TYPE APPROVAL CERTIFICATE

Certificate No:
TAP000008S
Revision No:
1

This is to certify:

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

with type designation(s)
Parker GlobalCore 387TC, Parker GlobalCore 387ST, Parker GlobalCore 487TC, Parker GlobalCore 487ST

Issued to
Parker Hannifin Corporation dba Hose Products Division
Wickliffe, OH, USA

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 class programme DNV-CP-0183 – Type approval – Flexible non-metallic hoses

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
Parker GlobalCore 387TC	see page 2	210 bar	-4 to -32
Parker GlobalCore 387ST	see page 2	210 bar	-4 to -32
Parker GlobalCore 487TC	see page 2	280 bar	-4 to -32
Parker GlobalCore 487ST	see page 2	280 bar	-4 to -32

Issued at **Høvik** on **2021-02-23**

This Certificate is valid until **2026-02-22**.
DNV local station: **New York**

Approval Engineer: **Andreas Hansen**

for **DNV**

Digitally Signed By: Zeinab, Sharifi
Location: DNV Høvik, Norway

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.

Product description

Two types of hose assemblies containing compact high pressure, wire reinforced, rubber covered hose according to minimum requirements outlined in ISO 18752.

Type:	387TC	387ST	487TC	487ST
Sizes:	Class 210 Grade A Type AC (-4 through -16)	Class 210 Grade A Type AC (-4 through -16)	Class 280 Grade A Type AC for sizes -4 through -12	Class 280 Grade A Type AC for sizes -4 through -12
	Class 210 Grade C Type CC (-20 through -32	Class 210 Grade C Type CC (-20 through -32)	Class 280 Grade C Type CC for (-16 through -32)	Class 280 Grade C Type CC for (-16 through -32)
Fittings:	43 & 48 Series, sizes -4 to -16	43 & 48 Series, sizes -4 to -16	43 & 48 Series, sizes -4 to -12	43 & 48 Series, sizes -4 to -12
	43 series, size -20	43 series, size -20	43 series, size -16	43 series, size -16
	77 Series, sizes -20 to -32	77 Series, sizes -20 to -32	77 Series, sizes -20 to -32	77 Series, sizes -20 to -32
Inner Tube:	Synthetic rubber	Synthetic rubber	Synthetic rubber.	Synthetic rubber.
Reinforcement:	One-braid steel wire for sizes -4 to -8	One-braid steel wire for sizes -4 to -8	Two-braid steel wire for sizes -4 to -12.	Two-braid steel wire for sizes -4 to -12.
	Two-braid steel wire for sizes -10 to -16	Two-braid steel wire for sizes -10 to -16	Four-spiral steel wire for sizes -16 to -24.	Four-spiral steel wire for sizes -16 to -24.
	Four-spiral steel wire for sizes -20 to -32	Four-spiral steel wire for sizes -20 to -32	Six-spiral steel wire for size -32.	Six-spiral steel wire for size -32.
Cover:	Synthetic rubber abrasion resistant	Synthetic rubber super abrasion resistant	Synthetic rubber abrasion resistant.	Synthetic rubber super abrasion resistant.

Hose and end fitting manufacturer:

Parker Hannifin Corporation dba Hose Products Division,
Wickliffe, Ohio, USA.

Application/Limitation

This certificate is valid for the specific assembly of hose and coupling types as specified, assembled, and delivered by the holder (named as manufacturer) of this certificate and assembling location as listed above.

The hose assemblies are approved to be used in hydraulic fluids HH, HL, HM, HR and HV as defined in ISO 6743-4 at temperature ranging from -40°C to +120°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.

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

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

The outer end of the pipe coupling (performing the connection to the fixed piping) is not covered by this certificate and shall follow the below requirements:

- Flanged ends shall be according to a recognized standard
- Slip-on threaded joints having pipe threads where pressure-tight joints are made on the threads with parallel or tapered threads, shall comply with requirements of a recognized standard. Limitations stated in DNV-RU-SHIP Pt.4 Ch.6 Sec.9 [5.2.6] to be followed.
- If these outer ends are going to be part of a mechanical joint as covered by Table 8 DNV-RU- SHIP Pt.4 Ch.6 Sec.9, then they shall be separately type approved.

Production testing

All hose assemblies delivered under the DNV 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 this type approval certificate.

Type Approval documentation

Specification GHS-387TC Rev.A dated 23-Sep-2014
Specification GHS-487TC Rev.A dated 23-Sep-2014

The Dimensional check test, Change in Length test and Burst test reports witnessed by DNV GL:

- 387TC: W20965, W20966, W20967, W20968, W20969, W20970, W20971, W20972, W20973, W20974, W20975, W20976, W20977, W20978, W20979, W20980 dated 2014-06-25 & 2014-06-26
- 387ST: W22396, W22390, W22397, W22399, W22395, W22394, W22389, w22391, W22385, W22384, W22388, dated 2015-08-26.
- 487TC: W20981, W20982, W20983, W20984, W20985, W20986, W20987, W20988, W20989, W20990, W21172, W20991, W20992, W20993 dated 2014-06-25 & 2014-06-26
- 487ST: W22410, W22411, W22401, W22407, W22406, W22412, W22405, W22404, W22400, dated 2015-08-26.
- Renewal burst test report W28293 witnessed by DNV surveyor, dated 2021-12-17

