

TYPE APPROVAL CERTIFICATE

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

Issued to

I.M.M. HYDRAULICS SPA
Atessa CH, Italy

is found to comply with

Det Norske Veritas' Standards for Certification 2.9 No. 5-791.70

Det Norske Veritas' Rules for Classification of Ships Pt.4, Ch.6 "Piping Systems"

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:
HYPRESS 4SH - product code TFDM4SH	-40 °C to +100 °C	250 bar to 420 bar	3/4" to 2"
HYPRESS 4SP - product code TFDM4SP	-40°C to +100°C	165 bar to 450 bar	1/4" to 2"

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

Issued at **Høvik** on **2016-09-14**

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.

Job Id: **262.1-015178-4**
Certificate No: **TAP00000D8**

Product description

Two types of flexible hose assemblies

Inner tube: CR, synthetic rubber.

External cover: CR Based, Anti abrasive synthetic rubber, oil and ozone resistant.

Reinforcement: 4 steel wire spiral.

Couplings: Carbon steel (Ferrule Code 4SH:004N & 4SP:0009) or inox fittings of stainless steel (Ferrule Code 4SH:X004N & 4SP:X0009)

Materials: 11SMnPb37 or AISI 316L

Hoses & Couplings manufactured by: I.M.M. Hydraulics S.p.A.

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.

Size		Hypress 4SP		Hypress 4SH	
inch	DN	MAXWP [bar]	MAXWP [psi]	MAXWP [bar]	MAXWP [psi]
1/4"	6	450	6525	-	-
3/8"	8	445	6453	-	-
1/2"	12	415	6018	-	-
5/8"	16	350	5075	-	-
3/4"	19	350	5075	420	6090
1"	25	280	5583	385	5583
1 1/4"	31	210	5275	350	5275
1 1/2"	38	185	4350	300	4350
2"	51	165	3625	250	3625

Hose assemblies covered by this certificate are suitable for petroleum base hydraulic fluids within a temperature range of -40°C to +100°C and water base hydraulic fluids within a temperature range of -40°C to +70°C. Operating temperatures in excess of maximum design temperature may materially reduce the life of the hose.

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 hydraulic pressure tested to 1.5 times the working pressure and delivered with the pressure test report with reference to this type approval certificate.

The hose assemblies covered by this type approval may be assembled and delivered by other than the certificate holder (authorized by type approval 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 hose assemblies must only be fitted in places where they are always accessible.

Hose assemblies covered by this type approval certificate shall not be installed in systems subject to pressure below atmospheric.

Type Approval documentation

Job Id: **262.1-015178-4**
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Manufacturer's datasheets.

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

LAPI fire test reports 1112-1113-1114-1115 - 1116 - 1117.0ISO110/12 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

Periodical assessment

For retention of the type approval, a DNV GL 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 are to be performed with the type of couplings that are Type Approved with the hoses.