

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
FPL

Issued to

IMI Hydronic Engineering AB
LJUNG, Sweden

is found to comply with

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 all vessels classed by DNV GL.

Temperature range: -20°C to +100°C
Max. working press.: 16 bar
Sizes: outside dia.: 6 to 54 mm

This Certificate is valid until **2021-06-30**.

Issued at **Høvik** on **2016-06-30**

for **DNV GL**

DNV GL local station: **Gothenburg**

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

Bite type pipe couplings: Unions, elbows, wall brackets, tees and manifolds.

Material: AMETAL (TA Hydronics AB trademark) special brass alloy - Dezincification resistant (CuZn33Pb2Si-C (CC751S) according to EN1982)

Application/Limitation

Couplings covered by this certificate are approved to be used in below applications:

- | | |
|--|---|
| 1- Flammable fluids (flash point $\leq 60^{\circ}\text{C}$) | 5- Sanitary/drains/scuppers |
| - Cargo oil lines | - Deck drains (internal) |
| - Crude oil washing lines | - Sanitary drains |
| - Vent lines | - Scuppers and discharge (overboard) |
| 2- Inert gas | 6- Sounding/vent |
| - Water seal effluent lines | - Water tanks/Dry spaces |
| - Scrubber effluent lines | - Oil tanks (f.p. $> 60^{\circ}\text{C}$) |
| - Main lines | 7- Miscellaneous |
| - Distributions lines | - Starting/Control air (*) |
| 3- Flammable fluids (flash point $> 60^{\circ}\text{C}$) | - Service air (non-essential) |
| - Cargo oil lines | - Brine |
| - Fuel oil lines | - CO2 system(*) |
| - Lubricating oil lines | - Steam |
| - Hydraulic oil | (*) Only inside Machinery spaces category A |
| - Thermal oil | |
| 4- Fresh water | |
| - Cooling water system | |
| - Condensate return | |
| - Non-essential system | |

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

Only to be used in readily accessible spaces.

All castings shall be made at foundries approved by the Society. (DNV GL rules Pt.2 ch.2 Sec.11 [1.6.1])

Type Approval documentation

- Manufacturer's catalogue 4-5-5 SE FPL 10.2015
- Test Report No. E30007 dated 1991-08-16, Swedish National Testing and Research Institute
- Test report No PUR1250 dated 2012-10-12 & PUR1539-4 dated 2016-04-12
- Reports no 99E1 3418 dated 1999-10-22, 99E1 3418-1 dated 2000-01-04, 99E1 3418-2 dated 2000-12-15, 99E1 3418-3 dated 2001-03-23, P101066 dated 2001-02-01

Tests carried out

Leakage, Repeated Assembly, Burst Pressure, Pull-Out, Vibration and Pressure Pulsation Test

Marking of product

For traceability to this Type Approval, the products are at least to be marked with:

- Manufacturer's name or trade mark
- Type designation
- Maximum working pressure
- Size

Periodical assessment

For retention of the Type Approval, DNV GL Surveyor shall perform a periodical assessment every second year, to verify that the conditions for the type approval are complied with and to witness burst tests on elbows and tees for selection of sizes.