

Type Test Reports

- 1) ASTM F1387-99 For Tube Fittings (SS 316)
- 2) ASTM F1387-99 For Tube Fittings (UNS 32750)
- 3) ASTM F1387-99 For Tube Fittings (6Mo-UNS 31254)
- 4) ASTM F1387-99 For Tube Fittings (UNS N04400)
- 5) Torsion, High Impact Shock & Fire Test as per ASTM F-1387-99 For Tube Fittings
- 6) CE-PED Certificate For Fittings & Valves
- 7) ATEX Certificate For Fittings & Valves
- 8) Interchangeability Compliance Report with Swagelok Tube Fittings
- 9) Interchangeability Compliance Report with Parker Tube Fittings
- 10) Fire Safe Test Certificate For Valves by GLIS (SS316 & UNS S32205)
- 11) Fire Safe Test Certificate For Valves by DNV-GL (ASTM A105)
- 12) Burst Pressure Test Of Fittings By CSA Group (USA)
- 13) MSS SP-99-2016a Type Test Certificate For Instrument Valves & Manifolds
- 14) Helium Leak Test Reports For Fittings & Valves
- 15) Lloyd's Type Approval Certificate For Tube Fittings
- 16) Cryogenic Test Report For Tube Fittings
- 17) Non-Seismic Vibration Test Report For Manifolds
- 18) Seismic Test Report For Manifolds



DNV Report No.:
Ref:- PUN/14/JJ/219 Rev. 1
Revision issued for addressing the latest standard edition highlighted as Δ .
No changes / amendments to tests or acceptance criteria.

DET NORSKE VERITAS AS

PERFORMANCE TESTING COMPLIANCE REPORT

MANUFACTURER: M/s Panam Engineers Limited

TESTS CONDUCTED AT: Survey No 192, Near Sujal Agro, NH - 8, At Post Piludra,
Dist - Sabarkantha, Gujarat 383120

COMPLIANCE STANDARD: As per ASTM F1387 - 99 (Reapproved 2012 Δ)

PRODUCTS COVERED: Grip-type Mechanically Attached Tubing Fittings (Separable) -
(consists of Body, Nut, Front & Rear Ferrule radially compressed on Tube) -
Type IV as per Clause 4.1.4 of ASTM F1387 -
Sizes: $\frac{1}{4}$ " OD, $\frac{3}{8}$ ", $\frac{1}{2}$ " OD, $\frac{3}{4}$ " OD, 1" OD

MATERIAL GRADE: Grade B - Stainless Steel (316) as per Clause 4.2.2 of ASTM F1387
Test Certificates Reviewed, Confirmed with Positive Material Identification (PMI)

TESTS WITNESSED:

ASTM Test ID	Test Description	No. of Samples Tested per Size	PANAM Clause No.
A2	Examination of Specimen	28	1.5
A3	Pneumatic Proof Test	28	1.4.1
A4	Hydrostatic Proof Test	28	1.4.2
A5	Impulse Test	6	1.4.3
A6	Flexure Fatigue Test	6	1.4.4
A7	Tensile Test	6	1.4.5
A8	Burst Test (Hydrostatic Test)	4	1.4.6
A9	Repeated Assembly	6*	1.4.7 Included in 1.4.3 & 1.4.4
A10	Rotary Flexure Test	6	1.4.8
S2	Thermal Cycling Test	10	1.4.9.3
S3	Elevated Temperature Soak Test	5	1.4.9.1
S4	Stress Corrosion Test	5	1.4.9.4
S8	Vibration Test	5	1.4.9.2

*: 3 each after Impulse and Flexure Fatigue Test

CONCLUSION: We hereby confirm that the fittings satisfactorily met the performance requirements as per the procedure laid out in the compliance standard.

Place and Date:
Pune, 2014-12-08


Jaishon Jose
Inspection Surveyor
to Det Norske Veritas AS

It is agreed that none of the personnel below Det Norske Veritas, its subsidiaries, bodies, officers, directors, employees and agents shall have any liability for any loss, damage or expense, directly or indirectly, by their mistake or negligence, breach of warranty, or any other act, omission or error by them, including gross negligence or willful misconduct by any such person with the exception of gross negligence or willful misconduct by the governing bodies or senior executive officers of Det Norske Veritas. This applies regardless of whether the loss, damage or expense has affected anyone with whom Det Norske Veritas has a contract or a third party who has acted or relied on decisions made or information given by or on behalf of Det Norske Veritas. * However, if any person uses the services of Det Norske Veritas or its subsidiaries or relies on any decision made or information given by or on behalf of them and as a consequence suffers a loss, damage or expense proved to be due to their negligence, omission or default, then Det Norske Veritas will pay by way of compensation to such person a sum representing his proved loss. * In the event Det Norske Veritas or its subsidiaries may be held liable in accordance with the sections above, the amount of compensation shall under no circumstances exceed the amount of the fee, if any, charged for that particular service, decision, advice or information. * Under no circumstances whatsoever shall the individual or individuals who have personally caused the loss, damage or expense be held liable. * In the event that any provision in this section shall be invalid under the law of any jurisdiction, the validity of the remaining provisions shall not in any way be affected.

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Form no. OP C5-RI-7-F3, rev. 1, 98.03.01

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DNV Report No.:
Ref:- PUN/15/JJ/133

DET NORSKE VERITAS AS

PERFORMANCE TESTING COMPLIANCE REPORT

MANUFACTURER: M/s Panam Engineers Limited

TESTS CONDUCTED AT: Survey No 192, Near Sujal Agro, NH - 8, At Post Piludra,
Dist-Sabarkantha, Gujarat 383120

COMPLIANCE STANDARD: As per ASTM F1387 - 99 (Reapproved 2012)

PRODUCTS COVERED: Grip-type Mechanically Attached Tubing Fittings (Separable) -
(consists of Body, Nut, Front & Rear Ferrule radially compressed on Tube) -
Type IV as per Clause 4.1.4 of ASTM F1387 -
Sizes: 1/4" OD, 3/8", 1/2" OD, 3/4" OD, 1" OD

MATERIAL GRADE: Grade B - Super Duplex Stainless Steel (UNS 32750)
as per Clause 4.2.2 of ASTM F1387
Test Certificates Reviewed, Confirmed with Positive Material Identification (PMI)

TESTS WITNESSED:

