DNV·GL

Certificate No:
TAP0000076

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s)
PFM25, PFM35, PFM35SX, PFM42SX

Issued to
DIESSE RUBBER HOSES SPA
FILAGO BG, Italy

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
PFM25	-40°C to 100°C	250 bar	DN 6,8,10,12,16,19,25
PFM35	-40°C to 100°C	350 bar	DN 6,8,10,12,16,19
PFM35SX	-40°C to 100°C	350 bar	DN 19,25,31,38
PFM42SX	-40°C to 100°C	420 bar	DN 6,10,12,16,19,25,31,38

This Certificate is valid until **2021-07-27**.

Issued at **Høvik** on **2016-07-28**

for **DNV GL**

DNV GL local station: **Milan**

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.

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Product description

Four types of Hose assemblies:

PFM25:

Hose: Inner Tube: Seamless black synthetic rubber.
Reinforcement: One or two braids of high tensile steel wire
Cover: Black synthetic rubber, resistant to abrasion, oil, ozone and weathering

PFM35:

Hose: Inner Tube: Seamless black synthetic rubber.
Reinforcement: Two braids of high tensile steel wire
Cover: Black synthetic rubber, resistant to abrasion, oil, ozone and weathering

PFM35SX (another designation: Xfight 5000):

Hose: Inner Tube: Seamless black synthetic rubber.
Reinforcement: Four layers (up to 1 ¼"). Six layers (1½") of alternated, spiralled, high-tensile steel wire
Cover: Black synthetic rubber, resistant to abrasion, oil, ozone and weathering

PFM42SX (another designation: Xfight 6000):

Hose: Inner Tube: Seamless black synthetic rubber.
Reinforcement: Four layers (up to 1). Six layers (1¼"- 1 ½") of alternated, spiralled, high-tensile steel wire
Cover: Black synthetic rubber, resistant to abrasion, oil, ozone and weathering

Hoses are made by: DIESSE Rubber Hoses SPA, Italy

Couplings are made by:

USN, UPN, UMS, UMS/SX (800 series)	OLEOMARKET SRL
SS/USN, SS/UPN, SS/UMS, SS/UMS/SX	CUSTOM FITTINGS LTD (Ferrule and the corresponding insert)
UPNS (800 series), MSI (400 series), 1800 series	INTERTRACO SRL
P1, P3, P4, P5, P7, P9	PH Industrie-Hydraulik GmbH & Co. KG (Ferrule and the corresponding insert)
SS/FR9R, SS/FR13	CUSTOM FITTINGS LTD (Ferrule and the corresponding insert)

Hose type	Size	DN	Carbon steel couplings	Stainless Steel coupling
PFM25-04	1/4"	6	USN (800 series)	SS/USN - SS/P9
PFM25-05	5/16"	8	USN (800 series)	SS/P9
PFM25-06	3/8"	10	USN (800 series)	SS/USN - SS/P9
PFM25-08	1/2"	12	UPN (800 series)	SS/UPN - SS/P5
PFM25-10	5/8"	16	UPN (800 series)	SS/UPN - SS/P5
PFM25-12	3/4"	19	UPN (800 series) – UPNS (800 series)	SS/UPN - SS/P5
PFM25-16	1"	25	UPN (800 series) – UPNS (800 series)	SS/UPN - SS/P5
PFM35-04	1/4"	6	UPN (800 series)	SS/UPN - SS/P1
PFM35-05	5/16"	8	UPN (800 series)	SS/UPN - SS/P1
PFM35-06	3/8"	10	UPN (800 series)	SS/UPN - SS/P1
PFM35-08	1/2"	12	UPN (800 series)	SS/UPN - SS/P1
PFM35-10	5/8"	16	UPN (800 series)	SS/UPN - SS/P1
PFM35-12	3/4"	19	UMS (800 series) – UPNS (800 series)	SS/UMS - SS/P1

PFM35SX-12	3/4"	19	UMS & UPNS (800 series) – MSI (400 series) - Intertraco 1800 series	SS/P7
PFM35SX-16	1"	25	UMS-16/SX & UPNS (800 series) – MSI (400 series) - Intertraco 1800 series	SS / UMS/SX - SS/P7
PFM35SX-20	1 1/4"	31	MSI (400 series) - Intertraco 1800 series	SS/P4 - FR9R
PFM35SX-24	1 1/2"	38	MSI (400 series) - Intertraco 1800 series	SS/P7 - FR13
PFM42SX-04	1/4"	6	UMS (800 series)	SS/P3SP4
PFM42SX-06	3/8"	10	UMS (800 series)	SS/P3
PFM42SX-08	1/2"	12	UMS (800 series)	SS/UMS - SS/P3
PFM42SX-10	5/8"	16	UMS (800 series) - MSI (400 series)	SS/UMS - SS/P3
PFM42SX-12	3/4"	19	MSI (400 series) - Intertraco 1800 series	SS/UMS - SS/P3 - SS/P7 - FR13
PFM42SX-16	1"	25	MSI (400 series) - Intertraco 1800 series	SS/UMS ; SS/UMS/SX - SS/P3 - SS/P7 - FR13
PFM42SX-20	1 1/4"	31	MSI (400 series) - Intertraco 1800 series	SS/P7
PFM42SX-24	1 1/2"	38	MSI (400 series) - Intertraco 1800 series	SS/P7

