



CERTIFICATE NUMBER 19-LD1872591-PDA

EFFECTIVE DATE 21 Jun 2019

EXPIRATION DATE 20 Jun 2024

ABS TECHNICAL OFFICE London Engineering Department

CERTIFICATE OF

Product Design Assessment

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

IMM HYDRAULICS SPA

located at

ATESSA (CH), Italy

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 **Flanged Coupling**

Model **37 deg Flared Flanged Coupling**

This Product Design Assessment (PDA) Certificate remains valid until 15/May/2024 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

Mohammed K.M. Abbas
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)

IMM HYDRAULICS SPA

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Tier: 2 - PDA Issued

Product: Flanged Coupling
Model: 37 deg Flared Flanged Coupling
Intended Service:
Hydraulic Piping System.

Description:
37° Flared Flange Connection – compression coupling flared type.

Material of construction for flanges:

- Carbon steel: S355, P355NL1
- Stainless steel: 1.4401, 1.4404, 1.4462 (UNS S32205) from EN 10028-7

Material of construction for flared tube:

- P235GH, ASTM A106 gr. B, E235 and E355
 - Stainless steel: AISI 316, 1.4462 (UNS S32205)* from EN 10028-7
- * only allowed in Seawater systems at room temp and pressure.

Sealing material: NBR & FKM90

Rating:

Sizes: See Attached table

Nominal Pressure: 50 bar to 420 bar (see attached Table)

Design Temperature: -40 deg C to +200 deg C (see attached Table)

The temperature range is dependent on the sealing material as follows:

NBR: -25 to +100 °C

Viton: -40 to +200 °C

Service Restriction:

1. Unit Certification is not 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. Flanged couplings having temperature ratings of below -18 deg C are subject to material tests in accordance with the respective ABS Rules.

Comments:

1. According to 4-6-1/Table 2 of ABS Steel Vessel Rules, all components are to bear permanent identification, such as Manufacturer's name or trademark, standard of compliance, material identity, pressure rating, etc., as required by the standard of compliance or the Manufacturer's specification. Such markings may be cast or forged integral with, stamped on, or securely affixed by nameplate on the component, and are to serve as a permanent means of identification of the component throughout its service life.
2. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes/Drawing/Documentation:

- Drawing No. 19, Upload Summary, Revision: 0, Pages: 1
- Drawing No. 2014XF206, Burst test RINA, Revision: 0, Pages: 1
- Drawing No. 21, GS37 dwg 100_122, Revision: 0, Pages: 1
- Drawing No. 22, GS37 dwg 125, Revision: 0, Pages: 1
- Drawing No. 23, GS37 dwg 132, Revision: 0, Pages: 1
- Drawing No. 24, GS37 dwg 134, Revision: 0, Pages: 1
- Drawing No. 25, GS37 dwg 135, Revision: 0, Pages: 1
- Drawing No. 26, GS37 dwg 184, Revision: 0, Pages: 1

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Tier: 2 - PDA Issued

Drawing No. 27, GS37 dwg 185, Revision: 0, Pages: 1
Drawing No. DNV-P-12001, Leakage after Fire test, Revision: 0, Pages: 1
Drawing No. DNVGL - CP - 0135, 37 degree DNV Burst test II, Revision: 0, Pages: 1
Drawing No. DNVGL-CP-0135, 37 degree DNV Burst Test I, Revision: 0, Pages: 1
Drawing No. IMM- GS Hydro Letter, IMM- GS Hydro Letter, Revision: -, Pages: 1
Drawing No. PRCS003228-B, Dynamic and vibration test, Revision: 0, Pages: 1
Drawing No. QA007/18, GS-Hydro to IMM Hydraulics SPA Type Approval and Certification Activity Authorization, Revision: -, Pages: 1
Drawing No. QA016/18, Interpump Group - IMM Hydraulics SPA GS Hydro Acquisition, Revision: -, Pages: 1
Drawing No. S-03301-18, Fatigue Test, Revision: 0, Pages: 1
Drawing No. S-04482-18, Tightness and Pull Out Test, Revision: 0, Pages: 1
Drawing No. VTT-S-2789-11, Fire Test, Revision: 0, Pages: 1

Terms of Validity:

