



Marine & Offshore

Certificate number: 10045/D0 BV

File number: ACI4010/014/002

Product code: 5301H

*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*

**LOROWERK K.H. VAHLBRAUK GmbH + Co. KG**

Bad Gandersheim - GERMANY

*for the type of product*

**PIPE PENETRATIONS IN FIRE DIVISIONS**

A-Class Steel Deck/Bulkhead Pipe Penetrations, type "LORO-X" and "LORO-XC"

### Requirements:

Bureau Veritas Rules for the Classification of Steel Ships Part C Chapter 4

SOLAS 74, as amended, SOLAS 2000 Regulations II-2/9.3.1

IMO Res. MSC.307(88) (2010 FTP Code)

*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 will expire on: 27 Oct 2026**

**For Bureau Veritas Marine & Offshore,**

At BV HAMBURG, on 27 Oct 2021,

Jens Bauermeister



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. 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.

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This certificate consists of 4 page(s)

## THE SCHEDULE OF APPROVAL

### 1. PRODUCT DESCRIPTION:

#### **A-Class Steel Deck/Bulkhead Pipe Penetrations, type "LORO-X" and "LORO-XC"**

The pipe penetrations consist of a circular steel sleeve (=bell socket) welded to division. The sleeves are installed symmetrically in bulkhead and deck or welded to the underside of the deck (=plug-in sleeve at unexposed side).

Sleeves can be fitted (see table below) by welding with a steel cover plate (on the exposed or unexposed side) which is penetrated by and welded to the pipes.

The pipes are made of stainless steel ("LORO-XC" type) or of galvanized steel with inner coating ("LORO-X" type). The pipes are prolonged by interlocking and the connections are sealed with NBR or SBR sealing elements (manufactured by Semperit Technische Produkte Gesellschaft m.b.H).

Pipe penetrations (sleeves) are insulated with a 40 mm thick layer of insulation material<sup>(1)</sup> only from the underside of the deck and are fully insulated with a 80 mm thick layer of insulation material<sup>(1)</sup> from both sides of the bulkhead.

<sup>(1)</sup> stone wool wired mat type "**PAROC Marine Wired Mat 100**" (nominal density 100 kg/m<sup>3</sup>; manufactured by PAROC Group Oy).

#### 1.1 - A-60 Class Steel Deck Penetrations:

##### 1.1.1 - A-60 Class Steel Deck Penetrations - Test report N° DMT-DO-53-032:

Identification in test report	Description	Bell socket welding position in division / Orientation	Pipe / socket material	Size	Sealing	Drawings N° (installation / socket)*
3	LORO-XCL	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	1.4571 / 1.4301	DN40	NBR	S902423 / S005248
5	LORO-X	(form R1) welded on the exposed side / bell socket opening facing the fire side	E195 / S355J2H (galvanized)	DN40	NBR	S902425 / S005253
6	LORO-XCL	(form T1) symmetrically / welded bell plate facing the side exposed to fire	1.4571 / 1.4301	DN40	NBR	S902427 / S005248
15	LORO-X	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	E195 / S355J2H (galvanized)	DN40	NBR	S902436 / S005249
16	LORO-X	(form T1) symmetrically / welded bell plate facing the side exposed to fire	E195 / S355J2H (galvanized)	DN40	NBR	S902437 / S005249
17	LORO-XCL	(form R1) welded on the exposed side / bell socket opening facing the fire side	1.4571 / 1.4301	DN40	NBR	S902438 / S005252
18	LORO-XCL	welded on the exposed side / welded bell plate facing the side exposed to fire	1.4571 / 1.4301	DN50	NBR	S902439 / S005260
19	LORO-X	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	E195 / S355J2H (galvanized)	DN50	NBR	S902442 / S902411
20	LORO-X	(form T1) symmetrically / welded bell plate facing the side exposed to fire	E195 / S355J2H (galvanized)	DN50	NBR	S902443 / S902411

\* insulation material: thickness 40 mm and length 500 mm

##### 1.1.2 - A-60 Class Steel Deck Penetrations - Test report N° DMT-DO-53-033:

Identification in test report	Description	Bell socket welding position in division / Orientation	Pipe / socket material	Size	Sealing	Drawings N° (installation / socket)*
1	LORO-X	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	E195 / S355J2H (galvanized)	DN125	SBR	S902420 / S902413
2	LORO-X	(form T1) symmetrically / welded bell plate facing the side exposed to fire	E195 / S355J2H (galvanized)	DN125	SBR	S902421 / S902413
7	LORO-XCL	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	1.4571 / 1.4301	DN200	SBR	S0902428 / S005250
10	LORO-X	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	P235TR1 / S355J2H (galvanized)	DN200	SBR	S902431 / S005251
13	LORO-X	welded on the exposed side / welded bell plate facing the side exposed to fire	S355J2H / S355J2H (galvanized)	DN100	SBR	S902432 / S005263
17	LORO-XCL	(form R1) welded on the exposed side / bell socket opening facing the fire side	1.4571 / 1.4301	DN40	NBR	S902438

