



MARINE DIVISION

Certificate number: 14336/A0 BV

File number: ACM 135/0509/04

Product code: 2130H

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

Eifeler Maschinenbau GmbH
Euskirchen - GERMANY

for the type of product

SCREW COUPLINGS

EMB FS-System

Requirements:

BUREAU VERITAS Rules for the Classification of Steel Ships

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 mentioned above.

This certificate will expire on: 24 Aug 2016

For BUREAU VERITAS,

At BV HAMBURG, on 24 Aug 2011,

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. 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 available on the internet site 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 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:

EMB FS System

Static and mobile equipment tube-resaping

Steel or Stainless Steel pipes can be reshaped in a range from 6 to 42 mm Outer diameter.

1.1 Design:

The EMB FS System consist of the following components:

- Tube reshaping Machine Type FS90/FS92/FS93
- Fitting body (according DIN 2353, ISO 8434-1)
- FSR-/FSSR Function ring with Soft Seal (NBR/FPM/PTFE)
- Nut (according DIN 2353, ISO 8434-1).

1.2 Identification of pipes and Rating:

Series L:

Tube OD [mm]	6	8	10	12	15	18	22	28	35	42
Maximum Pressure [bar]	500	500	500	400	400	400	250	250	250	250

Series S:

Tube OD [mm]	6	8	10	12	16	20	25	30	38
Maximum Pressure [bar]	800	800	800	630	630	400	400	400	400

1.3 Material:

Pipe: Carbon Steel according to EN 10305-4 or Stainless Steel according to DIN EN 10216-5

Seal: NBR/FPM/PTFE

1.4 Temperature range for the used Materials:

Material	Maximum allowable Temperature [°C]	Maximum allowable Temperature [°C]
Carbon Steel	-40	+120
Stainless Steel	-60	+400
NBR	-35	+100
FPM	-25	+200
PTFE	-60	+200

2. DOCUMENTS AND DRAWINGS:

According to the following documents:

- EMB FS, Revision July 2009.
- EMB catalogue Hydraulic Fittings, Revision 2003.

3. TEST REPORTS:

3.1 Test Report No. S018/09: Tests performed at IMA, Dresden/GERMANY

- Pull out Test
- Vacuum Test

3.2 Test Report No. 12282: Test performed at EMB premises, Euskirchen/GERMANY

- Burst Pressure Test
- Vibration-/Impulse Test
- Tightness Test

3.3 Test Report No. R1/0000007177: Fire-resistance Test performed at WTD71, Kiel/GERMANY

4. APPLICATION / LIMITATION:

4.1 EMB FS System approved as a compression coupling for the use in piping systems onboard ships.

4.2 The manufacturer's forming process and assembly instructions are to be complied with.

5. PRODUCTION SURVEY REQUIREMENTS:

5.1 The EMB FS System is to be manufactured, examined and tested by the manufacturer in accordance with the approved type described in this certificate and in accordance with BUREAU VERITAS Rules stated on the front page of this certificate.

5.2 The 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 **Eifeler Maschinenbau GmbH** 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.

6. MARKING OF PRODUCT:

- Manufacturer's name or logo
- Model

7. OTHERS:

7.1 This approval is given on the understanding that the Society reserves the right to require check test to be carried out on the units at any time and that **Eifeler Maschinenbau GmbH, Euskirchen/GERMANY** will accept full responsibility for informing shipbuilders, shipowners or their sub-contractors of the proper methods of use and general maintenance of the units and the conditions of this approval.

*** END OF CERTIFICATE ***