Certificate no.:
TAP00002V1

TYPE APPROVAL CERTIFICATE

This is to certify:

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

with type designation(s)
G1, G2, M3K, M4K, M5K, M6K

issued to

PH Industrie-Hydraulik GmbH und Co. KG

Ennepetal, Nordrhein-Westfalen, Germany

is found to comply with

DNV rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV-OS-D101 – Marine and machinery systems and equipment, Edition July 2021
DNV rules for classification – Naval vessels
DNV class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application:

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

Type:	Temperature range:	Max. working press.:	Sizes:
G1	-40°C to +100°C	225 bar	-4 to-32
G2	-40°C to +100°C	125 bar	-20, -24, -32
M3K	-40°C to +100°C	225 bar	-4 to -16
M4K	-40°C to +100°C	280 bar	-4 to -16
M5K	-40°C to +100°C	350bar	-4 to -8
M6K	-40°C to +100°C	420 bar	-4

Issued at **Hamburg** on **2025-10-10**
This Certificate is valid until **2030-10-09**.
DNV local unit: **Essen**

for **DNV**

Approval Engineer: **Christian Kaemmer**

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.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to USD 300 000.

Product description

Non-metallic hoses types: G1, G2, M3K, M4K, M5K and M6K crimped with stainless steel hose end-fittings.

Material of hose end fittings: Stainless steel 1.4571, AISI 316 Ti

Hose couplings without wire trap area/
Hose insert type (nipple): manufactured by PH-Hydraulic

Hose types:
G1, G2, M3K, M4K, M5K and M6K manufactured by Gates

Hose & Ferrule types:

Size		G1	G2	M3K	M4K	M5K	M6K
Dash	**DN**						
-4	**6**	P1-DN06	n.a.	PF-R7-DN06	P5-DN06	P5-DN06	P5-DN06
-5	**8**	P1-DN08		PF-R7-DN08	P5-DN08	P5-DN08	n.a.
-6	**10**	P1-DN10		P1-DN10	P5-DN10	P5-DN10	
-8	**12**	P1-DN12		P1-DN12	P5-DN12	P5-DN12	
-10	**16**	P1-DN16		P5-DN16	P5-DN16	n.a.	
-12	**19**	P1-DN19		P5-DN19	P5-DN19		
-16	**25**	P1-DN25		P1-DN25	P3-DN25		
-20	**31**	P1-DN32	P8-DN31	n.a.	n.a.		
-24	**38**	P1-DN38	P8-DN38				
-32	**51**	P1-DN51	P8-DN51				

Maximum working pressure (in bar):

Size		G1	G2	M3K	M4K	M5K	M6K
Dash	**DN**						
-4	6	225	n.a.	225	280	350	420
-5	8	215		225	280	350	n.a.
-6	10	180		225	280	350	
-8	12	160		225	280	350	
-10	16	130		225	280	n.a.	
-12	19	105		225	280		
-16	25	88		225	280		
-20	31	63	125	n.a.	n.a.		
-24	38	50	90				
-32	51	40	80				

Temperature range

Petroleum based hydraulic fluids	-40°C to +100°C
Water based hydraulic fluids and Air	-40°C to +70°C
Fresh Water	0°C to +70°C

Application/Limitation

The hose assemblies are type approved for:
- Flammable media such as hydraulic oil, fuel oil, petroleum oil and lubricating oil
- Sea water[1]
- Water and water-glycol based fluids

[1] Sea water application:
The term sea water application includes sea water piping systems and installation of piping systems on open deck. Stainless steel materials 1.4571 (AISI 316Ti) are approved for sea water systems with operation mode “flowing seawater” but not for application in piping systems with operation mode “stagnant seawater”.

Installation

For the following piping systems, hose assemblies are to be provided with means to shut off to avoid uncontrolled media release in case of hose rupture for lubrication oil, fuel oil and petroleum base hydraulic oil.

Hose assemblies shall be fitted at locations always accessible, shall not to be used on boiler fronts and not in permanently starting air lines of combustion engines. They shall not be installed in systems subject to pressure below atmospheric or vacuum conditions and are only to be used in short lengths where it is necessary.

Production testing
All hose assemblies 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

Marking of product

For traceability of the hose assemblies to this certificate the ferrule is to be marked with:

Scope	Example
Manufacturer sign plus material designation	PH 71
Trace code number 3 to 6 digits	174039
MAWP bar	350
Year / Month	2409

Production places

- PH Industrie-Hydraulik GmbH und Co. KG, Ennepetal, Germany
- Gates UK Ltd., St. Neots, Cambridgeshire, United Kingdom, covered by Type Approval Certificate: TAP000003S

Periodical assessment

For retention of the Type Approval, a DNV Surveyor shall perform periodical assessment to verify that the conditions for the Type Approval are complied with. Refer to the Class Programme DNV-CP-0338, Sec.4.

To check the validity of this certificate, please look it up in https://approvalfinder.dnv.com