\* insulation material: thickness 40 mm and length 1000 mm

##### 1.1.3 - A-60 Class Steel Deck Penetrations - Test report N° DMT-DO-53-034:

Identification in test report	Description	Bell socket welding position in division / Orientation	Pipe / socket material	Size	Sealing	Drawings N° (installation / socket)*
4	LORO-X	welded on the exposed side / welded bell plate facing the side exposed to fire	S355J2H / S355J2H (galvanized)	DN50	NBR	S902424 / S005261
8	LORO-XCL	(form R1) welded on the exposed side / bell socket opening facing the fire side	1.4301 / 1.4571	DN200	SBR	S902589 / S905254
12	LORO-X	(form R1) welded on the exposed side / bell socket opening facing the fire side	P235TR1 / S355J2H (galvanized)	DN200	SBR	S902435 / S90526
20	LORO-X	(form T1) symmetrically / welded bell plate facing the side exposed to fire	E195 / S355J2H (galvanized)	DN50	NBR	S902424 / S905261

\* insulation material: thickness 40 mm and length 1000 mm

## 1.2 - A-Class Steel Bulkhead Penetrations:

### 1.2.1 - A-60 Class Steel Bulkhead Penetrations - Test report N° DMT-DO-53-043:

Identification in test report	Description	Bell socket welding position in division / Orientation	Pipe / socket material	Size	Sealing	Drawings N° (installation / socket)*
7	LORO-XCL	symmetrically / welded bell plate facing the side exposed to fire	1.4571 / 1.4301	DN50	NBR	S902464 C / S005261
8	LORO-XCL	symmetrically / welded bell plate facing the side unexposed to fire	1.4571 / 1.4301	DN50	NBR	S902463 E / S005260
9	LORO-X	(form T1) symmetrically / welded bell plate facing the side exposed to fire	E195 / S355J2H (galvanized)	DN40	NBR	S902454 C / S005249
10	LORO-X	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	E195 / S355J2H (galvanized)	DN40	NBR	S902453 C / S005249
11	LORO-XCL	(form T1) symmetrically / welded bell plate facing the side exposed to fire	1.4571 / 1.4301	DN40	NBR	S902456 C / S005248
12	LORO-XCL	(form T1) symmetrically / bell opening facing the side unexposed to fire	1.4571 / 1.4301	DN40	NBR	S902455 C / S005248
13	LORO-XCL	(form R1) symmetrically / bell opening facing the side exposed to fire	1.4571 / 1.4301	DN40	NBR	S902462 C / S005252
14	LORO-X with pressure pipe clamp on the fire side	(form R1) symmetrically / welded bell plate facing the side exposed to fire	E195 / S355J2H (galvanized)	DN40	NBR	S902461 C / S005253
15		(form T1) symmetrically / welded bell plate facing the side exposed to fire	E195 / S355J2H (galvanized)	DN50	NBR	S902460 F / S902411
16	LORO-X	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	E195 / S355J2H (galvanized)	DN50	NBR	S902459 E / S902411
17	LORO-X	(form R1) symmetrically / bell opening facing the side unexposed to fire	E195 / S355J2H (galvanized)	DN40	NBR	S902588 B / S005253
18	LORO-XCL	(form R1) symmetrically / bell opening facing the side unexposed to fire	1.4571 / 1.4301	DN40	NBR	S902587 / S005252
19	LORO-X	symmetrically / bell opening facing the side unexposed to fire	E195 / S355J2H (galvanized)	DN50	NBR	S902451 D / S005261
20	LORO-XCL	symmetrically / bell opening facing the side unexposed to fire	1.4571 / 1.4301	DN50	NBR	S902452 / S005260
23	LORO-X	(form T1) symmetrically / welded bell plate facing the side exposed to fire	E195 / S355J2H (galvanized)	DN125	SBR	S902471 F / S902413
24	LORO-X	(form T1) symmetrically / welded bell plate facing the side unexposed to fire	1.4571 / 1.4301 and	DN125	SBR	S902584 D / S902413

