

MARINE DIVISION

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Certificate number: 02570/G0 BV

File number : ACM 135/1909/003

Product code : 2106H

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

TYPE APPROVAL CERTIFICATE

as per Bureau Veritas Classification Rules

This certificate is issued to

STRAUB WERKE A.G.

Wangs - SWITZERLAND

for the type of product

MECHANICAL JOINTS / SLIP-ON JOINTS / GRIP TYPE

STRAUB-METAL-GRIP and STRAUB-METAL-GRIP.dot

Regulations and standards :

BUREAU VERITAS Rules for the Classification of Steel Ships / IACS P2.11 (Nov. 2001)

This certificate is issued to attest that BUREAU VERITAS did undertake the relevant approval procedures for the product identified above which was found to comply with the relevant requirements of the Regulations and standards mentioned above.

This certificate is valid until : 10 Jul 2012

At Paris la Défense, on : 10 Jul 2007

For BUREAU VERITAS,
By order of the Secretary

Approval office

Local office : BV HAMBURG

Surveyor : U. Storm

L.COURREGELONGUE

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. 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 Division. Any Person not a party to the contract pursuant to which this document is delivered may not assert a claim against BUREAU VERITAS 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-METAL-GRIP and STRAUB-METAL-GRIP.dot

1.1 Design (slip-on joints, grip type)

- Axial restraint coupling with sealing and axial anchoring to join metal pipes with commercial outer diameter

1.2 Rating

Size (mm) / PN	30.0 to 219.1 / PN 16 244.5 to 406.4 / PN 14 to PN 8 bar depending on size
Maximum Service Pressure (bar)	16

1.3 Temperature range (°C) depending on gasket material according to manufacturer's recommendation

NBR	-20 °C to +80 °C
EPDM	-30 °C to +100 °C -20 °C to +80 °C (244,5 to 406,4 mm)

1.4 Material combination W1, W2 or W4

Components	W1	W2	W4
Casing	AISI 1024, hot-dip galv.	AISI 304	AISI 304
Screws	AISI 4135	AISI 4135	AISI 316
Bolts	AISI 12L 14, galv.	AISI 12L 14, galv.	AISI 304
Strip insert (option)	AISI 316 L	AISI 316 L	AISI 316 L

2. DOCUMENTS AND DRAWINGS

2.1 As per manufacturer's catalogue:

- Design drawings
- Technical specification
- Fitting instructions

2.2 Drawings: STRAUB-METAL-GRIP

- Assembling N° 3.1211.3 rev. 3 dated 21/02/1989 and N° 1211.5 rev. 3 dated 26/05/1997
- Technical data N° E/115100 E 99/11 AT; N° E/200000 I 00/03 MV and N° E/115511 A 02/03 AT

3. TEST REPORTS

Test reports:

- Tightness test, burst test, pull-out test, vacuum test and repeated assembly test N° Z2 030520-e dated 21/05/2003
- > Specimen MG139.7 and MG168.3 Straub-Metal-Grip L
- Pressure tests with "archway" Gripper rings Z 950629-e dated 29/06/1995
- Fire tests Z 931209-e dated 09/12/1993
- Vibration tests N° G 2634 s dated 18/01/1979

4. APPLICATION / LIMITATION

4.1 May be used on board for services of class II and class III piping systems:

- Cargo oil lines (flash point $\leq 60^{\circ}\text{C}$) - cargo oil 5, crude oil washing 5, vent lines 3
- Inert gas - water seal/scrubber effluent, main 2+5/distributions lines 5
- Flammable fluids (flash point $> 60^{\circ}\text{C}$) - cargo oil 5, fuel oil 2+3, lubricating oil 2+3, hydraulic oil 2+3, thermal oil lines 2+3
- Sea water - bilge/ballast/cooling water 1, fire main/water spray/foam/sprinkler systems 3, tank cleaning/non-essential lines
- Fresh water - cooling water 1, condensate return 1, non-essential lines
- Deck drains (internal) 4, sanitary drains
- Sounding and venting - water tanks/dry spaces, oil tanks 2+3 (flash point $> 60^{\circ}\text{C}$)
- Miscellaneous - service air (non-essential), brine, non essential systems

Footnotes:

- 1- Inside machinery spaces of category A - only approved fire resistant type
- 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 type
- 4- Above free board deck only
- 5- In pump rooms and open decks - only approved fire resistant type

4.2 The use of stainless steel is restricted as per Bureau Veritas rules.

4.3 The packing material must be compatible with the fluid to be conveyed and the maximum working temperature.

4.4 Approval also valid for ships to be granted with the notations AUT-UMS, AUT-CCS, AUT-PORT and AUT-IMS. Where notation AUT is expected, coupling screws are to be provided with locking devices.

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 joints are to be at any time accessible, excepting inside tanks where permitted by the Bureau Veritas rules.

5. PRODUCTION SURVEY REQUIREMENTS :

- 5.1 The products are to be manufactured, examined and tested by the manufacturer in accordance with the approved type described in this certificate and Bureau Veritas Rules and Regulations stated on the front page of this certificate.
- 5.2 Production sites are to be recognized by Bureau Veritas as per NR 320 for HBV products. To this end, the manufacturer has to make the necessary arrangements for a Society's Surveyor to perform visits and product audits at the production sites.
- 5.3 The manufacturer has declared to Bureau Veritas that the products detailed in this certificate are manufactured at the production site stated on the front page of this certificate.
- 5.4 No Bureau Veritas certificate is required for the approved product.

6. MARKING OF PRODUCT

Each coupling is to be clearly marked with at least:

- Manufacturer's name or logo
- Type designation
- Size

7. OTHERS

- 7.1 This approval is given with the understanding that the manufacturer will accept full responsibility for informing shipbuilders or their sub-contractors of the proper methods of fitting and general maintenance of the approved product and of the conditions of this approval.
- 7.2 This certificate supersedes the Type Approval Certificate N° 02570/F2 BV issued on 07/08/2003 by the Society.

*** END OF CERTIFICATE ***