

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Class A and B Penetration**with type designation(s)
"ADBUW", "ACBUW", "ADCW" and "ACWC"

Issued to

Hy-Lok Corporation
Busan, Republic of Korea

is found to comply with

DNV GL statutory interpretations DNVGL-SI-0364 – SOLAS interpretations
DNV GL rules for classification – Ships
DNV GL offshore standards**Application :****Approved for use as a pipe penetration system in A class steel bulkheads and decks.****This certificate is recognized by Transport Canada.****Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV GL.**Issued at **Høvik** on **2020-02-14**This Certificate is valid until **2025-02-13**.for **DNV GL**DNV GL local station: **Gimhae Station**Approval Engineer: **Helge Bjørnara**

Mårten Schei-Nilsson
Head of Section

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid. The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.



Product description

"ADBUW", "ACBUW", "ADCW" and "ACWC",
pipe penetration system consisting of a bulkhead union ("ADBUW" and "ACBUW") or insert weld
connectors ("ADCW" and "ACWC") welded to a steel pipe penetrating a structural core.

"ADBUW" comes in two versions (L series and S series). "ACBUW" comes in comes in two versions
(connects fractional tubes or metric tubes).

For further details, see drawings listed under Type Approval documentation.

Application/Limitation

Approved as A-0 or A-60 single pipe penetrations in steel bulkheads and decks. Other applications are
subject for case-by-case approval.

Approved for use in class A-15 and A-30 when the penetration system is insulated as A-60 and in
addition the division is to be insulated with A-60 insulation at least 200 mm around the penetration.

Table 1: A-class steel bulkhead

Bulkhead union type	Union size [mm]	Min. tube/pipe length [mm]	Union body/ Welded tube/ Welded pipe OD [mm]	Union body/ Welded tube/ Welded pipe thickness [mm]	Insulation	Rating
ADBUW	6 – 38	120 – 139 ¹⁾	18 - 60	7 - 14	none	A-0
ACBUW	6 – 38	120 – 146 ¹⁾	12 - 60	3,6 – 13,2	none	A-0
ADBUW	6 - 38	550 ²⁾	18 – 60	7 - 14	Fully insulated plus 450 mm along pipe.	A-60
ACBUW	6 – 38	550 ²⁾	12 - 60	3,6 – 13,2	Fully insulated plus 450 mm along pipe.	A-60
ADCW	6 – 15	500 ²⁾	21,3	3,7	Fully insulated plus 450 mm along pipe.	A-60
ACWC	6 – 15	500 ²⁾	21,3	3,7	Fully insulated plus 450 mm along pipe.	A-60

1) Tube/pipe is symmetrically welded to bulkhead

2) Tube/pipe is fitted with at least 450 mm on insulated side

Table 2: A-class steel deck

Bulkhead union type	Tube O.D size [mm]	Min. tube/pipe length [mm]	Union body/ Welded tube/ Welded pipe OD [mm]	Union body/ Welded tube/ Welded pipe thickness [mm]	Insulation	Rating
ADBUW	6 – 38	120 – 139 ¹⁾	18 - 60	7 - 14	none	A-0
ACBUW	6 – 38	120 – 146 ¹⁾	12 - 60	3,6 – 13,2	none	A-0
ADBUW	6 - 38	550 ²⁾	18 – 60	7 - 14	Fully insulated plus 450 mm along pipe on the underside	A-60
ACBUW	6 – 38	550 ²⁾	12 - 60	3,6 – 13,2	Fully insulated plus 450 mm along pipe on the underside	A-60

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ADCW	6 – 15	500 ²⁾	21,3	3,7	Fully insulated plus 450 mm along pipe on the underside	A-60
ACWC	6 – 15	500 ²⁾	21,3	3,7	Fully insulated plus 450 mm along pipe on the underside	A-60

1) Tube/pipe is symmetrically welded to bulkhead

2) Tube/pipe is fitted with at least 450 mm on insulated side

Each product is to be supplied with its manual for installation and maintenance.

Type Approval documentation

Certification in accordance with Class Programme DNVGL-CP-0338, September 2018.

Test report No. KOMERI-0402-17T2147 dated 14 March 2018 from KOMERI, Busan, Korea.

Test report No. KOMERI-0402-17T2148 dated 14 March 2018 from KOMERI, Busan, Korea.

Test report No. KOMERI-0402-17T2149 dated 14 March 2018 from KOMERI, Busan, Korea.

Test report No. KOMERI-0402-17T2150 dated 13 March 2018 from KOMERI, Busan, Korea.

Dwg. No. 2018E04D01-5, Rev.0, dated 10 May 2018 from maker.

Tests carried out

Tested according to IMO 2010 FTP Code part 3.

Marking of product

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

Transport Canada Approval

Based on the procedures laid down in the Transport Canada Publication entitled "Approval Procedures for, Life Saving Equipment and Structural Fire Protection Products (TP 14612)", DNV GL confirms that the product/s listed in this certificate is/are in accordance with Transport Canada's requirements.

Periodical assessment

DNV GL's surveyor is to be given permission to perform Periodical Assessments at any time during the validity of this certificate and at least every second year. The arrangement is to be in accordance with procedure described in Class Program DNVGL-CP-0338, Section 4.