



CERTIFICATE NUMBER	22-2200434-PDA
EFFECTIVE DATE	11-Feb-2022
EXPIRY DATE	10-Feb-2027
ABS TECHNICAL OFFICE	Houston ESD - Piping

CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

LOKRING TECHNOLOGY, LLC

located at

**38376 APOLLO PARKWAY, WILLOUGHBY, OH, United States,
44094**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

Product: Elastic Strain Preload (ESP) Fittings
Model: SS-40 and SS-3300 Stainless steel fitting body with stainless steel swage (drive) rings
Endorsements:
Tier: 2 - PDA Issued

This Product Design Assessment (PDA) Certificate remains valid until 10/Feb/2027 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping

Yongjin Lee

Yongjin Lee, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

LOKRING TECHNOLOGY

38376 APOLLO PARKWAY

WILLOUGHBY OH

United States 44094

Telephone: 440-942-0880

Fax: 440-942-1186

Email: msindelar@lokring.com

Web: www.lokring.com

Tier: 2 - PDA Issued

Product: Elastic Strain Preload (ESP) Fittings
Model: SS-40 and SS-3300 Stainless steel fitting body with stainless steel swage (drive) rings
Endorsements:

Intended Service:
Marine & Offshore Application - For joining Pipe and Tube .

Description:

- 1) SS-3300 for Carbon Steel Pipe, ASTM A53 and A106, SCH 10, 40 and 80, ¼" through 1½" NPS, and for Stainless Steel Pipe, ASTM A312 Grades 316(L) and 304(L), SCH 10, 40 and 80, ¼" through 1½" NPS.
- 2) SS-3300 for Stainless Steel Tube, ASTM A312, A269 and A213 Grades 316(L) and 304(L), 0.035" Wall Minimum, ¼" through ¾" O.D.
- 3) SS-40 for Carbon Steel Pipe, ASTM A53 and A106, SCH 10, 40 and 80, ¼" through 3" NPS, and for Stainless Steel Pipe, ASTM A312 Grades 316(L) and 304(L), SCH 10, 40 and 80, ¼" through 3" NPS.
- 4) SS-40 and SS-3000 for Stainless Steel Tube, ASTM A312, A269 and A213 Grades 316(L) and 304(L), 0.035" Wall Minimum, ½" through 2½" O.D.

Rating:
For Fittings, Sizes, Pressure Rating, etc. see attached "pdf" for details.

Service Restriction:
Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
Please see LOKRING Fittings Applications Guide for specific service applications.

Comments:
The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes/Drawing/Documentation:
Drawing No. Email 12-8-16, Email dated Dec 8-16 agreement to split, Revision: -, Pages: 1

Terms of Validity:
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STANDARDS

ABS Rules:
The Rules for Conditions of Classification, Part 1 2022 Marine Vessel Rules 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the following:
2022 Rules for Building and Classing Marine Vessel Rules: 4-6-2/5.9, 4-6-4/13.7.1(b), 4-6-4/Table 4, 4-6-2/5.9

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National:
ASTM F1387 (2019)

International:
IACS P2.11.5, (2021)

Government:
NA

EUMED:
NA

OTHERS:
NA

For the SS40 and SS-330 pipe product line:

LOKRING Fitting		NPS (inches)	Pipe/Tube OD(inches)	Pipe schedule			Pressure Rating ABS (Psi)
SS40-XXX-P04	SS-3300-XXX-P04	¼"	0.540	10	40	80	3300
SS40-XXX-P06	SS-3300-XXX-P06	3/8"	0.675	10	40	80	3300
SS40-XXX-P08	SS-3300-XXX-P08	½"	0.840	10	40	80	3300
SS40-XXX-P12	SS-3300-XXX-P12	¾"	1.050	10	40	80	3300
SS40-XXX-P16	SS-3300-XXX-P16	1"	1.315	10	40	80	3300
SS40-XXX-P20	SS-3300-XXX-P20	1-1/4"	1.660	10	40	80	2500
SS40-XXX-P24	SS-3300-XXX-P24	1-1/2"	1.900	10	40	80	2260
SS40-XXX-P32		2"	2.375	10	40	80	1500
SS40-XXX-P48		3"	3.500	10	40	80	920

For the SS40 and SS-3300 and SS-3300 Tubing Product Line:

LOKRING Fitting		OD (inches)	Pipe/Tube OD (inches)	Tube Wall (inches)				Pressure Rating ABS (Psi)
SS40-XXX-T04	SS-3300-XXX-T04	¼"	0.250	0.035	0.049	0.065		3300
SS40-XXX-T06	SS-3300-XXX-T06	3/8"	0.375	0.035	0.049	0.065		3102
SS40-XXX-T08	SS-3300-XXX-T08	1/2"	0.500	0.035	0.049	0.065		2444
SS40-XXX-T10	SS-3300-XXX-T10	5/8"	0.625	0.035	0.049	0.065		1974
SS40-XXX-T12	SS-3300-XXX-T12	¾"	0.750	0.035	0.049	0.065		1598
	SS-3000-XXX-T14	7/8"	0.875	0.065				2632
	SS-3000-XXX-T16	1"	1.00	0.065				2256
	SS-3000-XXX-T20	1-1/4"	1.250	0.065	0.083	0.095	0.109	1786
	SS-3000-XXX-T24	1-1/2"	1.500	0.065	0.083	0.095	0.109	1504
SS40-XXX-T32		2"	2.000	0.065		0.083		1034
SS40-XXX-T40		2-1/2"	2.500	0.065		0.083		846

Temperature and pressure de-rating for stainless steel lokring fittings:

Temperature °F (°C)	De-Rating Factor ASME B31.1	De-Rating Factor ASME B31.3
200°F (93°C)	1.00	1.00
300°F (148°C)	0.98	1.00
400°F (204°C)	0.96	0.97
500°F (260°C)	0.96	0.90
600°F (315°C)	0.90	0.85
650°F (343°C)	0.89	0.84
700°F (371°C)	0.87	0.82
750°F (398°C)	0.86	0.81
800°F (426°C)	0.85	0.80