ASTM Test ID	Test Description	No. of Samples Tested per Size	PANAM Clause No.
A2	Examination of Specimen	28	1.5
A3	Pneumatic Proof Test	28	1.4.1
A4	Hydrostatic Proof Test	28	1.4.2
A5	Impulse Test	6	1.4.3
A6	Flexure Fatigue Test	6	1.4.4
A7	Tensile Test	6	1.4.5
A8	Burst Test (Hydrostatic Test)	4	1.4.6
A9	Repeated Assembly	6*	1.4.7
A10	Rotary Flexure Test	6	Included in 1.4.3 & 1.4.4
S2	Thermal Cycling Test	10	1.4.8
S3	Elevated Temperature Soak Test	5	1.4.9.3
S4	Stress Corrosion Test	5	1.4.9.1
S8	Vibration Test	5	1.4.9.4

*: 3 each after Impulse and Flexure Fatigue Test

CONCLUSION: We hereby confirm that the fittings satisfactorily met the performance requirements as per the procedure laid out in the compliance standard.

Place and Date:
Pune, 2015-10-26


Jaison Jose
Inspection Surveyor
to Det Norske Veritas AS

It is agreed that save as provided below Det Norske Veritas, its subsidiaries, bodies, offices, directors, employees and agents shall have no liability for any loss, damage or expense directly or indirectly caused by their mistake or negligence, breach of warranty, or any other act, omission or error by them, including gross negligence or willful misconduct by any such person with the exception of gross negligence or willful misconduct by the governing bodies or senior executive officers of Det Norske Veritas. This applies regardless of whether the loss, damage or expense has affected anyone with whom Det Norske Veritas has a contract or a third party who has acted or relied on decisions made or information given by or on behalf of Det Norske Veritas. However, if any person uses the services of Det Norske Veritas or its subsidiaries or relies on any decision made or information given by or on behalf of them and as a consequence suffers a loss, damage or expense proved to be due to their negligence, omission or default, then Det Norske Veritas will pay by way of compensation to such person a sum representing his proved loss. *In the event Det Norske Veritas or its subsidiaries may be held liable in accordance with the sections above, the amount of compensation shall under no circumstances exceed the amount of the fee, if any, charged for that particular service, decision, advice or information. *Under no circumstances whatsoever shall the individual or individuals who have personally caused the loss, damage or expense be held liable. *In the event that any provision in this section shall be invalid under the law of any jurisdiction, the validity of the remaining provisions shall not in any way be affected.

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DNV Report No.:
Ref:- PUN/15/JJ/132

DET NORSKE VERITAS AS

PERFORMANCE TESTING COMPLIANCE REPORT

MANUFACTURER: M/s Panam Engineers Limited

TESTS CONDUCTED AT: Survey No 192, Near Sujal Agro, NH - 8, At Post Piludra,
Dist-Sabarkantha, Gujarat 383120

COMPLIANCE STANDARD: As per ASTM F1387 - 99 (Reapproved 2012)

PRODUCTS COVERED: Grip-type Mechanically Attached Tubing Fittings (Separable) -
(consists of Body, Nut, Front & Rear Ferrule radially compressed on Tube) -
Type IV as per Clause 4.1.4 of ASTM F1387 -
Sizes: 1/4" OD, 3/8", 1/2" OD, 3/4" OD, 1" OD

MATERIAL GRADE: Grade B - Super Austenitic Stainless Steel (6Mo - UNS 31254)
as per Clause 4.2.2 of ASTM F1387
Test Certificates Reviewed, Confirmed with Positive Material Identification (PMI)

TESTS WITNESSED:

ASTM Test ID	Test Description	No. of Samples Tested per Size	PANAM Clause No.
A2	Examination of Specimen	28	1.5
A3	Pneumatic Proof Test	28	1.4.1
A4	Hydrostatic Proof Test	28	1.4.2
A5	Impulse Test	6	1.4.3
A6	Flexure Fatigue Test	6	1.4.4
A7	Tensile Test	6	1.4.5
A8	Burst Test (Hydrostatic Test)	4	1.4.6
A9	Repeated Assembly	6*	1.4.7
A10	Rotary Flexure Test	6	Included in 1.4.3 & 1.4.4
S2	Thermal Cycling Test	10	1.4.9.3
S3	Elevated Temperature Soak Test	5	1.4.9.1
S4	Stress Corrosion Test	5	1.4.9.4
S8	Vibration Test	5	1.4.9.2

*: 3 each after Impulse and Flexure Fatigue Test

CONCLUSION: We hereby confirm that the fittings satisfactorily met the performance requirements as per the procedure laid out in the compliance standard.

Place and Date:
Pune, 2015-10-26


Jaison Jose
Inspection Surveyor
to Det Norske Veritas AS

It is agreed that none as provided below Det Norske Veritas, its subsidiaries, bodies, officers, directors, employees and agents shall have no liability for any loss, damage or expense allegedly caused directly or indirectly by their mistake or negligence, breach of warranty, or any other act, omission or error by them, including gross negligence or willful misconduct by any such persons with the exception of gross negligence or willful misconduct by the governing bodies or senior executive officers of Det Norske Veritas. This applies regardless of whether the loss, damage or expense has affected anyone with whom Det Norske Veritas has a contract or a third party who has acted in reliance on decisions made or information given by or on behalf of Det Norske Veritas. However, if any person uses the services of Det Norske Veritas or its subsidiaries or relies on any decision made or information given by or on behalf of them and as a consequence suffers a loss, damage or expense provided is due to their negligence, omission or default, then Det Norske Veritas will pay by way of compensation to such person a sum representing his proved loss. * In the event Det Norske Veritas or its subsidiaries may be held liable in accordance with the sections above, the amount of compensation shall under no circumstances exceed the amount of the fee, if any, charged for that particular service, decision, advice or information. * Under no circumstances whatsoever shall the individual or individuals who have personally caused the loss, damage or expense be held liable. * In the event that any provision in this section shall be invalid under the law of any jurisdiction, the validity of the remaining provisions shall not in any way be affected.

