

Certificate Of Fire Approval

This is to certify that the product(s) detailed below will be accepted for compliance with the applicable Lloyd's Register Rules and Regulations for use on offshore units classed with Lloyd's Register, and for use on offshore units and onshore facilities when authorised by contracting governments to issue the relevant certificates, licences, permits etc.

Manufacturer	Hy-lok Corporation
Address	97 Noksansandan 27-ro, Gangseo-gu, Busan, 46751, Republic of Korea
Type	Pipe Penetration (Standard Fire Test)
Description	Single and Multiple Stainless-steel Pipe Circular Penetrations – Types: "ACBUW", "ADBUW", "ACWC" and "ADCW" for applications in A-60 Class steel bulkheads and decks
Trade Name	"ACBUW", "ADBUW", "ACWC" and "ADCW".
Specified Standard	IMO Res. MSC.307(88) – (2010 FTPCode) Annex 1 Part 3 IMO MSC.1/Circ.1488

This certificate is not valid for equipment, the design or manufacture of which has been varied or modified from the specimen tested. The manufacturer should notify Lloyd's Register EMEA of any modification or changes to the equipment in order to obtain a valid Certificate.

The Design Appraisal Document and its supplementary Type Approval Terms and Conditions form part of this Certificate.

This certificate remains valid unless cancelled or revoked, provided the conditions in the attached Design Appraisal Document are complied with and the equipment remains satisfactory in service.



Saji Abraham

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ATTACHMENT TO CERTIFICATE OF TYPE APPROVAL No.LR2004437SF-01

The undernoted documents have been appraised for compliance with the relevant requirements of International Conventions, and this Design Appraisal Document forms part of the Certificate.
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EXAMINED DOCUMENTATION

Korea Marine Equipment Research Institute (KOMERI), 435, Haeyang-ro Yeongdo-gu, Busan, Korea, Fire Test Reports No. KOMERI 0402-17T2149 dated 14 March 2018 and KOMERI 0402-17T2150 dated 13 March 2018.

Manufacturer's Drawings: 2017F25D02, 2017F25D04, 2017F25D06 and 2017F25D07 (For reference only; product installation and insulation arrangements to be in accordance with Conditions of Certification as described below)

CONDITIONS OF CERTIFICATION

- Hy-Lok Single and Multiple Stainless-steel Pipe penetrations may be accepted for use in approved A-60 Class steel bulkheads and decks, with approved arrangements described in Tables 1 and 2, associated notes and manufacturer's drawings listed below.

Table 1-Approved Single Stainless-steel Pipe penetrations in A-60 Class Steel Bulkheads and decks				
Penetration Sleeve (Union) Type/ Drawing Reference	Flange Outer Diameter (O.D)	Connector (Cap) Type/O.D	Penetrating pipe O.D	Minimum insulation arrangements
ACBUW-38ML550/ 2017F25D04	250mm	ACCA-38M (38mm O.D)	38mm O.D	Penetration to be fully insulated with one layer of KCC Corporation "Hi- Wool" (50mm thick, 120 kg/m ³) or equivalent and the same insulation extended along the pipe for minimum 450mm, on at least one side in bulkheads and on the fire exposed underside in decks.
ADBUW- 38SL550/ 2017F25D02	250mm	ADCA-38S (38mm O.D)	38mm O.D	

- Approval of each penetration is limited to the fire tested configuration only, as described above.