\* insulation material: thickness 80 mm and length 500 mm

### 1.2.2 - A-30 Class Steel Bulkhead Penetrations - Test report N° DMT-DO-53-043:

Identification in test report	Description	Bell socket welding position in division / Orientation	Pipe / socket material	Size	Sealing	Drawings N° (installation / socket)*
1	LORO-XCL	(form R1) symmetrically / bell socket opening facing the side unexposed to fire	1.4301 / 1.4571	DN200	SBR	S902586 B / S005254
2	LORO-X	(form R1) symmetrically / bell socket opening facing the side unexposed to fire	S355J2H / P235TR1 (galvanized)	DN200	SBR	S902585 B / S005255
3	LORO-XCL	(form T1) symmetrically / bell socket opening facing the side exposed to fire	1.4301 / 1.4571	DN200	SBR	S902465 C / S005250
4	LORO-X	(form T1) symmetrically / bell socket opening facing the side unexposed to fire	S355J2H / P235TR1 (galvanized)	DN200	SBR	S902469 D / 08200200X
5	LORO-X	(form R1) symmetrically / bell socket opening facing the side exposed to fire	S355J2H / P235TR1 (galvanized)	DN200	SBR	S902446 C / S005255
6	LORO-XCL	(form R1) symmetrically / bell socket opening facing the side exposed to fire	1.4301 / 1.4571	DN200	SBR	S902444 C / S005254
21	LORO-XCL	(form T1) symmetrically / bell socket opening facing the side unexposed to fire	1.4301 / 1.4571	DN200	SBR	S902447 D / 08200200C
22	LORO-X	(form T1) symmetrically / bell socket opening facing the side exposed to fire	S355J2H / P235TR1 (galvanized)	DN200	SBR	S902448 C / 08200200X

\* insulation material: thickness 80 mm and length 500 mm

## 2. DOCUMENTS AND DRAWINGS:

As per the Manufacturer's drawings:

- Pipe Penetrations Designs: N° S006404 dated 13/01/2016, N° S006405 dated 14/01/2016, N° S006406 dated 15/01/2016.
- A-60 Class Pipe Penetrations in deck: N° S902411 Rev.A dated 17/04/2014, N° S902413 dated 25/03/2013, N° S902420~S902421, N° S902423~S902425, N° S902427~S902428, N° S902431~S902432, N° S902435~S902439, N° S902442~S902443, N° S902445 D and N° S902589 all dated 02/09/2015, N° S902430 Rev.C, N° S902433 Rev.C and N° S902434 Rev.C all dated 19/10/2015, N° S005248~S005249, N° S005252~S005255 and N° S005260~S005263 all dated 25/09/2013, and, N° 08200200C dated 22/05/2013 and N° 08200200X dated 31/05/2012.

- A-60 Class Pipe Penetrations in bulkhead: N° S902411 Rev.A dated 17/04/2014, N° S902413 dated 25/03/2013, N° S902444 C, N° S902446 C, N° S902447 D, N° S902448 C, N° S902451 D, N° S902452 C, N° S902453 C, N° S902454 C, N° S902455 C, N° S902456 C, N° S902459 E N° S902460 F, N° S902461 C, N° S902462 C, N° S902464 C, N° S902465 C, N° S902469 D, N° S902585 B, N° S902586 B, N° S902588 B dated 03/06/2015, N° S902472 B all dated 01/08/2014, N° S902463 E dated 27/11/2015, N° S902471 F and N° S902484 D both dated 04/09/2015, N° S902587 B dated 05/09/2014, N° S005248, N° S005249, N° S005252, N° S005253, N° S005254, N° S005255, N° S005260 and N° S005261 all dated 25/09/2013, N° 08200200C dated 22/05/2013 and N° 08200200X dated 31/05/2012.

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

Test reports as per IMO 2010 FTP Code Annex 1 Part 3, from DMT, Germany:

- A-60 Class Pipe Penetrations in deck: N° DMT-DO-53-032 dated 10/12/2015 (test date: 15/10/2014), N° DMT-D-53-033 dated 10/12/2015 (test date: 10/02/2015), and N° DMT-DO-53-034 dated 10/12/2015 (test date: 13/02/2015)
- A-60 Class Pipe Penetrations in bulkhead: N° DMT-DO-53-043 dated 10/12/2015 (test date: 18/06/2015)

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

4.1 - Approved for use:

- in A-15, A-30, A-60 class steel divisions, with fire insulation as described in §1.
- in A-0 class steel divisions, with local fire insulation arrangement (on the penetration itself as described in §1 and 200 mm around).

4.2 - The tests have been carried out with fire insulating material "**PAROC Marine Wired Mat 100**" (nominal density 100 kg/m<sup>3</sup>); any alternative insulation material, proven as giving at least an equivalent insulation performance, is subject to a case-by-case approval.

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

5.1 - The pipe penetrations are to be supplied by **LOROWERK K.H. VAHLBRAUK GmbH + Co. KG** 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 BV product certificate.

5.3 - **LOROWERK K.H. VAHLBRAUK GmbH + Co. KG** has to make the necessary arrangements to have its works recognised by Bureau Veritas in compliance with the requirements of NR320 for HBV products.

### **6. MARKING OF PRODUCT:**

The product or packing is to be marked with Manufacturer name, type, designation and fire-technical rating.

### **7. OTHERS:**

7.1 - It is **LOROWERK K.H. VAHLBRAUK GmbH + Co. KG**'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° 10045/C0 BV issued on 11/02/2014 by the Society.

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