



CERTIFICATE NUMBER	18-1732017-1-PDA
EFFECTIVE DATE	16-Sep-2020
EXPIRY DATE	18-Jun-2023
ABS TECHNICAL OFFICE	Houston ESD - Piping

# CERTIFICATE OF Product Design Assessment

This is to certify that a representative of this Bureau did, at the request of

**PBM, INC.**

located at

**1070 SANDY HILL RD., Irwin, PA, United States, 15642**

assess design plans and data for the below listed product. This assessment is a representation by the Bureau as to the degree of compliance the design exhibits with applicable sections of the Rules. This assessment does not waive unit certification or classification procedures required by ABS Rules for products to be installed in ABS classed vessels or facilities. This certificate, by itself, does not reflect that the product is Type Approved. The scope and limitations of this assessment are detailed on the pages attached to this certificate.

**Product Cryogenic Valve**

**Model 2-Way Ball Valves: CP Series, CN Series, C6 Series and IB Series, 3-Way Ball Valves: CD Series**

This Product Design Assessment (PDA) Certificate remains valid until 18/Jun/2023 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

American Bureau Of Shipping
Yongjin Lee, Engineer/Consultant

NOTE: This certificate evidences compliance with one or more of the Rules, Guides, standards or other criteria of ABS or a statutory, industrial or manufacturer's standards. It is issued solely for the use of ABS, its committees, its clients or other authorized entities. Any significant changes to the aforementioned product without approval from ABS will result in this certificate becoming null and void. This certificate is governed by ABS Rules 1-1-A3/5.9 Terms and Conditions of the Request for Product Type Approval and Agreement (2010)

**PBM**

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**Tier: 5 - Unit Certification Required**

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**Product:** Cryogenic Valve

**Model:** 2-Way Ball Valves: CP Series, CN Series, C6 Series and IB Series, 3-Way Ball Valves: CD Series

**Intended Service:**

Cryogenic LNG/LPG services in Marine and Offshore Applications.

**Description:**

2-Way Full Port Fire-safe Cryogenic Valves (CP, CN and C6 Series) - 1/2" to 4" ;

2-Way Cryogenic Instrument Valves (IB Series) - 3/4" and 1";

3-Way Full Port Cryogenic Valves (CD Series): 1/2" to 4";

Materials:

Body: ASME A351, CF8M, ASME A479, S31603;

Bonnet: ASME A351, CF3M, ASME A479, S31603;

Stem: ASME A564 S17400, H1150D;

Ball: 316L SST, ASME A479, S31603;

Bolts: ASME A320, CL.I, GR.B8;

Consult with the manufacturer regarding other available materials for specific services per ASME B16.34 or MSS SP 72

**Rating:**

Design Temperature: -196°C to +205°C;

Design Pressure Ratings:

2-Way Full Port Fire-safe Cryogenic Valves:

ASME Class #150:

CP Type Series 6: 1/2", 3/4", 1", 1-1/2", 2", 3" and 4" ;

CN Type Series 6: 1/2", 3/4", 1", 1-1/2", 2", 3" and 4" ;

CD Type Series 6: 1/2", 3/4", 1", 1-1/2", 2", 3" and 4" ;

ASME Class #300:

CP Type Series 6: 1/2", 3/4", 1", 1-1/2", 2", 3" and 4" ;

CN Type Series 6: 1/2", 3/4", 1", 1-1/2", 2", 3" and 4" ;

CD Type Series 6: 1/2", 3/4", 1", 1-1/2", 2", 3" and 4" ;

ASME Class #600:

C6 Type Series 6: 1/2", 3/4", 1", 1-1/2" and 2" ;

CN Type Series 6: 1/2", 3/4", 1", 1-1/2", 2", 3" and 4" ;

2-Way Cryogenic Instrument Valves:

IBH Type Series 5 Class #2500: 1" ;

IBH Type Series 5 up to 5367 psig: 3/4" ;

**Service Restriction:**

1) Unit Certification is required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.

2) All valves are to be tested at the plant of manufacturer in the presence of the Surveyor in accordance with 5C-8-5/13.1.1 (b) of ABS Marine Vessels Rules.

3) The material for valves with design temperature at or below -55°C are to be tested in the presence of the Surveyor in accordance with 5C-8-6/2.2 of ABS Marine Vessels Rules.

**Comments:**

1) The manufacturer is to guarantee that the valve has been tested to the pressure required by the pressure rating of the valve prior to shipment.

2) All valves to bear the trademark of the manufacturer legibly stamped or cast on the exterior of the valves as well as the primary rating.

