



Marine & Offshore

Certificate number: 01707/J0 BV

File number: ACM 135/1909/1

Product code: 2107H

*This certificate is not valid when presented without the full attached schedule composed of 7 sections*

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## TYPE APPROVAL CERTIFICATE

*This certificate is issued to*

**STRAUB WERKE A.G.**

Wangs - SWITZERLAND

*for the type of product*

**MECHANICAL JOINTS - SLIP-ON JOINTS - SLIP TYPE**

STRAUB-FLEX 1L, STRAUB-FLEX 2, STRAUB-FLEX 3, STRAUB-FLEX 1L.dot, STRAUB-FLEX 2.dot and STRAUB-FLEX 3.dot

**Requirements:**

BUREAU VERITAS Rules for the Classification of Steel Ships

*This certificate is issued to attest that Bureau Veritas Marine & Offshore did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements mentioned above.*

*This certificate is a renewal of certificate N° 01707/10 BV expiring on 15/07/2020*

**This certificate will expire on: 15 Jul 2025**

**For Bureau Veritas Marine & Offshore,**

At BV HAMBURG, on 06 Jul 2020,

Adama Diene



This certificate remains valid until the date stated above, unless cancelled or revoked, provided the conditions indicated in the subsequent page(s) are complied with and the product remains satisfactory in service. This certificate will not be valid if the applicant makes any changes or modifications to the approved product, which have not been notified to, and agreed in writing with Bureau Veritas Marine & Offshore. Should the specified regulations or standards be amended during the validity of this certificate, the product(s) is/are to be re-approved prior to it/they being placed on board vessels to which the amended regulations or standards apply. This certificate is issued within the scope of the General Conditions of Bureau Veritas Marine & Offshore available on the internet site [www.veristar.com](http://www.veristar.com). Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against Bureau Veritas Marine & Offshore for any liability arising out of errors or omissions which may be contained in said document, or for errors of judgement, fault or negligence committed by personnel of the Society or of its Agents in establishment or issuance of this document, and in connection with any activities for which it may provide.

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION :

**STRAUB-FLEX 1L; STRAUB-FLEX 2L, 2LS, 2LU, 2LH; STRAUB-FLEX 3LS, 3H**  
**STRAUB-FLEX 1L.dot; STRAUB-FLEX 2L.dot, 2LS.dot, 2LU.dot, 2LH.dot; STRAUB-FLEX 3LS.dot, 3H.dot**

#### 1.1 Design:

Couplings without axial restraining and with sealing and axial anchoring to join metal pipes with commercial outer diameter.

#### 1.2 Identification:

File number	Type	Size [mm]	Nominal pressure [bar]
ACM 135/1909/1	STRAUB-FLEX 1L	48.3 to 168.3	16
	STRAUB-FLEX 2	180.0 to 1219.2	2.5 to 25
	STRAUB-FLEX 3	558.8 to 2032.0	2 to 19
	STRAUB-FLEX 1L.dot	48.3 to 168.3	10 to 16
	STRAUB-FLEX 2L.dot	180.0 to 1219.2	2.5 to 25
	STRAUB-FLEX 3L.dot	558.8 to 2032.0	2 to 19

#### 1.3 Material:

- Sealing sleeves: NBR or EPDM

- Material combination W1, W2 or W5:

. STRAUB-FLEX 1L and STRAUB-FLEX 1L.dot (W2 or W5)

. STRAUB-FLEX 2L, 2LS, 2LU, 2LH and STRAUB-FLEX 2L.dot, 2LS.dot, 2LU.dot, 2LH.dot (W2, W5, W1)

. STRAUB-FLEX 3LS, 3H and STRAUB-FLEX 3LS.dot, 3H.dot (W2, W5, W1)

- Material of components:

Components	Material combination		
	W1	W2	W5
Casing	AISI 1024, hot-dip galv.	AISI 316Ti	AISI 316Ti
Screws	AISI 4135	AISI 4135	AISI 316L
Bolts	AISI 12L 14, galv.	AISI 12L 14, galv.	AISI 316L
Strip insert (option)	AISI 316L	AISI 316L	AISI 316L

#### 1.4 Service temperature range according to the used sealing sleeve:

Material	Min. allowable temperature [°C]	Max. allowable temperature [°C]
NBR	-20	+80
EPDM	-20	+80

### 2. DOCUMENTS AND DRAWINGS:

#### 2.1 As per manufacturer's catalogue:

- Design drawings
- Technical specification
- Fitting instructions
- Technical manual 6/02 (page 74): electrical conductivity clips
- Sectional view profile insert dated 11/07/2002