This Product Design Assessment (PDA) Certificate 19-LD1872591-PDA, dated 21/Jun/2019 remains valid until 20/Jun/2024 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:

Rules for Condition of Classification (2019): 1-1-4/7.7, 1-1-A3 and A4, which covers the following:
- Rules for Building and Classing Steel Vessels (2019): 4-6-1/7.1, 4-6-2/3.1.6, and 4-6-2/5.9
- Rules for Building and Classing Offshore Support Vessels (2019): 4-6-1/7.1 4-6-2/3.1.6 and 4-6-2/5.9
- Rules for Building and Classing Steel Vessels Under 90 Meters (295 Feet) in Length (2019): 4-4-2/7.5.4, 4-4-2/13
- Rules for Building and Classing Marine Vessels (2019): 4-6-1/7.1, 4-6-2/3.1.6, and 4-6-2/5.9
Rules for Conditions of Classifications – Offshore Units and Structures (2019): 1.1.4/9.7, 1-1-A2 and A3, which covers the following:
- Rules for Building and Classing Mobile Offshore Drilling Units (2019): 4-2-2/7.5.4 and 4-2-2/11
- Rules for Building and Classing Mobile Offshore Units (2019): 4-2-2/7.5.4 and 4-2-2/11

National:

NA

International:

ISO 19921:2005(E) Ship and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Test methods
ISO 19922:2005(E) Ship and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Requirements imposed on the test bench.

Government:

NA

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Tier: 2 - PDA Issued

EUMED:
NA

OTHERS:
NA

IMM HYDRAULICS SPA (450085)
 VIA ITALIA 49-51,
 ATESSA (CH),
 Italy,66041

Product Listing of 37 deg Flared Flanged Couplings

19-LD1872591-PDA Rev 0
 Issued :19 June 2019
 Expiry: 18 June 2024

Type	Size ["]	Pipe OD (mm)		MAWP (bar)
		Schedule Series	Metric Size	
308F	1/2	21.3	25	350
608F	1/2	21.3	25	350
312F	3/4	26.7	30	350
612F	3/4	26.7	30	420
316F	1	33.4	38	350
616F	1	33.4	38	420
320F	1 1/4	42.4	42	280
620F	1 1/4	42.4	42 / 46	420
124F	1 1/2	48.3	50	50
324F	1 1/2	48.3	50	280
624F	1 1/2	48.3	50 / 56	420
132F	2	60.3	60	50
332F	2	60.3	60	280
432F	2	60.3	60 / 66	350
632F	2	60.3	60 / 66	420
140F	2 1/2	73	73	50
340F	2 1/2	73	73	210
440F	2 1/2	73	73	350
148F	3	88.9	90	50
348F	3	88.9	90	210
448F	3	88.9	90	350
156F	3 1/2	101.6	100	50
164F	4	114.3	115	50
164-64F	4	114.3	115	64
456F	4	114.3	115	350
180F	5	139.7	140	50
180-64F	5	139.7	140	64
196F	6	168.3	165	50
196-64F	6	168.3	165	64
228F	8	168.3	165	50
228-64F	8	168.3	165	64
260F	10	273	273	50

Type	Size ["]	Pipe OD (mm)		MAWP (bar)
		Schedule Series	Metric Size	
GS210SH15F	1/2	21.3	25	210
GS210SS15F	1/2	21.3	25	210
GS280K15F	1/2	21.3	25	280
GS350K15F	1/2	21.3	25	350
GS210SH20F	3/4	26.7	30	210
GS210SS20F	3/4	26.7	30	210
GS280K20F	3/4	26.7	30	280
GS350K20F	3/4	26.7	30	350
GS210SH25F	1	33.4	38	210
GS210SS25F	1	33.4	38	210
GS280K25F	1	33.4	38	280
GS350K25F	1	33.4	38	350
GS210SH32F	1 1/4	42.4	42	210
GS210SS32F	1 1/4	42.4	42	210
GS280K32F	1 1/4	42.4	42 / 46	280
GS350K32F	1 1/4	42.4	42 / 46	350
GS210SH40F	1 1/2	48.3	50	210
GS210SS40F	1 1/2	48.3	50	210
GS280K40F	1 1/2	48.3	50 / 56	280
GS350K40F	1 1/2	48.3	50 / 56	350
GS210SH50F	2	60.3	60	210
GS210SS50F	2	60.3	60	210
GS280K50F	2	60.3	60 / 66	280
GS350K50F	2	60.3	60 / 66	350
GS210SH65F	2 1/2	73	73	210
GS210SS65F	2 1/2	73	73	210
GS280K65F	2 1/2	73	73	280
GS350K65F	2 1/2	73	73	350
GS210SH80F	3	88.9	90	210
GS210SS80F	3	88.9	90	210
GS280K80F	3	88.9	90	280
GS350K80F	3	88.9	90	350