3) The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

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- 4) All valves are to be subjected by the manufacturer to a hydrostatic test at pressure equal to that stipulated by the American National Standards Institute or other recognized standard. The manufacturer's Trademark, pressure/temperature rating and material identification, as applicable, must be stamped or cast on the component.  
5) Electrical components not included in this PDA

**Notes/Drawing/Documentation:**

Supporting Documents:

Sample Drawings:

CP Series:

Drawing No. CPH-H6J-G---04-L, 2" CPH-H6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 07/07/16, Page: 1;

Drawing No. CPHLC6B-G---04-L, 1/2" CPHLC6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 09/13/16, Page: 1;

Drawing No. CPHLC6Q9G---04-T296, 1/2" CPHLC6, 2-WAY, API-607, CL. 300, Double Block & Bleed Cryogenic Ball Valve, Rev. 0, Date: 10/02/17, Page: 1;

Drawing No. CPHLD6B-G---02-L, 3/4" CPHLD6, 2-WAY, 300# Cryogenic Ball Valve, Rev. 0, Date: 03/07/16, Page: 1;

Drawing No. CPHLE6B-G---04-L, 1" CPHLE6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 09/13/16, Page: 1;

Drawing No. CPHLE6B9G---04-T293, 1" CPHLE6, 2-WAY, API-607, CL. 300, Cryogenic Ball Valve, Rev. 0, Date: 10/04/17, Page: 1;

Drawing No. CPHLE6B9G---66-T293, 1" CPHLE6, 2-WAY, API-607, CL. 300, Cryogenic Ball Valve, Rev. 0, Date: 10/05/17, Page: 1;

Drawing No. CPHLG6B-G---04-L, 1-1/2" CPHLG6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 09/13/16, Page: 1;

Drawing No. CPHLH6B-G---04-L, 2" CPHLH6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 09/14/16, Page: 1;

Drawing No. CPHLK6B-G---02-L, 3" CPHLK6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 12/16/16, Page: 1;

Drawing No. CPHLL6B-G---02-L, 4" CPHLL6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 12/16/16, Page: 1;

CN Series:

Drawing No. CNH-C6L9G---04-L, 1/2" CNH-C6, 2-WAY, API-607, 150# Cryogenic Ball Valve, Rev. 0, Date: 06/05/17, Page: 1;

Drawing No. CNH-C6N-G---02-L, 1/2" CNH-C6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 08/17/16, Page: 1;

Drawing No. CNH-D6L-G---02-L, 3/4" CNH-D6, 2-WAY, 150# Cryogenic Ball Valve, Rev. 0, Date: 03/17/16, Page: 1;

Drawing No. CNH-D6M-G---04-L, 3/4" CNH-D6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 03/23/15, Page: 1;

Drawing No. CNH-D6N-G---02-L, 3/4" CNHLD6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 1, Date: 02/21/17, Page: 1;

Drawing No. CNH-E6L-G---02-L, 1" CNH-E6, 2-WAY, 150# Cryogenic Ball Valve, Rev. 0, Date: 03/31/17, Page: 1;

Drawing No. CNH-E6M-G---04-L, 1" CNH-E6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 08/25/15, Page: 1;

Drawing No. CNH-E6N-G---02-L, 1" CNH-E6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 1, Date: 02/21/17, Page: 1;

Drawing No. CNH-G6L-G---04-L, 1-1/2" CNH-G6, 2-WAY, API-607, 150# Cryogenic Ball Valve, Rev. 1, Date: 02/27/18, Page: 1;

Drawing No. CNH-G6M-G---04-L, 1-1/2" CNH-G6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 06/24/15, Page: 1;

Drawing No. CNH-G6N-G---02-L, 1-1/2" CNH-G6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 1, Date: 01/24/17, Page: 1;

Drawing No. CNH-H6L-G---04-L, 2" CNH-H6, 2-WAY, API-607, 150# Cryogenic Ball Valve, Rev. 0, Date:

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04/02/15, Page: 1;

Drawing No. CNH-H6L9G---66-T291, 2" CNH-H6, 2-WAY, API-607, 150# Cryogenic Ball Valve, Rev. 0, Date: 09/29/17, Page: 1;

Drawing No. CNH-H6M-G---04-L, 2" CNH-H6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 04/01/15, Page: 1;

Drawing No. CNH-H6N-G---02-L, 2" CNH-H6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 12/28/16, Page: 1;

Drawing No. CNH-K6L-G---09-L, 3" CNH-K6, 2-WAY, API-607, 150# Cryogenic Ball Valve, Rev. 1, Date: 07/15/15, Page: 1;

Drawing No. CNH-K6M-G---09-L, 3" CNH-K6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 1, Date: 07/15/15, Page: 1;

Drawing No. CNH-K6N-G---02-L, 3" CNH-K6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 07/25/17, Page: 1;

Drawing No. CNH-L6L-G---02-L, 4" CNH-L6, 2-WAY, API-607, 150# Cryogenic Ball Valve, Rev. 0, Date: 01/19/16, Page: 1;

