

TYPE APPROVAL CERTIFICATE**This is to certify:****That the Pipe Couplings, Bite and Compression Type**

with type designation(s)

LET-LOK® Tube Fittings

Issued to

**HAM-LET Advanced Control Technology
Nazareth Illit, Israel**

is found to comply with

DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018**DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems****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: -55 °C to 38 °C (-67 °F to + 100 °F)****Max. working press.: See page 2****Sizes: 1/8" to 1" (see page 2)**Issued at **Høvik** on **2018-02-21**for **DNV GL**This Certificate is valid until **2021-12-31**.DNV GL local station: **Haifa**Approval Engineer: **Maheshraja Venkatesan****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

Twin ferrule bite tube couplings in Stainless Steel AISI 304 and AISI 316 comprising of four parts:

- Body
- Front Ferrule
- Back Ferrule
- Nut

Configurations	Type Designations
Union	762L
Reducing Union	763L
Union Tee	764L
Reducing Union Tee	764LR
Union Elbow	765L
Reducing Union Elbow	765LR

Configurations	Type Designations
Female Connector	766L
Reducing Female Connector	766LR
Male Connector	768L
Male Elbow	769L
Female Elbow	770L
Union Cross	7102L

Application/Limitation

Maximum working pressures in PSI:

Tubing OD (mm)	Coupling size (inch)	Wall thickness of tube, inch							
		.028	.035	.049	.065	.083	.095	.109	.120
2	1/8	8550	10730	-	-	-	-	-	-
3	3/16	5500	7100	10150	-	-	-	-	-
6	1/4	4100	5200	7600	10150	-	-	-	-
8	5/16	-	4100	5900	7975	-	-	-	-
10	3/8	-	3350	4850	6525	-	-	-	-
12	1/2	-	-	3750	5150	6525	-	-	-
16	5/8	-	-	2950	4050	5250	5945	-	-
20	3/4	-	-	2450	3350	4250	4950	5655	-
22	7/8	-	-	-	2850	3650	4250	4843	-
25	1	-	-	-	2100	2700	3200	3700	3987

Couplings covered under this certificate are approved to be used for the following piping systems but however, in all cases, acceptance of the joint type shall be subject to approval for the intended application, and subject to conditions of the approval and applicable rules:

- Flammable fluids (Flash point ≤ 60 °C)
 - Cargo oil lines ³⁾
 - Crude oil washing lines ³⁾
 - Vent lines
- Inert Gas
 - Water seal effluent lines
 - Scrubber effluent lines
 - Main lines ^{1) 3)}
 - Distribution lines ³⁾
- Flammable fluids (Flash point > 60°C)
 - Cargo oil lines ³⁾
 - Fuel oil lines ¹⁾
 - Lubrication 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) ²⁾
 - Sanitary drains

- Scuppers and discharge (overboard)
- Sounding/ vent
 - Water tanks/Dry spaces
 - Oil tanks (flash point > 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 above bulkhead deck of passenger ships and freeboard deck of cargo ships.
- 3) Only in pump rooms and open decks - only approved fire resistant types

Material of couplings covered by this certificate are not sea water resistant and shall not be used in direct contact with sea water.

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

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

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

Threaded couplings where pressure-tight joints are made on parallel thread shall be allowed only in class III piping systems.

Type Approval documentation

- Manufacturer's catalog 2017 'LET-LOK® COMPRESSION TUBE FITTINGS'
- DNV Region Norway test report no. 00-1015 rev. 1 dated 18 January 2000
- Burst test report No. 211 witnessed by DNVGL Surveyor dated 2008-09-21
- Burst test report Nos.: 1311, 1312, 1313 and 1314 witnessed by DNVGL Surveyor dated 2013-03-14
- Test report no. K021/15 from IMA Dresden dated 2015-09-16
- Tightness test Rev 01 dated 2014-11-30 witnessed by ABS dated 2014-12-29
- Repeated assembly test Rev 01 dated 2014-11-30 witnessed by ABS dated 2014-12-29
- Burst pressure test Rev 01 witnessed by ABS dated 2014-11-30

Tests carried out

Tightness, Repeated Assembly, Burst, Pullout, Vibration and Pressure Pulsation tests.

Marking of product

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

- Manufacturer's name or trade mark
- Type designation

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.