

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Pipe Couplings**

with type designation(s)
Axilock, Axilock-S, Axilock-FP

Issued to

Taylor Kerr (Couplings) Ltd
Berkhamsted, Hertfordshire, United Kingdom

is found to comply with

DNV GL rules for classification – Ships Pt.4 Ch.6 Piping systems
DNVGL-OS-D101 – Marine and machinery systems and equipment, Edition January 2018
DNV GL class programme DNVGL-CP-0185 – Type approval – Mechanical joints

Application :

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

Type:	Temperature range:	Max. working press.:	Sizes:
Axilock	-40°C to 250°C (see page 3)	5 to 20 bar (size dependent)	DN32 to DN400
Axilock-S	-40°C to 250°C (see page 3)	13 and 16 bar (size dependent)	DN20 to DN150
Axilock-FP	-40°C to 250°C (see page 3)	5 to 16 bar (size dependent)	DN20 to DN400

Issued at **Høvik** on **2019-03-06**

This Certificate is valid until **2023-06-30**.

for **DNV GL**

DNV GL local station: **London**

Approval Engineer: **Adel Samiei**

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Marianne Spæren Marveng
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

Type: Slip-on joint Grip Type. All types with inside rubber sleeve. Tightened with 2 screws.

Axilock : Double steel casing. (may be delivered with heat shield)

Axilock S: Single steel casing. (may be delivered with heat shield)

Axilock FP: Double steel casing with quilt between inner and outer casing

Sizes: Axilock: DN32, 40, 50, 65, 80, 90, 100, 125, 150, 200, 225, 250, 300, 350, 400

Axilock S: DN20, 25, 30, 32, 40, 50, 65, 80, 90, 100, 125, 150

Axilock FP: DN20, 30, 32, 40, 50, 65, 80, 90, 100, 125, 150, 200, 250, 300, 350, 400

Materials:

Type	I	II	IV	V
Casing	Stainless steel AISI 304, EN 1.4301	Stainless steel AISI 304, EN 1.4301	Stainless steel AISI 316L, EN 1.4404	S355MC (EN10419-2) High strength steel, coated
Fasteners	S355MC (EN10419-2) High tensile steel PTFE coated B12.9	Stainless steel, AISI 316/316L, EN 1.4401/1.4404, A4-80	Stainless steel AISI 316/316L, EN 1.4401/1.4404, A4-80	S355MC (EN10419-2) High tensile steel PTFE coated B12.9
Gasket/ sealing	EPDM/NBR/ HNBR/FKM	EPDM/NBR/ HNBR/FKM	EPDM/NBR/ HNBR/FKM	EPDM/NBR/ HNBR/FKM

Application/Limitation

The slip-on joints (Grip type) are allowed for Class II and III below piping systems:

1) Flammable fluids (flash point $\leq 60^{\circ}\text{C}$) - Cargo oil lines ⁽⁴⁾ - Crude oil washing lines ⁽⁴⁾ - Vent lines ⁽³⁾ 2) Inert gas - Water seal effluent lines - Scrubber effluent lines - Main lines ⁽²⁾⁽⁴⁾ - Distributions lines ⁽⁴⁾ 3) Flammable fluids (flash point $> 60^{\circ}\text{C}$) - Cargo oil lines ⁽⁴⁾ - Fuel oil lines ⁽²⁾⁽³⁾ - Lubricating oil lines ⁽²⁾⁽³⁾ - Hydraulic oil ⁽²⁾⁽³⁾ - Thermal oil ⁽²⁾⁽³⁾ 4) Fresh water - Cooling water system ⁽¹⁾ - Condensate return ⁽¹⁾ - Non-essential system	5) Sea water - Bilge lines ⁽¹⁾ - Water filled fire extinguishing systems, e.g. sprinkler systems ⁽³⁾ - Non water filled fire extinguishing systems, e.g. foam, drencher systems ⁽³⁾ - Fire main (not permanently filled) ⁽³⁾ - Ballast system ⁽¹⁾ - Cooling water system ⁽¹⁾ - Tank cleaning services - Non-essential systems 6) Sanitary/drains/scuppers - Deck drains (internal) ⁽⁶⁾ - Sanitary drains 7) Sounding/vent - Water tanks/dry spaces - Oil tanks (f.p. $> 60^{\circ}\text{C}$) ⁽²⁾⁽³⁾ 8) Miscellaneous - Service air (non-essential) - Brine - Steam ⁽⁵⁾
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General note: Axilock and Axilock S with heat shield and Axilock FP are approved fire resistant types.

(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 except in cases where such mechanical joints are installed on exposed open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines.

(4) Only in pump rooms and open decks - only approved fire resistant types.

(5) May be used for pipes on deck with a design pressure of 10 bar or less.

(6) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

Approved for machinery and metallic and GRE/GRP marine piping systems in accordance with manufacturer's recommendations.

GRE/GRP pipes may only be delivered from below manufacturers:

AMERON, Fibersol, Future Pipe Industries (FPI) and Fiberdur

The GRE/GRP pipes shall be type approved by DNV GL and all limitation on the relevant certificate shall be observed.

Max. allowable working pressure:

Type	Size	Maximum working pressure
Axilock-S	DN20, 25, 30, 32, 40, 50, 65, 80, 90, 100	16 bar
	DN 125,150	13 bar
Axilock	DN32, 40, 50, 65, 80, 90, 100, 125, 150, 200	20 bar
	DN225, 250	8.75 bar
	DN300	7.5 bar
	DN350, 400	6 bar
Axilock-FP	DN20, 30, 32, 40, 50, 65, 80, 90, 100, 125, 150	16 bar
	DN200	12 bar
	DN250	8.75 bar
	DN300	7.5 bar
	DN350, 400	6 bar

Design temperature range dependent on gasket material:

NBR:	-20°C to +80°C
EPDM:	-40°C to +100°C, not to be used for hydrocarbon applications.
Viton:	-20°C to +250°C
HNBR:	-40°C to +130°C

Rubber elements and other parts subject to wearing are to be replaced by new parts in case of repeated use of the coupling.

The couplings are to be assembled and mounted according to the manufacturer's recommendations.

Type Approval documentation

Tests carried out

Burst pressure test, Vibration/Impulse test, Fire test, Vacuum test, Pull-out test, Tightness test, Repeated assembly test

Marking of product

For traceability to this Type Approval each joint is to be marked with:

- Manufacturer's name or trade mark
- Type designation
- Size
- Max. working pressure or pressure class

Periodical assessment

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