DNV·GL

Certificate No:
TAP000016H

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
L-Series / S-Series

Issued to
Rastelli Raccordi Commerciale S.r.l.
Villanterio PV, Italy

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition July 2015
DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints

Application :

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

Temperature range:	**-55°C to +400°C (See page 3)**
Max. working press.:	**160 - 630 bar (dependent on size/type)**
Sizes:	**6 to 42 mm (dependent on size/type)**

Issued at **Høvik** on **2017-12-28**

This Certificate is valid until **2022-12-27**.
DNV GL local station: **Milan**

Approval Engineer: **Adel Samiei**

for **DNV GL**

Digitally Signed By: Marveng, Marianne Spæren
Location: DNV GL Høvik, Norway

Marianne Spæren Marveng
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.

Job Id: **262.1-003252-4**
Certificate No: **TAP000016H**

Product description

Pipe couplings, cutting ring type
Including: Light series (L-series) and heavy series (S-series)

Material		
Part	Carbon Steel Coupling	Stainless Steel Coupling
Body	1.0737 (9SMnPb 36)	1.4571 (AISI 316Ti)
Nut	Ø8L - 15L: 1.0214 (C 10C) Ø28L - 38S: 1.0502 (C35Pb)	1.4571 (AISI 316Ti)
Ring	1.0715 (11SMN30)	1.4435 (AISI 316L)

Type	Designation
Welding bulkhead Conn.	TN117
Male Stud Couplings	TN92 /-93
Welding Bosses	TN91
Male Stud fitting type A	TN92A
Stud Elbows	TN95 /-94
Male Stud UNF/UN	TN92 UNF/UN
Stud Branch Tees	TN96 /-97
Stud Barrel Tees	TN127 /-129
Equal Tees	TN100
Straight Coupling	TN98 /-K /-R
Equal Crosses	TN101
Equal Elbows	TN99
Bulkhead Elbows	TN118
Swivel Elbows	TN114

Type	Designation
Swivel Barrel Tees	TN116
Angular Rotary Fitting	TN119
Rotary L-fitting	TN121
Swivel Branch Tees	TN115
Banjos	TN111 /-131
Rotary T-fitting	TN120
Rotary Fitting no Neck	TN130
Double orientable Fitting	TN136
Standpipe / Tube Red.	TN132
Stud/Standpipe Adapt.	TN126
Gauge Couplings	TN103
Male / Female Stud Adapt.	TN141 /-GG
Female Stud Coupling	TN147
Bulkhead Connections	TN102

Application/Limitation

Couplings covered by this certificate may be used in piping classes I, II and III in below applications:

- Flammable fluids (flash point ≤ 60°C)
  - Vent lines
  - Cargo oil lines (2)
  - Crude oil washing lines (2)
- Inert gas
  - Water seal effluent lines
  - Scrubber effluent lines
  - Main Lines (1) (2)
  - Distribution lines (2)
- Flammable fluids (flash point > 60°C)
  - Cargo Oil lines (2)
  - Fuel oil lines (1)
  - Lubricating oil lines (1)
  - Hydraulic oil (1)
  - Thermal oil (1)
- Fresh water
  - Cooling water system
  - Condensate return
  - Non-essential system
- Sanitary/drains/scuppers
  - Deck drains (internal) (3)
  - Sanitary drains
  - Scuppers and discharge (overboard)
- Sounding/vent
  - Water tanks/Dry spaces
  - Oil tanks (f.p. > 60°C) (1)
- Miscellaneous
  - Starting/Control air
  - Service air (non-essential)
  - Brine
  - CO2 system
  - Steam

1) 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.
2) Only in pump rooms and open decks
3) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

The approval is only valid when the couplings are assembled with tubing of correct temper and tolerances as recommended by the manufacturer.

Couplings covered by this certificate shall not be used in system subject to pressure below atmospheric or vacuum condition.

Series	Type	Max. pressure (bar)
L	6L	315 bar
	8L	
	10L	
	12L	
	15L	
	18L	
	22L	160 bar
	28L	
	35L	
	42L	

Series	Type	Max. pressure (bar)
S	6S	630 bar
	8S	
	10S	
	12S	
	14S	
	16S	400 bar
	20S	
	25S	
	30S	
	38S	315 bar

These couplings should not be used on tubes in cold fabricated (hard temper) conditions.

Maximum working temperature for couplings of the following materials:

Carbon steel	-40 °C to 120 °C
Stainless steel	-55 °C to 400 °C

In addition the limitations given by the coupling materials, the maximum working temperatures for couplings with o-rings of the materials:

NBR/Nitrile rubber	-30 °C to 90 °C
FPM/Fluorinated rubber	-25 °C to 170 °C

At elevated temperatures, the maximum working pressure has to be reduced with the following factors:

Temperature (°C)	20	50	100	120	150	200	250	300	350	400
Stainless Steel	1	0,95	0,85	0,81	0,77	0,71	0,67	0,63	0,60	0,58
Carbon Steel	1	1	1	0,97	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.

Threaded joints (having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads) may be used for outside diameters as stated below except for piping systems conveying toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur:

- Tapered thread: class I, outside diameter not more than 33.7 mm
- Tapered thread: class II and class III, outside diameter not more than 60.3 mm
- Parallel thread: Just for class III, outside diameter not more than 60.3 mm

Austenitic stainless steels grades 316L and 316Ti are not approved to be used in system conveying seawater.

Type Approval documentation

Manufacturer's catalogue No.2BA6 dated 06/2016
Test report no. 12 0261 0 92 from MPA NRW dated 26. November 1993.
Test report no. 12 0622 4 97 from MPA NRW dated 26. March 1998.
Pull-out test reports dated 2008-03-26
Fire test No. 2013CS013495/1; 2013CS013495/2; 2013CS013495/5; 2013CS013495/6; 2013CS013495/7;2013CS013495/8; 2013CS013495/9 and 2013CS013495/10
Test pressure report No.OC2-1011-AI dated 2013-09-20 witnessed by DNV surveyor
Test pressure report No.OC2-1011/BI dated 2017-11-31 witnessed by DNV GL surveyor
Tightness test report number 315934
Repeated test assembly number OC2-1011 dated 2007-11-22
Vibartion/impulse test report number 120002588 dated 2008-04-07
Drawing nos: 5086-I dated 28-11-97,5087-I dated 28-11-97,6119-A-I dated 28-11-97,6119-B-I dated 28-11-97,4288-A-I dated 28-11-97,4288-B-I dated 19-10-93,6006-A-I dated 1-12-97,6006-B-I dated 1-12-97,5086 dated 27-11-97,5087 dated 27-11-97,6119-A dated 27-11-97,6119-B dated 27-11-97,4288-A dated 27-11-97,4288-B dated 27-11-97,6006-A dated 27-11-97,6006-B dated 27-11-97

Tests carried out

Assembly/Tightness test, Burst test, Pressure pulsation/Vibration test, pull-out test and fire test.

Marking of product

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

- Manufacturer's name or trade mark
- Type designation and dimension

Periodical assessment

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