

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Pipe Flange, Welded Connection

with type designation(s)
RocLok Clamp Hub connector (HD and SD Series)

Issued to

Roc-Master Piping Solutions Ltd. (Kunshan Plant)
Suzhou City, China

is found to comply with

DNV-OS-E201 – Oil and gas processing systems, Edition July 2021

Application :

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

Temperature range: See page 2

Max. working press.: See page 2

Issued at **Høvik** on **2022-11-21**

This Certificate is valid until **2027-11-20**.

for **DNV**

DNV local station: **Shanghai / Høvik, Norway**

Approval Engineer: **Vegard Skaug Hjelmeland**

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Sinisa Sedlan
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

RocLok Clamp Hub connectors designed according to ASME BPVC Sec. VIII Div.1 Appendix 24 covering the following sizes: 1", 12", 26".

The assembly consists of the following four material combinations.

Material comb.	Clamp	Hub	Seal ring	Bolting
1	AISI 4130 75K, AISI 4140 75K	ASTM A105, ASTM A350 LF2	AISI 4130 75K, AISI 4140 75K	ASTM A193 B7
2	AISI 4130 75K, AISI 4140 75K	ASTM A182 F11 CL1, ASTM A182 F11 CL3, ASTM A182 F22 CL1, ASTM A182 F22 CL3	AISI 4130 75K, AISI 4140 75K	ASTM A193 B7
3	ASTM A182 F304	ASTM A182 F321H, ASTM A182 F347, ASTM A182 F347H	ASTM A182 F316	ASTM A193 B8
4	ASTM A182 F304	ASTM A182 F316	ASTM A182 F316	ASTM A193 B8
5	AISI 4130 75K, AISI 4140 75K	ASTM A182 F51, ASTM A182 F53, ASTM A182 F55	ASTM A182 F51	ASTM A193 B7
6	AISI 4130 75K, AISI 4140 75K	ASTM A694 F65, ASTM A694 F70	AISI 4130 75K, AISI 4140 75K	ASTM A193 B7

Application/Limitation

The products covered by this certificate are approved to be used in offshore hydrocarbon production plants and associated equipment.

Sizes and pressure ratings:

Clamp Connector size	RocLoc designation/ seal ring	Pipe schedule	Material comb.	Design pressure [bar]	Design temperature (min/max) [°C]
1"	1in/11	Std 40 40S	1	420	-46/+120
			2	320	-46/+232
			3	200	-46/+600
			4	320	-46/+120
			5	500	-29/+150
			6	600	-46/+120
	1in/5	XXS	1	1000	-46/+120
			2	980	-46/+232
			3	420	-46/+600
			4	800	-46/+120
			5	1035	-29/+150
			6	1035	-46/+120
12"	H12in/120	Std 40 40S	1	130	-46/+120
			2	145	-46/+232
			3	70	-46/+600
			4	130	-46/+120
			5	175	-29/+150
			6	160	-46/+120
	H12in/102	160	1	320	-46/+120
			2	360	-46/+232
			3	165	-46/+600
			4	260	-46/+120
			5	420	-29/+150
			6	420	-46/+120
26"	H26in/254	Std	1	90	-46/+120
			2	98	-46/+232
			3	42	-46/+600
			4	80	-46/+120
			5	110	-29/+150

	H26in/232	34.9 mm	6	100	-46/+120
			1	155	-46/+120
			2	155	-46/+232
			3	82	-46/+600
			4	112	-46/+120
			5	155	-29/+150
			6	155	-46/+120

The scope of this approval does not cover any external loads (e.g., bending moment capacity) acting on the clamp connector assembly.

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

Components shall be properly protected against corrosion. In sour service the NACE requirements shall be fulfilled and documented. Consider that traditional austenitic stainless steel grade 316 shall not be considered seawater resistant.

Type Approval documentation

Production testing and Certification

Each assembly shall be subject to a hydrostatic pressure test, with a minimum test pressure of 1.5 times the design pressure.

Certification for the actual intended application shall follow the latest applicable edition of the Rules (as mentioned on the front page of this certificate).

Marking of product

For traceability to this type approval the clamp hub connectors are to be marked with:

- Manufacturer's name or trade mark
- Pressure rating
- Material identification
- Size

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.