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DNV Report No.:
Ref: - PUN/16/JJ/506

DET NORSKE VERITAS AS

PERFORMANCE TESTING COMPLIANCE REPORT

MANUFACTURER: M/s Panam Engineers Limited

TESTS CONDUCTED AT: Survey No 192, Near Sujal Agro, NH – 8, At Post Piludra,
Dist-Sabarkantha, Gujarat 383120

COMPLIANCE STANDARD: As per ASTM F1387 - 99 (Reapproved 2012)

PRODUCTS COVERED: Grip-type Mechanically Attached Tubing Fittings (Separable) –
(consists of Body, Nut, Front & Rear Ferrule radially compressed on Tube) –
Type IV as per Clause 4.1.4 of ASTM F1387 –
Sizes: ¼" OD, 3/8", ½" OD, ¾" OD, 1" OD (For Pressure Class, refer
Manufacturer's test reports for different rated pressures within the size range.)

MATERIAL GRADE: Grade C – Nickel-Copper Alloy (UNS N04400)
as per Clause 4.2.2 of ASTM F1387
Test Certificates Reviewed, Confirmed with Positive Material Identification (PMI)

TESTS WITNESSED:

ASTM Test ID	Test Description	No. of Samples Tested per Size	PANAM Clause No.
A2	Examination of Specimen	28	1.5
A3	Pneumatic Proof Test	28	1.4.1
A4	Hydrostatic Proof Test	28	1.4.2
A5	Impulse Test	6	1.4.3
A6	Flexure Fatigue Test	6	1.4.4
A7	Tensile Test	6	1.4.5
A8	Burst Test (Hydrostatic Test)	4	1.4.6
A9	Repeated Assembly	6*	1.4.7 Included in 1.4.3 & 1.4.4
A10	Rotary Flexure Test	6	1.4.8
S2	Thermal Cycling Test	10	1.4.9.3
S3	Elevated Temperature Soak Test	5	1.4.9.1
S4	Stress Corrosion Test	5	1.4.9.4
S8	Vibration Test	5	1.4.9.2

*: 3 each after Impulse and Flexure Fatigue Test

CONCLUSION:

We hereby confirm that the fittings satisfactorily met the performance requirements as per the procedure laid out in the compliance standard.

Place and Date:
Pune, 2016-02-11


Jaison Jose
Inspection Surveyor
to Det Norske Veritas AS

It is agreed that save as provided below Det Norske Veritas, its subsidiaries, bodies, officers, directors, employees and agents shall have no liability for any loss, damage or expense allegedly caused directly or indirectly by their mistake or negligence, breach of warranty, or any other act, omission or error by them, including gross negligence or wilful misconduct by any such person with the exception of gross negligence or wilful misconduct by the governing bodies or senior executive officers of Det Norske Veritas. This applies regardless of whether the loss, damage or expense has affected anyone with whom Det Norske Veritas has a contract or a third party who has acted or relied on any decision made or information given by or on behalf of Det Norske Veritas. * However, if any person uses the services of Det Norske Veritas or its subsidiaries or relies on any decision made or information given by or on behalf of them and as a consequence suffers a loss, damage or expense proved to be due to their negligence, omission or default, then Det Norske Veritas will pay by way of compensation to such person a sum representing his proved loss. * In the event Det Norske Veritas or its subsidiaries may be held liable in accordance with the system above, the amount of compensation shall under no circumstances exceed the amount of the fee, if any, charged for that particular service, decision, advice or information. * Under no circumstances whatsoever shall the individual or individuals who have personally caused the loss, damage or expense be held liable. * In the event that any provision in this section shall be invalid under the law of any jurisdiction, the validity of the remaining provisions shall not in any way be affected.

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Form no. OP C5-R1-7-F3, rev. 1, 98.03.01

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DNV·GL

Certificate No.: GLIS/AHD/PANAM/NV/18-01

TYPE TEST COMPLIANCE REPORT

MANUFACTURER: M/s. Panam Engineers Limited

TESTS CONDUCTED AT: Survey No 192, Near Sujal Agro, NH – 8, At Post Piludra,
Dist – Sabarkantha, Gujarat 383120

COMPLIANCE STANDARD: As per ASTM F1387 – 99 (Reapproved 2012)

PRODUCTS COVERED: Grip-type Mechanically Attached Tubing Fittings (Separable) –
(Consists of Body, Nut, Front & Rear Ferrule radially compressed on
Tube) –
Type IV as per Clause 4.1.4 of ASTM
F1387 – Sizes: ¼" OD, 3/8", ½" OD,
¾" OD, 1" OD

MATERIAL GRADE: Grade B – Stainless Steel (316), as per Clause 4.2 of ASTM F1387.
Test Certificates Reviewed, Confirmed with Positive Material Identification
(PMI)

TESTS WITNESSED:

ASTM Test ID	Test Description	No. of Samples Tested per Size	PANAM Clause No.
-	Specimen checked	-	1.5
S5	Torsion Test	05	1.4.11.3
S6	High Impact Shock test	05	1.4.11.4
S7	Fire Test	05	1.4.12.1

CONCLUSION: We hereby confirm that the fittings satisfactorily met the performance requirements as per the procedure laid out in the compliance standard.

For Germanischer Lloyd Industrial Services GmbH,



Place: Prantij, Himmatnagar

Date : 27.10.2018

Inspection Engineers- Inspection Services

Equinox Business Park, 6th Floor, Tower 3, L.B.S Marg, Off. Bandra Kurla Complex, Kurla (W) Mumbai – 400 070

DNV GL Headquarters, Veritasveien 1, P.O.Box 300, 1322 Hovik, Norway. Tel: +47 67 57 99 00. www.dnvgl.com

Germanischer Lloyd Industrial Services GmbH India Branch Holding no 200430.
Company Registration no F02035



CERTIFICATE

TÜV NORD Systems GmbH & Co. KG

certifies that the company

Panam Engineers Limited
Survey No. 192, Near Sujal Agro, N.H. No. 8
At Post-piludra, Tal. Prantij - 383 120
Dist. Sabarkantha, Gujarat, India

has been verified and recognized as mechanical processor according to

AD 2000-Merkblatt W0

Certificate-No.: 07/203/1409/WP/2415/20

File No.: 811 801 0845

Production site: **See above.**

The scope of approval is available in the annex scope of approval.

The company fulfils the following essential requirements:

Facilities for appropriate manufacturing and testing, appropriate procedures for manufacturing of the products, qualified personnel for manufacturing and testing of the products and a quality management system with appropriate records, which ensures proper manufacture of the products, as well as compliance with the requirements specified in the material specification.