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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 **Flanged Coupling**

Model **90 deg Flared Coupling**

This Product Design Assessment (PDA) Certificate remains valid until 26 June 2024 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.

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American Bureau of Shipping

Mohammed K.M. Abbas
Engineer/Consultant

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Tier: 2 - PDA Issued

Product: Flanged Coupling
Model: 90 deg Flared Coupling
Intended Service:
Hydraulic Piping System.

Description:
Pipe couplings with 90° flared tubes connections

Material of construction for flanges:
- Carbon steel: S235, ASTM A105, S355
- Stainless steel: AISI 316, 1.4462 (UNS S32205) from EN 10028-7
- ASTM B466 UNS C70600 (Temper condition H55 or H80)
- EN 12449 CuNi10Fe1Mn (material condition R310/ R380)
- ASTM B265 Gr.2 (UNS R50400)

Material of construction for flared tube:
- P235GH, ASTM A106 Gr. B and E235
- Stainless steel: AISI 316, 1.4462 (UNS S32205) from EN 10028-7
- ASTM B466 UNS C70600 (Temper condition H55 or H80)
- EN 12449 CuNi10Fe1Mn (material condition R310/ R380)
- ASTM B265 Gr.2 (UNS R50400)

Sealing materials: Klinger, AF-400 and PTFE

Rating:
For sizes, refer to the attached document.
Nominal Pressure: 10 bar to 20 bar (see attached table)
Design Temperature: -10 deg C to +300 deg C (see below)

The temperature range is dependent on the sealing material as follows:
Klingersil : -10 to + 300 °C
AF-400 : -10 to + 250 °C
PTFE : -10 to + 260 °C

Service Restriction:
Unit Certification is not 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.

Comments:
1. According to 4-6-1/Table 2 of ABS Marine Vessels Rules, all components are to bear permanent identification, such as Manufacturer's name or trademark, standard of compliance, material identity, pressure rating, etc., as required by the standard of compliance or the Manufacturer's specification. Such markings may be cast or forged integral with, stamped on, or securely affixed by nameplate on the component, and are to serve as a permanent means of identification of the component throughout its service life.
2. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Notes/Drawing/Documentation:
Drawing No. 28, GS90 dwg 812, Revision: 0, Pages: 1
Drawing No. 30, GS90 dwg 817, Revision: 0, Pages: 1
Drawing No. 31, G90 dwg 815, Revision: 0, Pages: 1
Drawing No. BV Witness test, 90 degree flared Burst Tests, Revision: 0, Pages: 1
Drawing No. DNVGL-CP-0185, 90 degree DNV Burst Test, Revision: 0, Pages: 1

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Tier: 2 - PDA Issued

Drawing No. Group3029, Pressure test after fire test dated 07052009 for type DN200/220x6, Revision: 0, Pages: 1
Drawing No. IMM- GS Hydro Letter, IMM- GS Hydro Letter, Revision: -, Pages: 1
Drawing No. PRCS003228-C, Vibration & impulse test report PRCS003228-C, Revision: 0, Pages: 1
Drawing No. VTT-S-03301-18, Vibration & impulse test report VTT-S-03301-18, Revision: 0, Pages: 1
Drawing No. VTT-S-3335-09, Fire test report no. VTT-S-3335-09 dated 15th June 2009, Revision: 0, Pages: 1

Terms of Validity:

This Product Design Assessment (PDA) Certificate 19-LD1872592-PDA, dated 27/Jun/2019 remains valid until 26/Jun/2024 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

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Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:

