DNV·GL

Certificate No:
TAP00001MG

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
INTERPUMP HyGreen 4SH, INTERPUMP HyGreen R13, INTERPUMP HyGreen R15

Issued to
I.M.M. Hydraulics S.p.A.
Atessa CH, Italy

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018
DNV GL class programme DNVGL-CP-0183 – Type approval – Flexible hoses

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
INTERPUMP HyGreen 4SH	**-40°C to +100°C**	**250 to 420 bar**	**DN 19,25,31,38,51**
INTERPUMP HyGreen R13	**-40°C to +121°C**	**350 bar**	**DN 19,25,31,38,51**
INTERPUMP HyGreen R15	**-40°C to +121°C**	**420 bar**	**DN 16,19,25,31,38,51**

Issued at **Høvik** on **2018-12-21**
This Certificate is valid until **2023-12-20**.
DNV GL local station: **Milan**

for **DNV GL**

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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Job Id: **262.1-028595-1**
Certificate No: **TAP00001MG**

Product description

Three types of hose assemblies with below design:
Tube: Synthetic rubber, extruded whole without joints, of uniform thickness.
Reinforcement:
4SH:4 high tensile steel wire spiral
R13/R15:4 high tensile steel wire spiral up to size 1", 6 spiral from size 1 1/4".
Cover: Anti-abrasive synthetic rubber, resistant to oils, fuels and atmospheric conditions, MSHA
Designation: Hygreen4SH (Code TFDR4SH), HygreenR13 (Code TFDR013), HygreenR15 (Code TFDR015).
Hose manufacturer: IMM Hydraulics, Atessa (CH), Ascoli Satriano (FG), Italy

Coupling designations:

Hose Size			HyGreen 4SH		HyGreen R13		HyGreen R15	
DASH	DN	inch	Two Pieces	One Piece	Two Pieces	One Piece	Two Pieces	One Piece
-10	16	5/8"	-	-	-	-	0013/X0013	X Series
-12	19	3/4"	004N / X004N	X Series	004N / X004N	X Series	004N/X004N	X Series
16	25	1"	004N / X004N	X Series	0013/X0013	X Series	0013/X0013	X Series
-20	31	1 ¼"	004N / X004N	X Series	0013/X0013	X Series	0013/X0013	X Series
-24	38	1 ½"	004N / X004N	X Series	0013/X0013	X Series	0013/X0013	X Series
-32	51	2"	004N / X004N	X Series	0013/X0013	X Series	0013/X0013	X Series

Couplings Material: Two pieces (Ferrule 004N/X004N & 0013/X0013 with related interlock tail fittings): Carbon Steel (11SMnPb37/C4C) or Stainless Steel (AISI 316L); One Piece (X Series): Carbon Steel (11SMnPb37/C4C)
Coupling Manufacturer: IMM Hydraulics, Atessa (CH), Ascoli Satriano (FG), Italy

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 and below assembly locations:

I.M.M. Hydraulics S.p.A. - Atessa, Italy
GS-Hydro AB - Kista Suecia, Sweden
GS-Hydro Austria GmbH -Pasching, Austria
GS-Hydro Korea Ltd. - Busan, Korea
GS-Hydro S.A.U. - Abanto y Zierbena, Spain
GS-Hydro Singapore Pte. Ltd – Singapore
GS-Hydro U.S. Inc. - Houston, USA
GS-Hydro UK Ltd. - Branch office Wakefield, UK
GS-Hydro Sp. z o.o. - Gdynia, Poland
I.M.M. Hydraulics S.p.A. - Genova, Italy
GS-Hydro AB - Sundsvall Suecia, Sweden
GS-Hydro Danmark A/S - Kolding, Denmark
GS-Hydro Piping Systems Co. Ltd. - Shanghai, China
GS-Hydro S.A.U. - Madrid, Spain
GS-Hydro System GmbH - Hagen, Germany
GS-Hydro UK Ltd. - Aberdeen, UK
GS-Hydro UK Ltd. - Sunderland, UK
GS-Hydro Benelux B.V. - Barendrecht, Netherlands
GS Hydro do Brasil Sistemas Hidraulicos Ltda - Bairro Imperial, Brazil

Maximum working pressure

Hose size			INTERPUMP HyGreen		
inch	DN	Dash	4SH	R13	R15
5/8	16	-10	-	-	420
¾	19	-12	420	350	420
1	25	-16	385	350	420
1 ¼	31	-20	350	350	420
1 ½	38	-24	300	350	420
2	51	-32	250	350	420

Hose assemblies covered by this certificate may be used in:

- Petroleum based fluids (Mineral oils) and Biological Oils (temperature as stated on the front page);
- Water Based Fluids and compressed air (-40°C to +70 °C);
- Water (0°C to 70°C).

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 shall not replace/be used where permanent piping is possible/required.

The hose assemblies must only be fitted in places where they are always accessible. Flexible hoses of these types are not to be used on boiler fronts.

Hose assemblies covered by this certificate shall not be used in system subject to pressure below atmospheric or vacuum condition.

The cover of hoses for gaseous applications shall be pin-pricked.

Production testing

All hose assemblies 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.

Type Approval documentation

Tests carried out

Dimensional Check Test, Change in Length Test, Burst Test, Cold Flexibility Test, Ozone Resistance Test, Impulse Test, Oil Resistance Test and Fire Test.

Marking of product

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

- Hose manufacturer’s name or trademark;
- Date of manufacture (month/year);
- Designation type reference;
- Nominal diameter;
- Pressure rating;
- Temperature rating.

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.