This certificate is valid until

January 2023

Essen, 2020-01-28

Annex: scope of approval

Conventional Power Plants
Langemarckstr. 20
45141 Essen

Phone: 201-825-2722
Fax: 201-825-2858
E-Mail: DNiekamp@tuv-nord.de


Niekamp
TÜV NORD Systems GmbH & Co. KG,
Große Bahnstraße 31, D-22525 Hamburg



CERTIFICATE

Quality-Assurance System for material manufacturer
according to Pressure Equipment Directive 2014/68/EU

Certificate no.: 07/202/1409/WZ/2415/20

Name and address
of the manufacturer:

Panam Engineers Limited
Survey No. 192, Near Sujal Agro, N.H. No. 8
At Post-piludra, Tal. Prantij – 383 120
Dist. Sabarkantha, Gujarat, India

Herewith we certify that the manufacturer has established and applies a **quality-assurance system related to the material**. This QA System has been subjected to a specific assessment acc. to directive 2014/68/EU, annex I, point 4.3 with regard to the materials mentioned in the scope of approval.

Approved acc. to directive
2014/68/EU:

QA-System in relation to materials,
EN 764-5, section 4.2 and AD2000-Merkblatt W0

Certification file no.:

811 801 0845

Audit report file no.:

811 687 2525

Scope of approval:
(product / material)

Machining of Precision Parts and Assemblies of Instrumentation
Valves, Manifold, Filters, Regulators Accessories

Production site:

Survey No. 192, Near Sujal Agro, N.H. No. 8, At Post-
piludra, Tal. Prantij – 383 120, Dist. Sabarkantha, Gujarat,
India

The certificate is valid until:

January 2023

Only valid in conjunction with a valid certificate acc. to EN ISO 9001.

Essen, 28.01.2020

Annex: Scope of Approval

Conventional Power Plants
Langemarckstr. 20
45141 Essen

Phone: +49-(0) 201-825-2722
Fax: +49-(0) 201-825-2858
e-mail: DNiekamp@tuev-nord.de

Member of



CONFEDERATION EUROPEENNE DES ORGANISMES DE CONTRÔLE



Notified Body (0045)
for Pressure Equipment

Niekamp

TÜV NORD Systems GmbH & Co. KG,
Große Bahnstraße 31, D-22525 Hamburg



CERTIFICATE

Quality-Assurance System for material manufacturer
according to Pressure Equipment Directive 2014/68/EU

Certificate no.: 07/202/1409/WZ/2415/20

Name and address
of the manufacturer:

Panam Engineers Limited
Survey No. 192, Near Sujal Agro, N.H. No. 8
At Post-piludra, Tal. Prantij – 383 120
Dist. Sabarkantha, Gujarat, India

Herewith we certify that the manufacturer has established and applies a **quality-assurance system related to the material**. This QA System has been subjected to a specific assessment acc. to directive 2014/68/EU, annex I, point 4.3 with regard to the materials mentioned in the scope of approval.

Approved acc. to directive
2014/68/EU:

QA-System in relation to materials,
EN 764-5, section 4.2 and AD2000-Merkblatt W0

Certification file no.:

811 801 0845

Audit report file no.:

811 687 2525

Scope of approval:
(product / material)

Machining of Precision Parts and Assemblies of Mechanical attached
Fittings, Pipe Fittings, Flange Adaptor

Production site:

Survey No. 192, Near Sujal Agro, N.H. No. 8, At Post-
piludra, Tal. Prantij – 383 120, Dist. Sabarkantha, Gujarat,
India

The certificate is valid until:

January 2023

Only valid in conjunction with a valid certificate acc. to EN ISO 9001.

Essen, 28.01.2020



Notified Body (0045)
for Pressure Equipment

Niekamp

Annex: Scope of Approval

Conventional Power Plants
Langemarkstr. 20
45141 Essen

Phone: +49-(0) 201-825-2722
Fax: +49-(0) 201-825-2858
e-mail: DNiekamp@tuv-nord.de

Member of



CONFERENZA EUROPEA DI ORGANISMI DI CONTROLLO

TÜV NORD Systems GmbH & Co. KG

Notifizierte Stelle 0045 / Notified Body 0045

Geltungsbereich der Überprüfung gemäß / Scope of Approval according to

☒ Richtlinie 2014/68/EU, Anhang I, Nummer 4.3 / Directive 2014/68/EU, Annex I, Point 4.3.

☒ AD 2000-Merkblatt W 0 / AD 2000-Merkblatt W 0

Firma / Company: Panam Engineers Limited

Ort / Location: Survey No.192, Near Sujal Agro, N.H.No.8,

Al Post-piladra, Tal Prantij- 383 120

Dist.Sabarkantha, Gujarat,India



Zertifikat-Nr. / Certificate No.: 07 202 1409 WZ 2415 20

Zertifikat-Nr. / Certificate No.: 07 203 1409 WP 2415 20

Datum / Date: 28.01.2020

AZ / File No.: ISIPC-280/20

SAP-No.: 811 801 0845

Niekamli

Nr. No.	Werkstoffbezeichnung Material designation	Spezifikation Specification	Lieferzustand* Delivery cond.*	Erzeugnisform Product type	Abmessungen Dimensions Disc Thickness (mm) Size- 1/2" to 2" (3 mm to 50 mm)	Prüfgrundlagen Test specifications	Bemerkungen Remarks
1.11	UNS 31600, 316	ASTM A 479 / A 182/A276	+AT	Instrumentation Valves, Gauge Root Valves, Block & Bleed Valves, Check Valves, Relief Valves, Manifold, Fillers, Regulators, Accessories	Maximum 40 Kga.		If use in area of PED 2014/68/EU a Particular Material Appraisal (PMA) is necessary
1.12	UNS 31603 316L	ASTM A 479 / A 182/A276	+AT				
1.13	UNS 32750	ASTM A 479 / A 182/A276	+AT				
1.14	UNS 31254	ASTM A 479 / A 182/A276	+AT				
1.15	UNS N04400	ASTM A 479 / A 182/A276	+AT				
2.11	UNS N 06625	ASTM B 446	+U	Instrumentation Valves, Gauge Root Valves, Block & Bleed Valves, Check Valves Relief Valves, Manifold, Fillers, Regulators, Accessories	Maximum 40 Kga.		If use in area of PED 2014/68/EU a Particular Material Appraisal (PMA) is necessary
2.12	UNS N 10276	ASTM B 574	+U				

* +AT = Lösungsgelüht / solution annealed, -N = normalgeglüht / normalized forming, +U = unbehandelt / untreated, -NT = normalgeglüht und angelassen / normalized and tempered, +DT = vergütet / quenched and tempered, -M = thermomechanisch umgeformt / thermomechanically formed, +AR = wie gewalzt / as rolled, +SR = spannungsarmgeglüht / stress relieved, +A = weichgeglüht / soft annealed, +CR = kaltgewalzt / cold rolled (weitere Symbole / other symbols: EN 10027-1, Tab. 18)

51TH-ZE-AD2000 WD_PED_Geltungsbereich_Scope of Approval-FB-320_DE-ENG

Rev. 07 / 2019-05

1 / 1

TÜV NORD Systems GmbH & Co. KG

Notifizierte Stelle 0045 / Notified Body 0045

Geltungsbereich der Überprüfung gemäß / Scope of Approval according to

☒ Richtlinie 2014/68/EU, Anhang I, Nummer 4.3 / Directive 2014/68/EU, Annex I, Point 4.3.