Rules for Condition of Classification (2019): 1-1-4/7.7, 1-1-A3 and A4, which covers the following:
Rules for Building and Classing Steel Vessels (2019): 4-6-1/7.1, 4-6-2/3.1.6, and 4-6-2/5.9
Rules for Building and Classing Offshore Support Vessels (2019): 4-6-1/7.1 4-6-2/3.1.6 and 4-6-2/5.9
Rules for Building and Classing Steel Vessels Under 90 Meters (295 Feet) in Length (2019): 4-4-2/7.5.4, 4-4-2/13
Rules for Building and Classing Marine Vessels (2019): 4-6-1/7.1, 4-6-2/3.1.6, and 4-6-2/5.9

Rules for Conditions of Classifications – Offshore Units and Structures (2019): 1.1.4/9.7, 1-1-A2 and A3, which covers the following:

Rules for Building and Classing Mobile Offshore Drilling Units (2019): 4-2-2/7.5.4 and 4-2-2/11
Rules for Building and Classing Mobile Offshore Units (2019): 4-2-2/7.5.4 and 4-2-2/11

National:

NA

International:

ISO 19921:2005(E) Ship and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Test methods

ISO 19922:2005(E) Ship and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Requirements imposed on the test bench.

Government:

NA

EUMED:

NA

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Tier: 2 - PDA Issued

OTHERS:

NA

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VIA ITALIA 49-51,
ATESSA (CH),
Italy,66041

Product Listing of 90 deg Flared Flanged Couplings

19-LD1872592-PDA Rev 0
Issued :27 June 2019
Expiry: 26 June 2024

Type	Size ["]	Pipe OD (mm)		MAWP (bar)
		Schedule Series	Metric Size	
308N	1/2	21.3	25	16
312N	3/4	26.7	30	16
316N	1	33.4	38	16
320N	1 1/4	42.4	42	16
124N	1 1/2	48.3	50	16
132N	2	60.3	60	16
140N	2 1/2	73	73	16
148N	3	88.9	90	16
164N	4	114.3	115	16
180N	5	139.7	140	16
196N	6	168.3	165	16
228N	8	219.1	220	16
ASME B16.5	1 1/2	48.3	50	20
	2	60.3	60	20
	2 1/2	73	73	20
	3	88.9	90	20
	4	114.3	115	20
	5	139.7	140	20
	6	168.3	165	20
	8	219.1	220	20
EN 1092-1	1 1/2	48.3	50	PN10 / 16
	2	60.3	60	PN10 / 16
	2 1/2	73	73	PN10 / 16
	3	88.9	90	PN10 / 16
	4	114.3	115	PN10 / 16
	5	139.7	140	PN10 / 16
	6	168.3	165	PN10 / 16
	8	219.1	220	PN10 / 16
10	273	273	PN10 / 16	

Type	Nominal Dia	Pipe OD (mm)		MAWP (bar)
		Schedule Series	Metric Size	
GSJIS-10-16K-DN32	32	42.4	42	16
GSJIS-10-16K-DN40	40	48.3	50	16
GSJIS-10K-DN50	50	60.3	60	10
GSJIS-10K-DN65	65	73	73	10
GSJIS-10K-DN80	80	88.9	90	10
GSJIS-10K-DN100	100	114.3	115	10
GSJIS-10K-DN125	125	139.7	140	10
GSJIS-10K-DN150	150	168.3	165	10
GSJIS-10K-DN200	200	219.1	220	10
GSJIS-16K-DN50	50	60.3	60	16
GSJIS-16K-DN65	65	73	73	16
GSJIS-16K-DN80	80	88.9	90	16
GSJIS-16K-DN100	100	114.3	115	16
GSJIS-16K-DN125	125	139.7	140	16
GSJIS-16K-DN150	150	168.3	165	16
GSJIS-16K-DN200	200	219.1	220	16



CERTIFICATE NUMBER 19-LD1872595-PDA

EFFECTIVE DATE 27 June 2019

EXPIRATION DATE 26 June 2024

ABS TECHNICAL OFFICE London Engineering Department

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

IMM HYDRAULICS SPA

located at

ATESSA (CH), Italy

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 Flanged Coupling

Model See Attached table

This Product Design Assessment (PDA) Certificate remains valid until 26 June 2024 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).

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American Bureau of Shipping

Mohammed K.M. Abbas
Engineer/Consultant

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Tier: 5 - Unit Certification Required

Product: Couplings and Fittings

Model: See Attached table

Intended Service:

Hydraulic pipe system.

