

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings, Bite and Compression Type

with type designation(s)
EO-DiNova - 24° Cone connectors

Issued to

Parker Hannifin Manufacturing Germany GmbH & Co KG
BIELEFELD, Germany

is found to comply with
DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints

Application :

Products approved by this certificate are accepted for installation on all vessels classed by DNV GL.

Temperature range: -40°C up to +150°C
Max. working press.: 630bar. Refer to certificate
Sizes: 6mm up to 38mm

Issued at **Høvik** on **2018-01-25**

This Certificate is valid until **2023-01-24.**

for **DNV GL**

DNV GL local station: **Essen**

Approval Engineer: **Hagen Markus**

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Olaf Drews
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

The Parker Hannifin EO-DiNova pipe coupling system according to EN ISO 8434-1, DIN86126 and DIN 3861 consist of the following components:

Cutting rings

EO-DiNova metal ring with 2 soft seals (front seal to 24° cone and back/internal seal to tube).

Nuts

Standard tube nuts in accordance with DIN EN ISO 8434-1, DIN86126.

Scope of Fittings

This type approval includes the fittings as specified in the Parker catalogue no 4100-10/UK, section I2 to I5 'DIN fittings'.

The following fittings are not included in this type approval certificate:

- Male stud banjo elbow
- High pressure banjo elbow, tee

For the following fittings limitations as specified in the Rules Pt.4, Ch.6 are to be observed:

- **Bulkhead connections** of type SV, WSV are not approved through tank walls, fire divisions, watertight deck and bulkheads.
- **Pipe couplings with threaded sealing connections** are limited in the application as follows:
 - Pipe couplings with parallel thread are not approved for pipe class I and II
 - Tapered or parallel thread is not approved for toxic or flammable media or services where fatigue, severe erosion or crevice corrosion is expected to occur
 - Refer to DNVGL Rules, Pt.4, Ch.6 – Section 9 – 5.2.6

Overview of threaded pipe couplings with limitations

Type	Name
GE-R(KEG)	Male stud connector
GE-M(KEG)	
GE-NPT	
EGE-NPT	Swivel connector
WE-NPT	Male stud elbow
WE-M(KEG)	
WE-R(KEG)	
TE-R(KEG)	Male stud branch tee
TE-M(KEG)	
LE-R(KEG)	Male stud run tee
LE-M(KEG)	
GAI-NPT	Female connector
RI	Thread reducer/expander

All other fittings with male stud end not listed in the above table are approved and not limited in the application.

Materials

Component	Material designation	Standard
Fitting body, Nut	Stainless steel 1.4571	EN 10088
	CuNiFe 2.1972	WL 2.1972
Tubes ¹	Stainless steel 1.4571	EN 10216-5 Tolerances EN 10305-1 Delivery condition CFA
	CuNiFe 2.1972.22	WL 2.1972 Tolerances DIN 86019 Delivery condition DIN 85004-4
Front ring	Stainless steel 1.4439	DIN EN 10088, hardened
Back ring		DIN EN 10088
Sealings	Polyketone	Parker Engineering Standard

Notes

- ¹ For selection of the tube wall thickness the DNV GL Ship Rules Pt.4, Ch.6, Section 9, Tables 3 and 4 are to be observed. Requirements on material certificates are defined in Section 2, Table 3.
Tubing of correct temper and tolerances as recommended by the manufacturer shall be used.

Production places

This certificate includes in addition the following production places:

Parker Hannifin Sp.z.o.o. Ul. Eugeniusza Kwiatkowskiego 16 PL- 55011 Siechnice Poland
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Responsibility

The company Parker Hannifin Manufacturing Germany GmbH & Co. KG takes the responsibility that both design and production are in compliance with the DNV GL Rules and Class Programme listed on page 1 of this certificate.

Application/Limitation

The Parker Hannifin EO-DiNova pipe coupling system is type approved for application in pipe class I, II and III-piping systems, as specified in DNV GL Ship Rules Pt. 4, Ch. 6, Sec. 9 Table 12 and 13 - compression couplings - fire resistant type.

Sea water piping systems

For application in sea water systems stainless steel grades with a minimum pitting resistance equivalent number (PREN) of 30 or CuNiFe shall be used.

Refer to Parker Hannifin catalogue C 4100-10/UK, Section C – Materials and Parker overview “List of Grades”. With respect to DNVGL Rules refer to Pt.4, Ch. 6 – Section 2 Materials.

Assembling and Installation

Pipe Couplings, Bite and Compression Type are not approved for installation in high pressure fuel injection systems of combustion engines.

For assembly and installation of the pipe couplings the Parker Hannifin catalogue C 4100-10/UK, Section Tube and Fitting assembly are to be observed.

EO-DiNova assembly parameters such as setting pressures for EOMAT machines or torques are to be requested from Parker Hannifin Manufacturing Germany GmbH&Co.KG.

Temperature range for EO-DiNova fittings

Stainless steel and CuNiFe -40°C up to 150°C

Sizes and pressure range^{1,2}

Tube OD series	Stainless Steel PN	CuNiFe PN
6S	630	--
8S	630	200
10S	630	100
12S	630	100
14S	420	--
16S	420	100
20S	420	150
25S	420	100
30S	420	100
38S	315	100

Notes

¹ Individual nominal pressures of the fittings accordance to catalogue 4100-10/UK are to be observed.

² Max working pressure for the piping system depend on pipe material and thickness

Type Approval documentation

Tests carried out

Marking of product

Element	Marking
Coupling	Parker, identification sign of manufacturer
Nut	EO/P and nut size
EO-DiNova Cutting ring stainless steel CuNiFe	EO-dwd

Periodical assessment

For retention of the type approval certificate periodical assessments shall be carried out at production places by DNVGL surveyor.

The objective of the periodical assessment is to verify that the design and production conditions for the type approval have not been altered.

Main scope of the assessment:

- verification of the production and quality control system
- review of quality control documentation of recent deliveries
- review of drawings in production to verify any design changes which may have an impact on data specified in the type approval certificate, performance and range of application
- verification of the product marking
- witness of burst testing on selected sizes from production.

Periodical assessment is to be performed after 2 years and after 3.5 years.

A renewal assessment will be performed at renewal of the certificate.

In connection with the renewal assessment, burst pressure tests on test assemblies are to be carried out in the presence of the DNV GL surveyor. The test assemblies shall consist of two pieces of tubing connected with a mechanical joint of straight type. Selection of joint sizes and quantity of test assemblies is to be determined prior to the assessment.



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At least one of the test assemblies is to be manufactured in the presence of the surveyor according to the manufacturers specification.

End of certificate