☒ AD 2000-Merkblatt W 0 / AD 2000-Merkblatt W 0

Firma / Company: Panam Engineers Limited

Ort / Location: Survey No.192, Near Sujal Agro, N.H.No.8,

At Post-piludra, Tal.Pranliji- 383 120

Dist.Sabarkantha, Gujarat, India



Zertifikat-Nr. / Certificate No.: 07 202 1409 WZ 2415 20

Zertifikat-Nr. / Certificate No.: 07 203 1409 WP 2415 20

Datum / Date: 28.01.2020

AZ / File No.: ISIPC-26020

SAP-No.: 811 801 0845

Niekamp

Nr. No.	Werkstoffbezeichnung Material designation	Spezifikation Specification	Lieferzustand* Delivery cond.*	Erzeugnisform Product type	Abmessungen Dimensions Dicke Thickness (mm) Size- 1/2" to 2" (3 mm to 50 mm)	Q / Gewicht Q / Weight (kg) Maximum 40 Kgs.	Prüfgrundlagen Test specifications	Bemerkungen Remarks
1.11	UNS 31600, 316	ASTM A 479 / A 182/A276	+AT	Mechanically Attached Fittings, Pipe Fittings, Instrumentation Flange Adaptor & Flange	Size- 1/2" to 2" (3 mm to 50 mm)	Maximum 40 Kgs.		If use in area of PED 2014/68/EU a Particular Material Appraisal (PMA) is necessary
1.12	UNS 31603 316L	ASTM A 479 / A 182/A276	+AT					
1.13	UNS 32750	ASTM A 479 / A 182/A276	+AT					
1.14	UNS 31254	ASTM A 479 / A 182/A276	+AT					
1.15	UNS N04400	ASTM A 479 / A 182/A276	+AT					
2.11	UNS N 09525	ASTM B 446	+U	Mechanically Attached Fittings, Pipe Fittings, Instrumentation Flange Adaptor & Flange	Size- 1/2" to 2" (3 mm to 50 mm)	Maximum 40 Kgs.		If use in area of PED 2014/68/EU a Particular Material Appraisal (PMA) is necessary
2.12	UNS N 10276	ASTM B 574	+U					

* +AT = Lösungsgeglüht / solution annealed, +N = normalgeglüht, normalisierend umgeformt / normalized forming, +U = unbehandelt / untreated, +NT = normalgeglüht und angewässert / normalized and tempered, +QT = wärgeglüht / quenched and tempered, +M = thermomechanisch umgeformt / thermo mechanical formed, +AR = wie gewulzt / as rolled, +SR = spannungsarmgeglüht / stress relieved, +A = weichgeglüht / soft annealed, +CR = kaltgewalzt / cold rolled
(weitere Symbole / other symbols: EN 10027-1, Teil 1b)

STH-ZE-AD0000 W0_PED_Geltungsbereich_Scope of Approval-FB-320_DE-ENG

Rev. 07 / 2019-05

1 / 1

ATEX Certificate For Fittings & Valves



LCIE

ACCUSE DE RECEPTION DE DEPOT DE DOSSIER ACKNOWLEDGEMENT OF FILE DEPOSIT

1 Version : 00

LCIE 22 AR 242 NM

Issue : 00

- 2 Le LCIE, Organisme Notifié sous la référence 0081 conformément à l'article 17 de la directive 2014/34/UE du Parlement européen et du Conseil du 26 février 2014, accuse réception de la documentation technique :

LCIE, Notified Body number 0081 in accordance with article 17 of the Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014 acknowledges receipt of the technical documentation :

N°	Date
PEL/TCF/002	2022/04

La conformité de cette documentation aux exigences de l'Annexe VIII, point 2, de la Directive 2014/34/UE relève de la responsabilité du fabricant.

Le LCIE n'examine pas la documentation ou le produit.

The compliance of this documentation to the requirements of Annex VIII, point 2, comes under the responsibility of the manufacturer.

LCIE does not examine the documentation or the product.

- 3 Fabricant :

Manufacturer :

PANAM ENGINEERS LIMITED

Survey No.192, NH-08, At Post - Piludra, Taluka - Prantij, Dist. Sabarkantha - 383120 (Gujarat, INDIA)

- 4 Produit :

Vannes et raccords d'instrumentation

Product :

Instrumentation Valves & Fittings

Type:

Instrumentation Valves : Ball valves, Needle valves, Check valves, Relief valves, Gauge root valves, Double block and bleed valves, Manifolds, Filters, Regulators, Hook-ups, & Accessories.

Instrumentation Fittings : Mechanically attached fittings, Pipe fittings, Instrumentation flanges, adaptors, Kidney flanges & cover, High pressure fittings.

- 5 Dossier LCIE N° :

LCIE file N°:

15015022-778540

Ce document est émis conformément au Chapitre 3, article 13, point 1.b.ii de la Directive 2014/34/UE.

This document is issued in accordance with the relevant Chapter 3, article 13, point 1.b.ii of the Directive 2014/34/EU.

- 6 Ce document est valable :

This document is valid :

Du / From	Au / To
2022/04/20	2032/04/19

Toute modification du dossier enregistré, à la demande du fabricant, est soumise à un nouveau dépôt de dossier et à l'émission d'un nouvel accusé de réception.

Il ne peut être ouvert que sur demande express des autorités.

Any modification of the registered file at the request of the manufacturer is subject to a new file deposit and issuance of a new acknowledgement receipt.

It can only be opened upon explicit request of the authorities.

