



TYPE APPROVAL CERTIFICATE

Certificate No:
TAD00000CA
Revision No:
5

This is to certify:

That the Mud and Cementing Equipment

with type designation(s)
1.25" to 3" Black Eagle Flexible Hoses for Cementing and Chemical Injection

Issued to

**Parker Hannifin Manufacturing Germany GmbH & Co. KG - Polymer
Hose Division Europe
Lampertheim, Hessen, Germany**

is found to comply with
DNV-OS-E101 – Drilling facilities, Edition July 2021

Application :

**Product(s) approved by this certificate is/are accepted for installation on vessels classed by DNV, with exception of vessels where full compliance with API Specification 7K is mandatory.
Product(s) covered in this certificate are: cementing flexible hoses and chemical injection flexible hoses.**

Issued at **Høvik** on **2021-11-23**

This Certificate is valid until **2026-04-30**.

for **DNV**

DNV local station: **Augsburg**

Approval Engineer: **Sinisa Sedlan**

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Zeinab Sharifi
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.

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 300,000 USD.



Reference standard

API Spec 7K, Drilling and Well Servicing Equipment, 6th edition.

Manufacturing location

Hose manufacturer and assembly plant:

- Parker Hannifin Manufacturing Germany GmbH & Co. KG – Polymer Hose Division Europe
 An der Tuchbleiche 4, 68623 Lampertheim (Hüttenfeld), Germany

Hose assembly plants:

- Abdex Industries Pty Ltd, 42 Bushland Ridge, Bibra Lake, WA 6163, Australia
- Active Service AS, Sjøkrigsskoleveien 15, 5165 Laksevåg, Norway
- Beattie Industrial Ltd., Div. of Newfoundland Offshore, 1345 Topsail Road, PO Box 8398, A1B 3N7, Paradise, NF, Canada
- Flexiflo Corp., PO Box 18532, Jebel Ali Free Zone, Dubai, United Arab Emirates
- Fluid Control Service AS, Ljosheimsvegen 1, 4050 Sola, Norway
- Hydratit AS, Bleivassvegen 30F, 5347 Ågotnes, Norway
- Hydrasun Group Ltd., Gateway Business Park, Moss Road, Aberdeen AB12 3GQ, United Kingdom
- Mento AS, PO Box 44, Kontinentalveien 22, 4098 Tananger, Norway
- Parker Hannifin Corporation, Parflex Division, 11151 Cash Road, Stafford, TX 77477, USA

Product description

Cement and chemical injection hose assemblies including:

- unbonded flexible hose
- end termination
- end connection (standard as per current edition of OS-E101)

Structure	Hose nominal size	Max design pressure	Temperature range	Core tube ID (hose ID)	Hose OD	FSL
2440N-20V80	1.25"	10 000 psi	-40/100°C	32.2 mm	55.5 mm	0
2640N-24V80	1.5"	10 000 psi	-40/70°C	38.0 mm	70.5 mm	0
2640N-24V80 -15K	1.5"	15 000 psi	-40/70°C	38.0 mm	66.0 mm	0
2240N-32V10	2"	3 000 psi	-40/100°C	50.5 mm	68.5 mm	0
2248N-32V10	2"	5 000 psi	-40/100°C	50.5 mm	68.5 mm	0
2448N-32V80	2"	5 000 psi	-40/70°C	50.5 mm	80.5 mm	0
2449N-32V10	2"	8 000 psi	-40/100°C	50.5 mm	80.5 mm	0
2580N-32V80	2"	10 000 psi	-40/70°C	50.5 mm	84.5 mm	0
2648N-32V80	2"	15 000 psi	-40/70°C	50.5 mm	86.0 mm	0
2240N-48V80	3"	5 000 psi	-40/70°C	75.0 mm	114.0 mm	0
2440N-48V80	3"	10 000 psi	-40/70°C	75.0 mm	122.0 mm	0
2640N-48V80	3"	15 000 psi	-40/70°C	75.0 mm	130.0 mm	0

Application/Limitation

- The hoses covered in this Type Approval are compliant with requirements of DNV-OS-E101. Their suitability for service is established by having demonstrated partial compliance with API 7K requirements, with the design intention of API 7K retained.
 The hoses are not fully compliant with API 7K in the following:
 - The hoses do not belong to the same design family acc. to definition of family in API 7K
 - Working pressure ratings of 3K and 8K are not specified in API 7K Table 10
 - Working pressure rating of 5K is not intended for cement hoses in API 7K Table 10
 - Hose nominal sizes 1.25" and 1.5" are not specified in API 7K Table 10
 - Temperature ranges of the hoses do not correspond with temperature ranges specified in API 7K clause 9.7.3.1
 - The hoses do not meet the requirement of API 7K 9.7.10.2 for Deformation Test Under Pressure. It is the end user's responsibility to ensure that possible adverse effect of change of length under pressure is considered in the installation.
- The hoses covered in this Type Approval cannot be used on installations where full compliance with API Specification 7K is required.
- Hose assembly plants are approved for hose sizes listed in valid "Workshop Certificate", issued by Parker Polymer Hose Division Europe.

Type Approval documentation

Tests carried out

Design verification testing for FSL 0 performed according to Ch. 9.6.10.2, 9.6.10.3, 9.6.10.6 & Ch. 9.6.10.7 in API Spec. 7K 5th edition, for the largest hose with the highest pressure rating in the range covered by this Type Approval (3" 15 000 psi hose 2640N-48V80).

Reference is made to SwRI® Report 18.18142.01.330, Rev.1.

Marking of product

For traceability the following marking is to be carried out on each product:

- All equipment shall be clearly marked with identification and serial number which relates the equipment to certificates and fabrication documentation.
- Markings in accordance with API spec. 7K, 6th ed.

Periodical assessment

For retention of the Type Approval, a DNV 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 DNV-CP-0338.