Table 2-Approved Multiple Stainless-steel Pipe Circular Penetrations in A-60 Class Steel Bulkheads and decks			
Penetration Type/ Drawing Reference	Flange O.D	Product description (Penetration Sleeve/Connector/Stainless-Steel Pipe)	Minimum insulation arrangements
AXBUW-XXX/ 2017F25D06	280mm	1 x ADBUW-06LL550 with ADCA-06L Caps and 6mm O.D pipes 1 x ADBUW-15LL550 with ADCA-15L Caps and 15mm O.D pipes 1 x ACBUW-06ML550 with ACCA-6M Caps and 6mm O.D pipes 1 x ACBUW-15ML550 with ACCA-15M Caps and 15mm O.D pipes	Penetration to be fully insulated with one layer of KCC Corporation "Hi- Wool" (50mm thick, 120 kg/m ³) or equivalent and the same insulation extended along the pipe for minimum 450mm, on

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ADCW(CWC)XXX-04BI/ 2017F25D07	280mm	1 x ADCW06L-04BI with ADCA-06L Caps and 6mm O.D pipes 1 x ADCW15L-04BI with ADCA-15L Caps and 15mm O.D pipes 1 x ACWC6M-8PI with ACCA-6M Caps and 6mm O.D pipes 1 x ACWC15M-15PI with ACCA-15M Caps and 15mm O.D pipes	at least one side in bulkheads and on the fire exposed underside in decks.
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1. Approval of each multi pipe penetration is limited to the fire tested configuration with the as tested pipe types only, as described above. The following deviations may be accepted: the number of pipes in the penetration may be reduced; also, the larger pipes may be replaced with smaller pipes of outside diameter not less than the minimum size pipe of the same type tested in the same penetration. All other deviations from the tested arrangements are subject to case-by-case approvals
2. Hy-Lok Single and Multiple Pipe penetrations described in Tables 1 and 2 may also be accepted in A-30, A-15 and A-0 Class steel bulkheads and decks, provided they are fitted with at least the same as-tested A-60 Class insulation arrangements described in these Tables and additionally the same A-60 Class insulation must also be extended for a minimum distance of 200mm around the penetration, on all fire risk sides of bulkheads and decks, this being determined by the Project Plan Approval authorities
3. Penetrations and Pipes are to be fitted with the as-tested insulation materials in all cases. Any alternative insulation system proposed must be separately approved by the final Project Authority as being equivalent, at least in fire performance, material properties, thickness and density as the fire tested insulation system. Final insulation arrangements onboard must be approved by the project authority on a case-by-case basis
4. Consists of: single or multiple stainless-steel pipe penetration sleeves (bulkhead/deck union) fitted symmetrically to a stainless-steel flange plate (250mm or 280mm O.D respectively) by continuous welding on both sides. The steel flange plate is then attached to the steel division, by continuous welding on at least one side of the division. Each pipe penetration sleeve is fitted with threaded stainless-steel bite connectors (caps) at each end to connect stainless-steel pipes (lubes)
5. The penetration weld arrangements must be as-tested in accordance with manufacturer's specifications and to the satisfaction of the attending project surveyor. Any additional requirements specified by the project surveyors for special applications (for example, installations in high stress locations) must also be complied with
6. Composition, application and installation of sub components, including adhesives, seals and any fire retardants, to be maintained in production and used in accordance with originally tested composition formula and method of application and installation, and manufacturer's instructions
7. Production items are to be manufactured in accordance with a quality control system which shall be maintained to ensure that items are of the same standard as the approved prototype
8. The certificate holder is solely responsible for the products supplied under this Certificate and to ensure that their products, whether manufactured by themselves or their licensee manufacturers, if agreed by Lloyd's Register, are fully compliant with the relevant statutory regulations and Lloyd's Register Class rules as applicable and designed and manufactured to the same quality and specifications as the prototype tested, including components that are designed and manufactured by third parties

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PLACE OF PRODUCTION

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Busan 46751
Republic of Korea



Saji Abraham
Senior Specialist
Fire & Safety, Statutory Discipline Team
UK&I Technical Support Office, Marine & Offshore
Lloyd's Register EMEA

Supplementary Type Approval Terms and Conditions

This certificate and Design Appraisal Document relates to type approval, it certifies that the prototype(s) of the product(s) referred to herein has/have been found to meet the applicable design criteria for the use specified herein, it does not mean or imply approval for any other use, nor approval of any products designed or manufactured otherwise than in strict conformity with the said prototype(s).