- 7 Le produit doit comporter le marquage requis par les directives et normes applicables sous la responsabilité du fabricant.

Il n'est pas exigé que le numéro d'accusé de réception figure sur le produit.

The product shall bear the marking required by the applicable directives and standards under the responsibility of the manufacturer.

It is not required that acknowledgement number be affixed on the product.

- 8 Détails des modifications

Details of changes

Version/ Issue	Description	Date
00	Initial / Initial	2022/06/08

Fontenay-aux-Roses, le 8 juin 2022



Chargé d'évaluation ATEX
ATEX Assessment Officer
Mohammed HJAJI

Interchangeability Compliance Report with Swagelok Tube Fittings



DNV Report No.:
Ref:- PUN/14/JJ/225

DET NORSKE VERITAS AS

INTERCHANGEABILITY COMPLIANCE REPORT

MANUFACTURER: M/s Panam Engineers Limited

TESTS CONDUCTED AT: Survey No 192, Near Sujal Agro, NH-8, At Post Piludra, Sabarkantha, Gujarat 383120

SCOPE OF TEST: To establish interchangeability of Tubing Fittings manufactured by Manufacturer with Tubing Fittings of similar size and rating of a different Make.
The other make used for this test purpose is M/s Swagelok (Identified with SWAGELOK marking on the fitting components).

PRODUCTS COVERED: Grip-type Mechanically Attached Tubing Fittings (Separable)
(consists of Body, Nut, Front & Rear Ferrule radially compressed on Tube)

MATERIAL GRADE: Stainless Steel (316), Test Certificates Reviewed, Confirmed with PMI

FITTINGS USED FOR TESTING:

Panam Part No	Description	Quantity
PMC-04-04-SS	1/4"OD X 1/4"NPT Male Connector	5
PMC-06-06-SS	3/8"OD X 3/8"NPT Male Connector	5
PMC-08-08-SS	1/2"OD X 1/2"NPT Male Connector	5
PMC-12-12-SS	3/4"OD X 3/4"NPT Male Connector	5
PMC-16-16-SS	1"OD X 1"NPT Male Connector	5
PU-04-SS	1/4"OD Union	5
PU-06-SS	3/8"OD Union	5
PU-08-SS	1/2"OD Union	5
PU-12-SS	3/4"OD Union	5
PU-16-SS	1"OD Union	5
PTC-04-SS	1/4"OD Tube Cap	5
PTC-06-SS	3/8"OD Tube Cap	5
PTC-08-SS	1/2"OD Tube Cap	5
PTC-12-SS	3/4"OD Tube Cap	5
PTC-16-SS	1"OD Tube Cap	5

TEST METHOD: The above Fittings were assembled in different configuration of both the makes (i.e. Panam and Swagelok) with identically rated fitting as indicated in the attached interchangeability test report. The Fittings were then assembled with suitably rated tube and each fitting was subjected to a hydrostatic test to applicable pressure as per the attached report for 5 minutes.

CONCLUSION: M/s Panam Fittings were found compatible with M/s Swagelok Fittings while fitment with respect to tube gripping and threads matched identically.
Pressure testing was satisfactory with no visible signs of leakage or pressure drop.

ATTACHMENTS: Interchangeability Test Report of M/s Panam Engineers Limited.

Place and Date:
Pune, 2014-12-08

Jalson Jose
Inspection Surveyor to Det Norske Veritas AS

It is agreed that none of the information provided herein Det Norske Veritas AS, its subsidiaries, licensees, officers, directors, employees and agents shall have any liability for any loss, damage or expense allegedly caused directly or indirectly to their mistake or negligence, breach of warranty, or any other act, omission or error in fact, including gross negligence or willful misconduct by any such person with the exception of gross negligence or willful misconduct by the governing bodies or senior executive officers of Det Norske Veritas AS. This applies regardless of whether the loss, damage or expense has been suffered by or on behalf of a third party who has acted in reliance on information given by or on behalf of Det Norske Veritas AS. However, if any person uses the services of Det Norske Veritas AS or its subsidiaries or relies on any decision made or information given by or on behalf of them and in consequence suffers a loss, damage or expense proved to be due to their negligence, omission or default, then Det Norske Veritas AS will pay for any of compensation to such person a sum representing his proved loss. In the event Det Norske Veritas AS or its subsidiaries may be held liable in accordance with the sentence above, the amount of compensation shall under no circumstances exceed the amount of the fee, if any, charged for that particular service, omission, advice or information. Under no circumstances whatsoever shall the individual or individuals who have personally caused the loss, damage or expense be held liable. In the event that any provision in this section shall be invalid under the law of any jurisdiction, the validity of the remaining provisions shall not in any way be affected.

DET NORSKE VERITAS AS, VERITASVEIEN 1, N-1322 HØVIK, NORWAY TEL:INT: +47 67 57 99 00, TELEFAX: +47 67 57 99 11
Form No.: 40.91a Issue: January 98

Page 1 of 1

Interchangeability Compliance Report with Parker Tube Fittings



DNV Report No.:
Ref:- PUN/16/JI/542
R1

DET NORSKE VERITAS AS

INTERCHANGEABILITY COMPLIANCE REPORT

MANUFACTURER: M/s Panam Engineers Limited

TESTS CONDUCTED AT: Survey No 192, Near Sujal Agro, NH-8, At Post Piludra, Sabarkantha, Gujarat 383120

SCOPE OF TEST: To establish interchangeability of Tubing Fittings manufactured by M/s Panam Engineers Limited with Tubing Fittings of similar size and rating of a different Make. The other make used for this test purpose is M/s PARKER (Identified with PARKER marking on the fitting components).