Description:

Pipe couplings with retaining ring connection.

Material of construction for flanges:

- Carbon steel: S355, P355NL1

- Stainless steel: 1.4401, 1.4404, 1.4462 (UNS S32205) from EN 10028-7

Material of construction for piping connection:

- P235GH, ASTM A106 gr. B, E235 and E355

- Stainless steel: AISI 316, 1.4462 (UNS S32205) from EN 10028-7

Sealing material: NBR, FKM90

Rating:

For sizes refer to the attached document.

Nominal Pressure: 50 bar to 420 bar (see attached document)

Design Temperature: -40 deg C to +200 deg C

The temperature range is dependent on the sealing material as follows:

NBR : -25 to +100 °C

FKM90 : -40 to +200 °C

Service Restriction:

1. Unit Certification is not 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. Flanged couplings having temperature ratings of below -18 deg C are subject to material tests in accordance with the respective ABS Rules

Comments:

1. According to 4-6-1/Table 2 of ABS Marine Vessels Rules, all components are to bear permanent identification, such as Manufacturer's name or trademark, standard of compliance, material identity, pressure rating, etc., as required by the standard of compliance or the Manufacturer's specification. Such markings may be cast or forged integral with, stamped on, or securely affixed by nameplate on the component, and are to serve as a permanent means of identification of the component throughout its service life.

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

Notes/Drawing/Documentation:

Drawing No. 19, Upload Summary, Revision: 0, Pages: 1

Drawing No. 32, GSRR dwg 332, Revision: 0, Pages: 1

Drawing No. 33, GSRR dwg 334 335, Revision: 0, Pages: 1

Drawing No. 34, GSRR dwg 355, Revision: 0, Pages: 1

Drawing No. 35, GSRR dwg 385, Revision: 0, Pages: 1

Drawing No. 36, GSRR dwg 322, Revision: 0, Pages: 1

Drawing No. 37, GSRR dwg 325, Revision: 0, Pages: 1

Drawing No. 38, GSRR dwg 335, Revision: 0, Pages: 1

Drawing No. 39, GSRR dwg 750, Revision: 0, Pages: 1

Drawing No. DNV-CP-0185, Retain Ring DNV Burst Test, Revision: 0, Pages: 1

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Tier: 5 - Unit Certification Required

Drawing No. Eurofins Expert Services, Tightness Test, Revision: 0, Pages: 1
Drawing No. Group3027Air, Vacuum Test Witnessed by RINA, Revision: 0, Pages: 1
Drawing No. Group3027Hyd, Burst Test witnessed by RINA, Revision: 0, Pages: 1
Drawing No. Group3027Hyd2, Repeated Assembly Witnessed by RINA, Revision: 0, Pages: 1
Drawing No. IMM PDA application, PDA Application, Revision: -, Pages: 1
Drawing No. IMM- GS Hydro Letter, IMM- GS Hydro Letter, Revision: -, Pages: 1
Drawing No. VTT-S-00812-10, Fatigue Test VTT, Revision: 0, Pages: 1
Drawing No. VTT-S-02319-10, Pull Oit Test, Revision: , Pages: 00
Drawing No. VTT-S-04947-18, Fatigue Test, Revision: 0, Pages: 1
Drawing No. VTT-S-4647-09, Fire Resistance Test VTT, Revision: 0, Pages: 1

Terms of Validity:

This Product Design Assessment (PDA) Certificate 19-LD1872595-PDA, dated 27/Jun/2019 remains valid until 26/Jun/2024 or until the Rules or specifications used in the assessment are revised (whichever occurs first).

This PDA is intended for a product to be installed on an ABS classed vessel, MODU or facility which is in existence or under contract for construction on the date of the ABS Rules or specifications used to evaluate the Product.

Use of the Product on an ABS classed vessel, MODU or facility which is contracted after the validity date of the ABS Rules and specifications used to evaluate the Product, will require re-evaluation of the PDA.

Use of the Product for non ABS classed vessels, MODUs or facilities is to be to an agreement between the manufacturer and intended client.

