

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe Couplings, Flared or Welded Nipple Type**

with type designation(s)

3-Piece Tube Assembly 37 deg flared

Issued to

Ham-Let Ltd.**Nazareth Illit, Israel**

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 January 2018****DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints****Application :****Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV GL.****Temperature range: -29°C to +350°C****Max. working press.: 207 to 345 bar****Sizes: 1/8" to 1"**Issued at **Høvik** on **2019-04-25**for **DNV GL**This Certificate is valid until **2024-04-24**.DNV GL local station: **Haifa**Approval Engineer: **Adel Samiei**

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.



Product description

3-Piece Tube Assembly 37 deg flared fitting made of stainless steel grade 316 (1.4401/ X5CrNiMo17-12-2, EN10272 or EN10222-5, ASTM A479, ASTM A276); bodies are machined from hot rolled or cold drawn bar or forgings as per ASTM A182 (316)

Application/Limitation

Maximum working pressure at room temperature for each size shall be according to the below table:

Nominal DASH Size	Tube size (inch)	Maximum working Pressure		Pipe OD x thk.
		Psi	bar	
2	1/8"	5000	345	1/8" x 0.035" (3.18 x 0.89 mm)
3	3/16"	5000	345	3/16" x 0.049" (4.77 x 1.20 mm)
4	1/4"	5000	345	1/4" x 0.065" (6.35 x 1.20 mm)
5	5/16"	5000	345	5/16" x 0.065" (7.94 x 1.20 mm)
6	3/8"	5000	345	3/8" x 0.065" (9.52 x 1.72 mm)
8	1/2"	4500	310	1/2" x 0.083" (12.7 x 2.11 mm)
10	5/8"	3500	241	5/8" x 0.095" (15.9 x 2.41 mm)
12	3/4"	3500	241	3/4" x 0.109" (19.1 x 2.77 mm)
14	7/8"	3000	207	7/8" x 0.109" (17.3 x 2.77 mm)
16	1"	3000	207	1" x 0.12" (25.4 x 3.05 mm)

At elevated temperatures, the maximum working pressures shall be reduced by a correction factor as the below table:

Temperature (°C)	20	100	150	200	250	300	350
Correction factor	1	0.84	0.80	0.77	0.76	0.75	0.75

Couplings covered by this certificate are approved to be installed in piping systems classes I, II and III and below applications:

<p>1) Flammable fluids (flash point ≤ 60°C)</p> <ul style="list-style-type: none"> - Cargo oil lines ⁽²⁾ - Crude oil washing lines ⁽²⁾ - Vent lines <p>2) Inert gas</p> <ul style="list-style-type: none"> - Water seal effluent lines - Scrubber effluent lines - Main lines ⁽¹⁾⁽²⁾ - Distributions lines ⁽²⁾ <p>3) Flammable fluids (flash point > 60°C)</p> <ul style="list-style-type: none"> - Cargo oil lines ⁽⁴⁾ - Fuel oil lines ⁽¹⁾ - Lubricating oil lines ⁽¹⁾ - Hydraulic oil ⁽¹⁾ - Thermal oil ⁽¹⁾ 	<p>4) Fresh water</p> <ul style="list-style-type: none"> - Cooling water system - Condensate return - Non-essential system <p>5) Sanitary/drains/scuppers</p> <ul style="list-style-type: none"> - Deck drains (internal) ⁽³⁾ - Sanitary drains <p>6) Sounding/vent</p> <ul style="list-style-type: none"> - Water tanks/dry spaces - Oil tanks (f.p. > 60°C) ⁽¹⁾ <p>7) Miscellaneous</p> <ul style="list-style-type: none"> - Service air (non-essential) - Brine - Steam
<p>(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.</p> <p>(2) Only in pump rooms and open decks</p> <p>(3) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.</p>	

Threaded joints where pressure-tight joints are made on the threads with parallel or tapered threads, are not allowed for piping systems conveying toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur.

Threaded joints in CO₂ systems are only allowed inside protected spaces and in CO₂ cylinder rooms.

For other applications, these threaded joints are only be allowed for

- with tapered thread : Class I, II and III piping systems
- with parallel thread: Only class III piping system

Job Id: **262.1-030204-1**
Certificate No: **TAP00001RS**

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

Type Approval documentation

Ham-let 37° flare couplings catalogue

Burst pressure test report rev.01 dated 2017-09-06 – witnessed by DNV GL

Repeated assembly test report rev01 dated 2017-09-06 – witnessed by DNV GL

Tightness test report rev01 dated 2017-09-06 – witnessed by DNV GL

IMA test report K134/17 dated 2018-08-09 (Pull-out and vibration/impulse test reports)

IHA fire test report numbers 016-18, 017-18, 018-18, 019-18, 020-18, 021-18

Tests carried out

Leakage, repeated assembly, burst, vibration & pressure pulsation, pull-out, and fire test

Marking of product

For traceability to this type approval, each coupling is at least to be marked with:

- Manufacturer's trade mark
- Type designation
- Size

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.