PRODUCTS COVERED: Grip-type Mechanically Attached Tubing Fittings (Separable)
(consists of Body, Nut, Front & Rear Ferrule radially compressed on Tube)

MATERIAL GRADE: Stainless Steel (316), Test Certificates Reviewed

FITTINGS USED FOR TESTING:

Panam Part No	Description	Quantity
PMC-04-04-SS	1/4"OD X 1/4"NPT Male Connector	5
PMC-06-06-SS	3/8"OD X 3/8"NPT Male Connector	5
PMC-08-08-SS	1/2"OD X 1/2"NPT Male Connector	5
PMC-12-12-SS	3/4"OD X 3/4"NPT Male Connector	5
PMC-16-16-SS	1"OD X 1"NPT Male Connector	5
PU-04-SS	1/4"OD Union	5
PU-06-SS	3/8"OD Union	5
PU-08-SS	1/2"OD Union	5
PU-12-SS	3/4"OD Union	5
PU-16-SS	1"OD Union	5
PTC-04-SS	1/4"OD Tube Cap	5
PTC-06-SS	3/8"OD Tube Cap	5
PTC-08-SS	1/2"OD Tube Cap	5
PTC-12-SS	3/4"OD Tube Cap	5
PTC-16-SS	1"OD Tube Cap	5

TEST METHOD: The above Fittings were assembled in different configuration of both the makes (i.e. Panam and Parker) with identically rated fitting as indicated in the attached interchangeability test report. The Fittings were then assembled with suitably rated tube and each fitting was subjected to a hydrostatic test to applicable pressure as per the attached report for 5 minutes.

CONCLUSION: M/s Panam Fittings were found compatible with M/s Parker while fitment with respect to tube gripping and threads matched identically. Pressure testing was satisfactory with no visible signs of leakage or pressure drop.

ATTACHMENTS: Interchangeability Test Report of M/s Panam Engineers Limited.

Place and Date:
Pune, 2016-12-30 (Revised for Typo-error)

It is agreed that none are provided below Det Norske Veritas AS, its subsidiaries, offices, directors, employees and agents shall have no liability for any loss, damage or expense allegedly caused directly or indirectly by their mistake or negligence, breach of warranty, or any other act, omission or error by them, including gross negligence or willful misconduct by any such person with the exception of gross negligence or willful misconduct by the governing bodies or senior executive officers of Det Norske Veritas AS. This applies regardless of whether the loss, damage or expense has been suffered by a third party who has relied on information given by or on behalf of Det Norske Veritas AS. However, if any person (other than Det Norske Veritas AS or its subsidiaries or offices or its subsidiaries) is held liable in any way for the loss, damage or expense caused to him due to their negligence, omission or default, then Det Norske Veritas AS will pay by way of compensation to such person a sum representing the amount lost. For the event Det Norske Veritas AS or its subsidiaries, may be held liable in accordance with the parties above, the amount of compensation shall under no circumstances exceed the amount of the fee, if any, charged for this particular service, omission, advice or information. Under no circumstances whatsoever shall Det Norske Veritas AS or its subsidiaries be held liable for any loss, damage or expense to third parties. On no event shall any provision in this contract shall be deemed to be in any way affected by the validity of the remaining provisions that are in any way affected.

DET NORSKE VERITAS AS, VERITASVEIEN 1, N-1322 HØVIK, NORWAY TEL:INT: +47 67 57 99 00, TELEFAX: +47 67 57 99 11
Form No.: 40.91a Issue: January 96


Jaison Jose
Inspection Surveyor to Det Norske Veritas AS

GLIS 	
Certificate No: GLIS/AHD/2013-14/CR-208	GLIS. Ref. No: 101-010-51004-226
<u>FIRE SAFE TEST CERTIFICATE</u>	
This certificate is issued to	
PANAM ENGINEERS. R628, TTC Industrial Area M.I.D.C. Rabale, Navi Mumbai. St.:Maharashtra.	
to certify that at their request the undersigned surveyor to GLIS-India, attended their works at R628, TTC Industrial Area M.I.D.C. Rabale, Navi Mumbai on 06 th February- 2014, for the purpose of witness of fire safe test of DBB valves. The scopes of Inspection & Approval are as below.	
<u>FIRE SAFE TEST STANDARD</u>	: API 6FA, IV Edition, 2010
<u>SPECIFICATION</u>	
<u>TECHNICAL SPECIFICATION</u>	
Design Standard	: BS 5351/ANSI B 16.34/ANSI B 16.5
Construction	: DOUBLE BLOCK AND BLEED VALVE
Size	: 2" (DN 50)
Class	: 1500# ,2500#
Valve Serial No.	: 14010001890.
Valve Drg. No.	: PDBB-DSS-FB-50-1500-FF
<u>MATERIAL OF CONSTRUCTION</u>	
Body	: ASTM A 182 GRF60/ UNS 32205
Ball	: ASTM A 182 GRF60/ UNS 32205
Stem	: ASTM A 182 GRF60/ UNS 32205
Seats	: PEEK
Gasket	: PEEK / Grafoli
Conclusion: DBB Valve Sr. no. 14010001890 punched on flange had successfully passed fire safe test as per procedure outlined in API 6FA, IV Edition, 2010 and witnessed by undersigned GLIS-India Surveyor on February 06 th 2014. Temperature report, Test report and other calculation sheets are enclosed herewith after endorsement by us.	
GLIS-India, is to be notified of any changes in Design of this Certificate that may affect the validity of this certificate.	
Other Sizes Qualified	: 2" & Below, 2-1/2", 3", 4"
Other Pressure Class Qualified	: 1500# & 2500#
Date of Issue	: 06th February, 2014
Issued at:	
Ahmedabad	06.02.2014.
Place	Date
 B. Jaykumar INDUSTRIAL SERVICES GL-05 General Manager	
Branch Office Director, Gulf Lloyds Industrial Services-India 184/A, Jayant Park Society, Nr. Yaganda Society, Memnagar, Ahmedabad -380052, Gujarat, India. Telefax : (91) 79-22773522, gulfllvds.india@gmail.com glis.india@yahoo.com Office : (الخدمات الصناعية للبحرين) Bur Dubai, Dubai, Contact no: +971 55 9098935, Email id : gulfllvds@icim.ae	



Certificate No: GUS/AHD/PE/2013/CR-120

GLIS. Ref. No: 101-010-51003-120

FIRE SAFE TEST CERTIFICATE

This certificate is issued to

M/s.PANAM ENGINEERS.

R628, TTC INDUSTRIAL AREA
MIDC, RABALE,
NAVI MUMBAL

to certify that at their request the undersigned surveyor to Gulf Lloyds -India attended their works at Navi Mumbai, on 30th May- 2013, for the purpose of witness of fire safe test of DBB valves.
The scopes of Inspection & Approval are as below.

STANDARD SPECIFICATION

: API 6FA, Edition ,2008

TECHNICAL SPECIFICATION

Design Standard

: BS 5351 / ANSI B16.34/ANSI B16.5

Construction

: DOUBLE BLOCK & BLEED VALVE

Size

: 2" (DN 50)

Class

: 1500#

Valve Serial No.