Impulse test reports for 387TC signed at 11-02-2015:

- With couplings 43 series: W19732(DN4), W20225(DN6), W20052(DN8), W19231(DN10), W19245 & W19147 (DN12), W19246 & W19149(DN16), W20688(DN20)
- With couplings 48 series: W20383(DN4), W20248(DN6), W20362(DN8), W20253(DN10), W20379 (DN12), W20380(DN16)
- With couplings 77 series: W19166(DN20), W20389(DN24), W20426(DN32)

Impulse test reports for 487TC signed at 11-02-2015:

- With couplings 43 series: W19641(DN4), W19131(DN6), W19132(DN8), W19231(DN10), W19135(DN12), W17973(DN16)
- With couplings 48 series: W20250(DN4) , W20251(DN6), W20252(DN8), W20253(DN10), W20254 (DN12)
- With couplings 77 series: W19166(DN20), W20393(DN24), W21191&W20426(DN32)

Fire test reports done in accordance with ISO15540/ISO15541(Done By LAPI):

- 387TC:
  - 940.0ISO110/14 & 943.0IS0110/14 dated 11-07-2014 for 387TC-4 (fitting 43 & 48)
  - 941.0IS0110/14 & 944.0IS0110/14 dated 11-07-2014 for 387TC-10 (fitting 43 & 48)
  - 945.0IS0110/14 dated 11-07-2014 for 387TC-16 (fitting 48)
  - 1134.0IS0110/14 dated 21-07-2014 for 387TC-20 (Fitting 77)
  - 947.0IS0110/14 dated 11-07-2014 for 387TC-32 (fitting 77)
- 487TC
  - 933.0IS0110/14 & 937.0IS0110/14 dated 11-07-2014 for 487TC-4 (fitting 43 & 48)
  - 934.0IS0110/14 & 938.0IS0110/14 dated 11-07-2014 for 487TC-8 (fitting 43 & 48)
  - 935.0IS0110/14 & 939.0IS0110/14 dated 11-07-2014 for 487TC-12 (fitting 43 & 48)
  - 936.0IS0110/14 dated 11-07-2014 for 487TC-16 (fitting 43)
  - 948.0IS0110/14 dated 11-07-2014 for 487TC-20 (fitting 77)
  - 949.0IS0110/14 dated 11-07-2014 for 487TC-32 (fitting 77)
- 387ST:
  - 818.0ISO110/15& 819.0ISO110/15 dated 14-07-2015 for 387ST-4 (fitting 43 & 48)
  - 822.0IS0110/15 dated 14-07-2015 for 387ST-32 (fitting 77)
  - 820.0IS0110/16& 821.0IS0110/16 dated 14-07-2015 for 387ST-4 (fitting 43 & 48)
- 487ST:
  - 825.0ISO110/15& 819.0ISO110/15 dated 14-07-2015 for 487ST-16 (fitting 43)
  - 826.0IS0110/15 dated 14-07-2015 for 487ST-24 (fitting 77)
  - 823.0IS0110/15& 824.0IS0110/15 dated 14-07-2015 for 487ST-4 (fitting 43 & 48)

Cold flexibility, Oil resistance, Cover adhesion, ozone resistance, vacuum also Impulse (only for types: 387ST &487ST) test reports:

- Test specification numbers: 387TC-4, 387TC-6, 387TC-8, 387TC-10, 387TC-12, 387TC-16, 387TC-20, 387TC-24, 387TC-32 dated February 2015.
- Test specification numbers: 487TC-4, 487TC-6, 487TC-8, 487TC-10, 487TC-12, 487TC-16, 487TC-20, 487TC-24, 487TC-32 dated February 2015.
- Test Report No: T-508A_387ST-4, T-508B_387ST-4, T-509A_387ST-6, T-509B_387ST-6, T-510A_387ST-8, T-510B_387ST-8, T-511A_387ST-10, T_511B_387ST-10, T-512A_387ST-12, T-512B_387ST-12, T-513A_387ST-16, T-513B_387ST-16, T-514A_387ST-20, T-514B_387ST-20, T-515_387ST-24, T-516_387ST-32
- Test Report No: T-517A_487ST-4, T-517B_487ST-4, T-518A_487ST-6, T-518B_487ST-6, T-519A_487ST-8, T-519B_487ST-8, T-520A_487ST-10, T-520B_487ST-10, T-521A_487ST-12, T-521B_487ST-12, T-522_487ST-16, T-523_487ST-20, T-524_487ST-24, T-525_487ST-32

Tests carried out

On hoses: Dimensional Check Test – Change in Length test – Cold Flexibility Test – Oil Resistance Test – Cover Adhesion Test – Ozone Resistance Test – Vacuum Test
On hose assemblies: Burst Test – Fire Test – Impulse Test

Marking of product

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

- Manufacturer's name or trade mark;
- Date of manufacture (month/year);
- Designation type designation;
- Maximum working pressure;
- Temperature rating;
- Nominal diameter.

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.