



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14456**

This is to certify that the
Flexible Hoses of Non-Metallic Material with Permanently Fitted Couplings

with type designation(s)
HYPRESS 4SH - product code TFDM4SH, HYPRESS 4SP - product code TFDM4SP

Manufactured by
I.M.M. HYDRAULICS SPA
ATESSA CH, Italy

is found to comply with
Det Norske Veritas' Rules for Classification of Ships
Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70
IACS UR P2

Application

The hoses are approved for: Hydrocarbon based hydraulic-, fuel and lubricating oil systems, and sea water, water based hydraulic power and control, pneumatic power and control, compressed air, air conditioning, fresh water and sanitary systems., gases (less than 20% oxygen)

| Type: | Temperature range: | Max. working press.: | Sizes: |
|-------------------------------------------|-------------------------------------------------|---------------------------|-------------------|
| HYPRESS 4SH - product code TFDM4SH | -40 °C to +100 °C (+120 °C intermittent) | 250 bar to 420 bar | 3/4" to 2" |
| HYPRESS 4SP - product code TFDM4SP | -40°C to +100°C (+120 °C intermediate) | 165 bar to 450 bar | 1/4" to 2" |

This Certificate is valid until **2017-06-30**.

Issued at **Høvik** on **2013-07-03**

DNV local station: **Milan**

Approval Engineer: **Tom Berg-Nielsen**

for **Det Norske Veritas AS**

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on behalf of 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.

If any person suffers loss or damage which is proved to have been caused by any negligent act or omission of Det Norske Veritas, then Det Norske Veritas shall pay compensation to such person for his proved direct loss or damage. However, the compensation shall not exceed an amount equal to ten times the fee charged for the service in question, provided that the maximum compensation shall never exceed USD 2 million. In this provision "Det Norske Veritas" shall mean the Foundation Det Norske Veritas as well as all its subsidiaries, directors, officers, employees, agents and any other acting on behalf of Det Norske Veritas.

Product description

Design: Flexible hose exceed ISO 3862/EN 856 4SH manufactured by IMM Hydraulics SpA
Inner tube: CR, synthetic rubber.
External cover: CR Based, Anti abrasive synthetic rubber, oil and ozone resistant.
Reinforcement: 4 steel wire spiral.

Couplings: Swaged couplings of carbon steel or inox fittings of stainless steel
Materials: 11SMnPb37 or AISI 316L

Hose manufacturer: I.M.M. Hydraulics S.p.A.
Carbon steel couplings manufactured by : IMM Hydraulics S.p.A..

Stainless steel couplings manufactured by: M.C.S. Hydraulics S.r.L.

Application/Limitation

| Hypress 4SH | | | Hypress 4SP | | |
|-------------|-------|-------|-------------|-------|-------|
| Size | MAXWP | MAXWP | Size | MAXWP | MAXWP |
| | [bar] | [psi] | | [bar] | [psi] |
| - | - | - | 1/4" | 450 | 6525 |
| - | - | - | 3/8" | 445 | 6453 |
| - | - | - | 1/2" | 415 | 6018 |
| - | - | - | 5/8" | 350 | 5075 |
| 3/4" | 420 | 6090 | 3/4" | 350 | 5075 |
| 1" | 385 | 5583 | 1" | 280 | 5583 |
| 1 1/4" | 350 | 5275 | 1 1/4" | 210 | 5275 |
| 1 1/2" | 300 | 4350 | 1 1/2" | 185 | 4350 |
| 2" | 250 | 3625 | 2" | 165 | 3625 |

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.

All hose assemblies delivered under this type approval certificate shall be in compliance with an assembly procedure issued by the certificate holder.

Hose assemblies delivered from the certificate holder shall be delivered with the following documentation:

- Pressure test report with reference to the type approval certificate

The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder under the conditions described in Type Approval Programme 5-791.70.

Flexible hoses are only to be used in short lengths where it is necessary due to vibrations or flexible mounting of the machinery.

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

The Rules Pt.4 Ch.6 Sec.6D and the respective Government Authorities Regulations to be complied with..

Each hose is to be hydraulic pressure tested to 1.5 times the working pressure.

Type Approval documentation

Manufacturer's datasheets.

Test reports dated 2009-12-16 and 2012-07-27

LAPI fire test reports 1112-1113-1114-1115 – 1116 - 1117.0IS0110/12 dated 02/08/2012

Tests carried out

Dimensional check, Change in length, Burst, Adhesion, Ozone resistance, impulse test, abrasion resistance, cold flexibility, oil resistance and fire.

Marking of product

For traceability to this type approval, the final products (hoses with couplings) are at least to be marked with:

- Manufacturer's name or trade mark
- Type designation

Certificate Retention Survey

For retention of the type approval, a DNV Surveyor shall perform a survey 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 test
- Change in length test
- Burst test
- Leakage test

The tests shall be performed in accordance with the procedures described in Det Norske Veritas Certification Note 2.9 "Type Approval of Flexible Hoses of Non-Metallic Material", or another recognised standard.

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

END OF CERTIFICATE