#### 2.2 Drawings:

Title	STRAUB-FLEX 1L STRAUB-FLEX 1L.dot	STRAUB-FLEX 2 STRAUB-FLEX 2L.dot	STRAUB-FLEX 3 STRAUB-FLEX 3L.dot
<b>Assembling</b>	611.6 rev. 6 of 11/11/1997 651.6 rev. 6 of 24/11/1997 681.6 rev. 6 of 05/11/1998 2834.2 rev.2 of 25/11/1997	417.7 rev. 7 of 27/10/1997 474.7 rev. 7 of 28/10/1997	411.7 rev. 7 of 30/10/1997 510.6 rev. 6 of 31/10/1997
<b>Technical data</b>	E/145110 D 99/11 AT E/145511 A 02/03 AT	E/145120 D 99/11 AT E/145512 A 02/03 AT	E/145130 D 99/11 AT E/145513 A 02/03 AT

### **3. TEST REPORTS:**

- 3.1 Tightness test, burst test and vacuum test: Z4 030520-e dated 21/05/2003. Specimen F57.0 and F139.7 Straub-Flex 1L.
- 3.2 Pressure tests and vacuum tests: 831114/2 (25/11/83), 830429/8 (30/04/83), 830505/6 (05/05/83), 840510/7 (10/05/83), 830308 (29/03/83) and 840403/2 (08/06/84).
- 3.3 Vibration tests: F 2633 s (18/01/79).
- 3.4 Fire test: F2646 w/d (23/11/79) and F/G 2670 d/w (4/11/80).
- 3.5 Short-time withstand current test according to EN 60947-7-2: 95, clause 8.3.4 by Swiss Electrotechnical Association (SEV): test report 01-IK-0331.10 dated 07/12/2001

### **4. APPLICATION / LIMITATION:**

- 4.1 The couplings may be used for the following services on board ships:
  - Fresh and sea water (for cooling and other systems)
  - Bilge and ballast
  - Air, filling and sounding pipes for fresh and sea water tanks
  - Scupper and sanitary discharges led overboard above freeboard deck
  - Cargo piping of tankers
  - Low pressure air system
  - Fire extinction by pressure water and spraying water system
  - Inert gas system, on deck, outside of engine room
  - Liquid fuel and lubricating oil
  - Deck wash lines
  - Hold sounding pipes
  - Soils and waste pipes also in machinery space
  - Oil fuel transfer for deck transfer systems and through other fuel tanks. Couplings may be used on fuel oil pipelines in duct keels (only with STRAUB-T-insert)
  - Vapour lines within cargo tanks (only with STRAUB-electrical-conductivity clips)
- 4.2 This approval is also valid for ships granted with automation notations. Where notation AUT is expected, coupling screws are to be provided with locking devices. The couplings shall not be used on hydrocarbon piping circuits.
- 4.3 The nature of materials, gaskets included, should be suitable for the intended service
- 4.4 Unless the couplings are additionally equipped with STRAUB-electrical-conductivity clips, they are not to be used in piping systems where generation of electrostatic charge would cause a hazardous situation.
- 4.5 Assembly instructions given by the manufacturer are to be complied with.
- 4.6 In all cases, the associated pipes are to be suitably supported and anchored. The couplings are to be at any time accessible, excepting inside tanks where permitted by the Bureau Veritas Rules.

### **5. PRODUCTION SURVEY REQUIREMENTS:**

- 5.1 The couplings are to be supplied by **STRAUB Werke AG** in compliance with the type described in this certificate.
- 5.2 This type of product is within the category HBV of BUREAU VERITAS Rule Note NR320 and as such does not require a BUREAU VERITAS product certificate.
- 5.3 **STRAUB Werke AG** has to make the necessary arrangements to have its works recognised by BUREAU VERITAS in compliance with the requirements of NR320 for HBV products.
- 5.4 For information, **STRAUB Werke AG** has declared to BUREAU VERITAS the following production sites:  
**STRAUB Werke AG, Wangs / SWITZERLAND**

**6. MARKING OF PRODUCT:**

Each coupling is to be clearly marked with at least:

- Manufacturer's name or logo
- Type designation
- Nominal diameter
- Nominal pressure

**7. OTHERS:**

7.1 It is **STRAUB Werke AG**'s responsibility to inform shipbuilders or their sub-contractors of the proper methods of fitting, use and general maintenance of the approved equipment and the conditions of this approval.

7.2 This certificate supersedes the Type Approval Certificate N° 01707/I0 BV issued on 15 Jul 2015 by the Society.

**\*\*\* END OF CERTIFICATE \*\*\***