Drawing No. CNH-L6M-G---02-L, 4" CNH-L6, 2-WAY, API-607, 300# Cryogenic Ball Valve, Rev. 0, Date: 01/19/16, Page: 1;

Drawing No. CNH-L6N-G---02-L, 4" CNH-L6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 02/27/18, Page: 1;

**C6 Series:**

Drawing No. C6H-C6N-G---02-L, 1/2" C6H-C6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 05/18/17, Page: 1;

Drawing No. C6H-D6N-G---02-L, 3/4" C6H-D6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 05/18/17, Page: 1;

Drawing No. C6H-E6N-G---02-L, 1" C6H-E6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 02/08/17, Page: 1;

Drawing No. C6H-G6N-G---02-L, 1-1/2" C6H-G6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 01/24/17, Page: 1;

Drawing No. C6H-H6N-G---02-L, 2" C6H-H6, 2-WAY, API-607, 600# Cryogenic Ball Valve, Rev. 0, Date: 01/20/17, Page: 1;

**IB Series:**

Drawing No. IBH-F5EEG44-66--T368, 1", 2-WAY, 2500# Cryogenic Instrument Valve, Rev. 0, Date: 11/09/17, Page: 1;

Drawing No. IBH-F5EEGEE-66--T292, 3/4", 2-WAY, Cryogenic Instrument Valve up to 5367 psig, Rev. 0, Date: 09/29/17, Page: 1;

**CD Series:**

Drawing No. CDHLC6Q-G18-04-L, 1/2" CDHLC6, 3-Way, 300# Cryogenic Ball Valve, Rev. 2, Date: 05/27/2020, Page: 1;

Drawing No. CDHLD6Q-G18-04-L, 3/4" CDHLD6, 3-Way, 300# Cryogenic Ball Valve, Rev. 2, Date: 09/24/2018, Page: 1;

Drawing No. CDH-E6Q-H18-04-L, 1" CDH-E6, 3-Way, 300# Cryogenic Ball Valve, Rev. 1, Date: 12/27/2018, Page: 1;

Drawing No. CDHLG6D-G18-04-L, 1-1/2" CDHLG6, 3-Way, 300# Cryogenic Ball Valve, Rev. 1, Date: 05/18/2020, Page: 1;

Drawing No. CDHLH6D-G18-04-L, 2" CDHLH6, 3-Way, 300# Cryogenic Ball Valve, Rev. 1, Date: 05/18/2020, Page: 1;

Drawing No. CDH-K6B-G18-09-L, 3" CDH-K6, 3-Way, 300# Cryogenic Ball Valve, Rev. 1, Date: 05/21/2020, Page: 1;

**Test Reports:**

ABS Prototype Test Report No. C3484657, Date: 4/29/18;

**Fire Test Reports:**

Project No. 214227 per API 607 6th Edition (2010), Date: 8/5/2014, 2" Class 150 CNH-H6 Cryogenic Ball Valve;

Project No. 214142 per API 607 6th Edition (2010), Date: 6/3/2014, 2" Class 150 CPHLH7 Cryogenic Ball Valve;

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Project No. 217425 per API 607 7th Edition (2016), Date: 1/26/2018, 2" Class 600 CNH-H6 Cryogenic Ball Valve;  
Project No. 217317 per API 607 7th Edition (2016), Date: 9/29/2017, 2" Class 600 C6H-H6 Cryogenic Ball Valve;

**Terms of Validity:**

This Product Design Assessment (PDA) Certificate remains valid until 18/Jun/2023 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

**STANDARDS**

**ABS Rules:**

The Rules for Conditions of Classification, 2020 Marine Vessels Rules: 1-1-4/7.7, 1-1-A3, 1-1-A4, which covers the followings;  
2020 Rules for Building and Classing Marine Vessels: 4-6-1/7.1, 4-6-2/3, 4-6-2/5.11, 5C-8-5/13.1, 5C-8-6/2.2 and 5C-8-6/Table 4;

The Rules for Conditions of Classification - Offshore Units and Structures, 2020 Mobile Offshore Units Rules: 1-1-4/9.7, 1-1-A2, 1-1-A3 which covers the following:  
2020 Rules for Building and Classing Mobile Offshore Units: 4-2-2/9, 4-2-2/17;

**National:**

ASME B16.34 - 2017 Valves - Flanged, Threaded and Welding End;  
MSS SP 72 - 2010A - Ball Valves with Flanged or Butt-Welding Ends for General Service;  
API 607 (6th/7th Edition) Fire Test for Quarter-turn Valves and Valves Equipped with Nonmetallic Seats;

**International:**

NA

**Government:**

NA

**EUMED:**

NA

**OTHERS:**

NA