STANDARDS

ABS Rules:

Rules for Condition of Classification (2019): 1-1-4/7.7, 1-1-A3 and A4, which covers the following:
- Rules for Building and Classing Marine Vessels (2019): 4-6-1/7.1, 4-6-2/3.1.6, and 4-6-2/5.9
- Rules for Building and Classing Steel Vessels (2019): 4-6-1/7.1, 4-6-2/3.1.6, and 4-6-2/5.9
- Rules for Building and Classing Offshore Support Vessels (2019): 4-6-1/7.1 4-6-2/3.1.6 and 4-6-2/5.9
- Rules for Building and Classing Steel Vessels Under 90 Meters (295 Feet) in Length (2019): 4-4-2/7.5.4, 4-4-2/13

Rules for Conditions of Classifications – Offshore Units and Structures (2019): 1.1.4/9.7, 1-1-A2 and A3, which covers the following:

- Rules for Building and Classing Mobile Offshore Drilling Units (2019): 4-2-2/7.5.4 and 4-2-2/11
- Rules for Building and Classing Mobile Offshore Units (2019): 4-2-2/7.5.4 and 4-2-2/11

National:

NA

International:

ISO 19921:2005(E) Ship and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Test methods

ISO 19922:2005(E) Ship and marine technology – Fire resistance of metallic pipe components with resilient and elastomeric seals – Requirements imposed on the test bench.

Government:

NA

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Tier: 5 - Unit Certification Required

EUMED:
NA

OTHERS:
NA

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19-LD1872595-PDA Rev 0
 Issued :27 June 2019
 Expiry: 26 June 2024

Type	Size ["]	Pipe OD (mm)		MAWP (bar)
		Schedule Series	Metric Size	
308	1/2	21.3	26	350
608	1/2	21.3	26	420
312	3/4	26.7	36	350
612	3/4	26.7	36	420
316	1	33.4	39	350
616	1	33.4	39	420
320	1 1/4	42.4	46	280
620	1 1/4	42.4	42.4	420
124	1 1/2	48.3	50	50
324	1 1/2	48.3	56	280
424	1 1/2	48.3	50	400
624	1 1/2	42.4	46	420
132	2	60.3	60	50
332	2	60.3	66	280
432	2	60.3	66	400
632	2	60.3	66	420
140	2 1/2	73	73	50
340	2 1/2	73	80	210
440	2 1/2	73	80	400
148	3	88.9	90	50
348	3	88.9	97	210
448	3	88.9	97	400
156	3 1/2	101.6	100	50
164	4	114.3	115	50
456	4	114.3	115	345
860	4 1/2	130	130	350
180	5	139.7	140	50
864	5	139.7	150	350
196	6	168.3	165	50
880	6	168.3	190	280
228	8	219.1	220	50
888	8	219.1	220	350
896	8	250	250	350
260	10	273	273	50
8160	10	273	273	250

Type	Size ["]	Pipe OD (mm)		MAWP (bar)
		Schedule Series	Metric Size	
GS210SH15	1/2	21.3	25	210
GS210SS15	1/2	21.3	25	210
GS280K15	1/2	21.3	25	280
GS350K15	1/2	21.3	25	350
GS210SH20	3/4	26.7	30	210
GS210SS20	3/4	26.7	30	210
GS280K20	3/4	26.7	30	280
GS350K20	3/4	26.7	30	350
GS210SH25	1	33.4	38	210
GS210SS25	1	33.4	38	210
GS280K25	1	33.4	38	280
GS350K25	1	33.4	38	350
GS210SH32	1 1/4	42.4	42	210
GS210SS32	1 1/4	42.4	42	210
GS280K32	1 1/4	42.4	42 / 46	280
GS350K32	1 1/4	42.4	42 / 46	350
GS210SH40	1 1/2	48.3	50	210
GS210SS40	1 1/2	48.3	50	210
GS280K40	1 1/2	48.3	50 / 56	280
GS350K40	1 1/2	48.3	50 / 56	350
GS210SH50	2	60.3	60	210
GS210SS50	2	60.3	60	210
GS280K50	2	60.3	60 / 66	280
GS350K50	2	60.3	60 / 66	350
GS210SH65	2 1/2	73	73	210
GS210SS65	2 1/2	73	73	210
GS280K65	2 1/2	73	73	280
GS350K65	2 1/2	73	73	350
GS210SH80	3	88.9	90	210
GS210SS80	3	88.9	90	210
GS280K80	3	88.9	90	280
GS350K80	3	88.9	90	350