



DET NORSKE VERITAS

TYPE APPROVAL CERTIFICATE

CERTIFICATE NO. **P-14896**

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

with type designation(s)
Alfagomma: 1 SN Temp-tech Dunlop Hiflex: Commander

Issued to
ALFAGOMMA HYDRAULIC SPA
CASTELNUOVO VOMANO TE, 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
**Hydraulic and Pneumatic systems (incl. power and control for steering gears) / Fuel Oil / Lube Oil / Compressed Air /
Fresh Water / Sanitary**

Temperature range: -40°C to 150°C (see cert.)
Max. working press.: 40 to 225 bar
Sizes: DN 6/10/12/16/20/25/32/40/50 (1/4" to 2")

This Certificate is valid until **2018-03-31**.

Issued at **Høvik** on **2014-09-29**

DNV local station: **Milan**

Approval Engineer: **Adel Samiei**

for **Det Norske Veritas AS**

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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

Type designation: 1 SN Temp-tech acc. to EN 853 1SN and SAE 100 R1AT.

Tube: Oil resistant syntetic rubber compound
 Cover: Syntetic rubber compound, weather-, oil- and abrasion, Ozone and hydrocarbon resistant

Couplings: Alfagomma and Dunlop Hiflex series of inserts and ferrules in carbon or stainless steel.

Hose size	Carbon Steel 11SMnPb30 according UNI EN 10277 Stainless Steel AISI 304 - AISI 316		
	Skive fittings		No skive fittings
Dash	AG Branding	DH Branding	DH Branding
- 04	H1100204-04	D330000-04	D110000-04
- 06	H1100204-06	D330000-06	D110000-06
- 08	H1100204-08	D330000-08	D110000-08
- 10	H1100204-10	D330000-10	D110000-10
- 12	H1100204-12	D330000-12	D110000-12
- 16	H1100204-16	D330000-16	D110000-16
- 20	H1100104-20		D110000-20
- 24	H1100104-24		D110000-24
- 32	H1100104-32		D110000-32

Manufacturing plants:

Couplings

Alfagomma Hydraulic S.p.A.Zona
 Industriale Piano Lago
 87050 Mangone (CS)

Hoses

Alfagomma Hydraulic S.p.A.
 Via Enrico Mattei no.6
 64020 - Castelnuovo Vomano (TE)

Alfagomma Hydraulic S.p.A.
 Area Industriale Piano Lago
 87050 Figline Vegliaturo (CS)

Application/Limitation

DN		MWP
[inch]	DN	[bar]
¼	6	225
3/8	10	180
½	12	160
5/8	16	130
¾	20	105
1	25	88
1 ¼	32	63
1 ½	40	50
2	50	40

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.

Each hose assembly is before delivery to be hydraulic pressure tested to 1.5 times the maximum working pressure.

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 following conditions:

- The assembler is authorised by a written authorization from the certificate holder. The certificate holder shall keep record of all assembler authorisations.
- Hose assemblies are in accordance with an assembly procedure issued by the certificate holder and the assembler has proved their qualifications by burst testing of a selection of hose/coupling combinations.
- One sample of each hose type is to be burst tested and the testing is to be witnessed by DNV. This testing is to be performed at least once a year.

Hoses used for continuous operation at temperatures higher than 100°C will have their lifetime reduced. In such cases more frequent inspections and planned exchange should be a part of the maintenance program.

For compressed air or gases the cover should be pin pricked.

Flexible hoses are only to be used in lengths up to 2 meters 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 hoses must only be fitted in places where they are always accessible.

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

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

It must be possible to shut off from the system all flexible hoses used in systems for compressed air, lube oil, fuel oil and petroleum base hydraulic oil.

Each hose is to be hydraulic pressure tested to 1.5 times the maximum working pressure and to be delivered with manufacturer's pressure test certificate.

Hose assemblies with couplings made of carbon steel are not to be used at temperatures below -10°C unless the material is normalized.

Type Approval documentation

- DNV test reports dated 2009-10-12.
- LAPI test reports Test report n. 1413/09, 1414/09 and 1415/09 dated 2009-11-09 and 2009-11-05.
- Impulse test reports dated 2008-07-30, 2009-05-25, 2009-03-30 and 2009-10-06.
- Test reports dated 2009-10-23.
- Crimping table 5/G/U/TA/060 dated 2008-07-25, DH.122T.11.B dated 2008-04-21 and DH.122T.33A dated 2008-04-21.
- List of ferrules.
- Alfagomma technical datasheet.
- Test report dated 2014-03-05 witnessed by DNV local station Milan (acc. to ISO 1402)
- Type approval assessment report dated 2014-03-06 signed and stamped by DNV local station Milan.

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 according to ISO 15540.

Marking of product

For traceability to this type approval the final hose is to be marked with:

- Manufacturer's name or trade mark
- Type designation: ALFAGOMMA: 1SN TEMP TECH DUNLOP HIFLEX: COMMANDER

Periodical assessment

Certificate No.: P-14896
File No.: 791.70
Job Id.: 262.1-016581-1

For retention of the Type Approval, a DNV GL Surveyor shall perform a periodical assessment every second year and before the expiry date of this certificate, to verify that the conditions for the type approval are complied with and to witness the Burst test on a selection of sizes.

The Burst tests shall be performed in accordance with procedures given in DNV Certification notes no. 2.9 5-791.70 "Type Approval of Flexible Hoses of Non-Metallic Material" or another recognized standard. The test is to be performed with the type of couplings fitted that is Type Approved with the compensators.

END OF CERTIFICATE