and mounted according to manufacturer's instructions.

Type Approval documentation

Tests carried out

Marking of product

For traceability to this type approval, the products are to be marked with

Marking content	Example
Manufacturer's name or logo	Jinan Meide Casting Co., Ltd.
Type designation	RTX
Size	165.1 x 114.3 mm
Rubber gasket material (on the gasket)	NBR
Manufacturing date	3/24

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 ---