Certificate No:
TAP00002GZ

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Couplings

with type designation(s)
Repico-G, Repico-S, Repico-SG

Issued to
AVK Nederland B.V.
Vaassen, Gelderland, Netherlands

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-0185 – Type approval – Mechanical joints

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
Repico-G	See page 2	8 bar to 16 bar	DN40 to DN250
Repico-S	See page 2	8 bar to 16 bar	DN40 to DN250
Repico-SG	See page 2	8 bar to 16 bar	DN40 to DN250

Issued at **Høvik** on **2022-06-02**
This Certificate is valid until **2027-06-01**.
DNV local station: **Netherlands CMC**

Approval Engineer: **Andreas Hansen**

for **DNV**

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.

Product description

Three slip-type pipe expansion joints, with inside rubber sleeve covering the metallic part, tightened with bolts. Tightness is obtained by friction between rubber sleeve and pipe surface.

Repico G – Axial restrained
Repico S – Axial flexible
Repico SG – Axial flexible / Axial restrained

Materials of construction:

Type	Repico G	Repico S	Repico SG
Body	AISI 316L	AISI 316L	AISI 316L
Slide plate	AISI 316L	AISI 316L	AISI 316L
Fasteners	SS316 / PTFE coated	SS316 / PTFE coated	SS316 / PTFE coated
Grip	SS301H	-	SS301H
Sealing	EPDM/NBR	EPDM/NBR	EPDM/NBR

Application/Limitation

The slip-on joints covered by this certificate are allowed in class II and class III piping systems, in the below applications :

1) Inert gas
   - Water seal effluent lines
   - Scrubber effluent lines
2) Flammable fluids (flash point > 60°C)
   - Fuel oil lines(2)(3)
   - Lubricating oil lines(2)(3)
   - Hydraulic oil(2)(3)
   - Thermal oil(2)(3)
3) Fresh water
   - Cooling water system(1)
   - Condensate return(1)
   - Non-essential system
4) Sanitary/drains/scuppers
   - Deck drains(4)
   - Sanitary drains
5) Sounding/vent
   - Water tanks / dry spaces
   - Oil tanks(2)(3) (flash point > 60°C)
6) Miscellaneous
   - Service air (non-essential)
   - Brine
   - Steam(6)

(1) Inside machinery spaces of category A – only approved fire resistant types
(2) Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery spaces provided the joints are located in easily visible and accessible positions
(3) Approved fire resistant types
(4) Above free board deck only
(5) In pump rooms and open decks
(6) Slip joints allowed provided that they are restrained on the pipes, may be used for pipes on deck with a design pressure ≤ 10 bar.

The couplings covered by this certificate shall not be used in systems subject to pressure pulsation and/or vibration may occur.

Size			Repico-G			Repico-S			Repico-SG		
DN	Pipe O.D.		Length [mm]	Thck. [mm]	MAWP [bar]	Length [mm]	Thck. [mm]	MAWP [bar]	Length [mm]	Thck. [mm]	MAWP [bar]
	DIN/ISO [mm]	ASTM [Inch]									
40	48.3	1.90	60	0.8	16	60	0.8	16	60	0.8	16
50	60.3	2.38	80	1.0	16	80	1.0	16	80	1.0	16
65	76.1	2.88	80	1.0	14	80	1.0	16	80	1.0	14
80	88.9	3.50	110	1.0	14	110	1.0	16	110	1.0	14
90	101.6	4.00	110	1.5	14	110	1.5	16	110	1.5	14
100	114.3	4.50	110	1.5	14	110	1.5	16	110	1.5	14
125	139.7	5.50	111	1.5	14	111	1.5	14	111	1.5	14
150	168.3	6.63	111	1.5	12	111	1.5	12	111	1.5	12
200	219.1	8.63	150	2.0	8	150	2.0	8	150	2.0	8
250	273.0	10.75	150	2.0	8	150	2.0	8	150	2.0	8

The couplings shall be assembled and mounted according to the manufacturer's instructions.

Design temperature is dependent on the gasket material, as below:

EPDM*	:	-30°C to +110°C
NBR	:	-25°C to +80°C

*) Material not to be utilized in hydrocarbon applications.

Materials chosen for the specific system shall be suitable for the intended medium and environmental conditions.

Slip-on joints shall not be used in pipelines in cargo holds, tanks, and other spaces which are not easily accessible. Application of the joints inside tanks may be permitted only if the inside medium is the same as that surrounding the coupling. Such application shall be subject to case-by-case approval.

Type Approval documentation

Tests carried out

Tightness test, repeated assembly test, burst test, vacuum test, pull-out test, and fire test.

Marking of product

For traceability to this type approval, each product is at least to be marked clearly with:

- Manufacturer's name or trademark
- Type designation

The identification marking shall be in low stressed areas.

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.