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling type as specified, assembled and delivered by the holder (named as manufacturer) of this certificate.

Hose assemblies are approved for use with petroleum base hydraulic fluids and water base hydraulic fluids within a temperature range of -40°C to +100°C. Operating temperature in excess of +100°C may materially reduce the life of the hose.

Flexible hoses are only to be used where it is necessary due to vibrations or flexible mounting of the machinery. The hoses shall not replace/be used where permanent piping is possible/required.

All hoses delivered under the DNV GL type approval scheme shall be subject to a pressure test at 1.5 times the maximum working pressure and shall be delivered with the pressure test report with reference to the type approval certificate.

Flexible hoses of these types are not to be used on boiler fronts.

The hoses must only be fitted in places where they are always accessible.

The hoses are to be mounted in accordance with the manufacturer's instructions.

Carbon steel used in couplings shall be normalised when the minimum design temperature is –10°C or below.

Type Approval documentation

- Pirtek Technical specification numebrs : PTS0004 (Rev. 7 – dated 2012-03-21), PTS0005 (Rev. 6 - dated 2008-05-23), PTS0164 (Rev. 2 dated 2015-02-09), PTS0165 (Rev. 2 – dated 2015-02-09)
- Coupling drawing "TABELLA CODULI" Rev.0 dated 2014-09-29
- Fire test reports witnessed by DNV GL surveyor (Milan): DIESSE 001, 002, 003, 004, 005, 006, 007, 008, 009, 010, 011, 012, 013, 014, 015, 016, 017, 018, 019, 020, 021, 022, 023, 024, 025, 026, 027/0016
- Burst test reports witnessed by DNV GL surveyor (Milan) dated 2015-10-08 (PFM25)
- LAPI fire test report numbers 129.0IS0110/13, 130.0IS0110/13 & 131.0IS0110/13 dated 2013-03-07 (PFM25)
- Impulse test report numbers 078/15, 068/14 & 067/14 (PFM25)

- Impulse test reports dated 2005-02-07, 2012-01-019, 2006-03-20 (PFM25)
- Production test reports for PFM25 dated 2015-10-08
- Burst test reports witnessed by DNV GL surveyor (Milan) dated 2015-10-08 (PFM35)
- LAPI fire test report numbers648.0IS0110/07 dated 2007-06-04, 133.0IS0110/13 & 134.0IS0110/13 dated 2013-03-07 (PFM35)
- Impulse test reports dated 2005-07-18, 2004-06-14, 2006-03-19 (PFM35)
- Impulse test report numbers 091/13 & 142/13 (PFM35)
- Production test reports for PFm25 dated 2015-10-08
- Burst test reports witnessed by DNV GL surveyor (Milan) dated 2015-10-02 & dated 2015-10-08 (PFM35SX)
- LAPI fire test reports 1434.0IS0110/15, 1435.0IS0110/15, 1436.0IS0110/15 dated 2015-09-29 (PFM35SX)
- Impulse test report numbers 269/14, 279/14, 213/15 & PiFM35SX-16-DN25 (PFM3SX5)
- Production test reports for PFM35SX dated 2015-10-08
- Burst test reports witnessed by DNV GL surveyor (Milan) dated 2015-10-02 & dated 2015-10-08 (PFM42SX)
- LAPI fire test reports 169.0IS0110/05 dated 2005-02-24, 1438.0IS0110/15 dated 2015-09-29 & 1696.0IS0110/15 dated 2015-11-06 (PFM42SX)
- Impulse test reports numbers 101/13, 262/14, 203/15, 211/15 & 221/15 (PFM42SX)
- Impulse test report dated dated 2006-07-03 (PFM42SX)
- Production test reports for PFM42SX dated 2015-10-08
- Burst test report witnessed by DNV GL surveyor (MILAN) dated July 2016

Tests carried out

Burst test, fire test, pressure impulse test, cover adhesion test, ozone resistance test, change in length test, vacuum 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 the following tests on a selection of sizes:

- Dimensional check
- Change in length
- Burst test

The tests are to be performed with the type of couplings fitted that are Type Approved with the hoses.