: 13060122050

Valve Drg. No.

: PDBB-SS-FB-50-1500-FF

MATERIAL OF CONSTRUCTION

Body

: SS316

Ball

: SS316

Stem

: SS316

Seats

: PEEK

Gasket & Packing

: PEEK/Grafoil

Conclusion: Ball Valve Sr. no. 13060122050 punched on flange had successfully passed fire safe test as per procedure outlined in API 6FA, Edition ,2008 and witnessed by undersigned GLIS Surveyor on 30th May- 2013. Temperature report, Test report and other calculation sheets are enclosed herewith with endorsement by us.

Note : GLIS-India, is to be notified of any changes in design of this Valve that may affect the validity of this certificate.

Other Sizes Qualified

: 2", 2 1/2", 3" & 4".

Other Pressure Class Qualified

: 1500# & 2500#.

Date of Issue: 30th May, 2013

Issued at:

Ahmedabad

30.05.2013.


B. Jaykumar

B. Jaykumar

INDUSTRIAL SERVICES

General Manager

Place

Date

Branch Office: Director, Gulf Lloyds Industrial Services-India.

184-A, Laxmi Jyoti Society, Nr. Yagnand Soc. Memnagar - Ahmedabad - 380052, Gujarat, India

Telefax : 91179-27491138. gulflls@india.com gulflls@india.com gulflls@india.com

Head Office : (الخدمات الصناعية للبحر) (البحر)

Rm Dubai, Dubai>Contact no: +971 54 9099935. Email id: gulflls@india.com

Page : 1 of 1

Fire Safe Test Certificate For Valves by DNV-GL (ASTM A105)

DNV-GL	
Certificate No.: GLIS/AHD/PANAM/NV/18-02	
FIRE SAFE TEST CERTIFICATE	
This certificate is issued to	
M/s. Panam Engineers Limited Survey No 192, Near Sujal Agro, NH – 8, At Post Piludra, Dist – Sabarkantha, Gujarat 383120	
We hereby certify that the fire safe test on below valve has been conducted at the Panam Engineers Limited works and witnessed by DNV-GL surveyor according to requirement of API 607 7th ED:2016	
STANDERD SPECIFICATION :	API 607 7 TH ED:2016
TECHNICAL SPECIFICATION	
Design STD :	API 6D:24 TH ED/API 698/ASME B16.34/ASME B16.5
Construction :	3 Piece Design Full Bore Flanged End Double Block and Bleed Ball Valves
Size :	50MM (2")
Class :	600#
Production No. :	1810P37531
Valve Drg. No. :	PDBB-BNB-FB-CS-01-15-600-RF-8NF-8N Rev No.00
MATERIAL OF CONSTRUCTION	
Body :	ASTM A 105(NACE)
Trims :	ASTM A 276/ASTM A479 316L
Seats :	PTFE
Stud & Nut :	ASTM A193 Gr.B7 & ASTM A194 Gr.2H
QUALIFIED RANGE OF VALVE	
Qualified Size :	2" and Below, 2 1/2", 3", 4"
Qualified Pressure Rating :	600#, 800#, 900#
Conclusion: This certificate is issued according to The above valve complies to the fire safe requirement as per API 607: 2016 7 th Edition.	
This Certificate is in conjunction with Inspection Report No.-DNVGL/AHD/PANAM/18-02.	
Place: Prantij, Himmatnagar Date : 27.10.2018	 E.ON Germanischer Lloyd Industrial Services GmbH. Nikhil Vasva Inspection Engineers- Inspection Services
Equinox Business Park, 8 th Floor, Tower 3, L.B.S Marg, Off. Bandra Kurla Complex, Kurla (W) Mumbai – 400 070 DNV-GL Headquarters, Veritasveien 1, P.O.Box 300, 1322 Hovik, Norway. Tel: +47 67 57 99 00, www.dnvgl.com	
Germanischer Lloyd Industrial Services GmbH India Branch trading as DNV-GL Company Registration No FC0288	

Burst Pressure Test Of Fittings By CSA Group (USA)



**CSA
Group**

CSA Group Laboratory Test Data - Hydrostatic Test

Testing performed in CSA Group Cleveland office laboratories: 8503 E. Pleasant Valley Rd. Independence, OH 44131
ORIGINAL TEST DATA

This report shall not be reproduced, except in full, without the approval of CSA Group.

Date	2017-11-27	Project	70162731	FC Code	807201
Contact	Umang Vekariya Marketing Manager	Company	Panam Engineers Ltd Mumbai, India		
Standard(s):	Reference to ASTM F1387-99 (R2012) A7 Hydrostatic Proof Test & A8 Hydrostatic Burst Test				
Page number	1 of 15	Reviewed by: Title	<i>Project Manager</i>	Signature:	<i>[Signature]</i>

The results relate only to the items tested



Test Description:

- Place the test specimens into a burst chamber and secure them into place in accordance with the manufacturer's recommended procedures. Fill the test specimens with water or hydraulic fluid, bleeding air out. One end must be free to move.
- Equip the chamber with calibrated pressure gages to permit visual readings of actual pressure being applied.
- Perform the hydrostatic test at ambient temperature.
- Proof Pressure Test:** Initially pressurize the test specimens to 0.690 MPa (100 psi) $\pm$ 5 %. There shall be no evidence of leakage. If there is no evidence of leakage, gradually increase the pressure at an average rate not to exceed 172 MPa/min (25,000 psig/min) to 150 $\pm$ 5 % of the rated pressure of the tube. Maintain this pressure for an additional period of 1 min. If leakage occurs, discontinue the test. If there is no evidence of leakage, during both pressurized periods, the test specimens have passed the hydrostatic proof test.
- Burst Pressure Test:** Subject the test specimens to a gradual increase of pressure at an average rate not to exceed 127MPa/min (25,000psig/min; 416 psig/sec) to four times the rated pressure of the specimen assembly and hold for minimum of 1min. If tube burst occurs below four times the rated pressure of the specimen assembly, discontinue the test. The affected tubing test specimen has failed the test. If leakage occurs below four times the rated pressure of the specimen assembly, the affected fitting test specimen has failed the burst test.
- The fitting and tubing test specimens have passed the hydrostatic burst test when four times the rated pressure of the specimen assembly has been attained.

Assembly #	1
Part #/Brand#	201
Description	1/4 x .035

Results:

Tube MAWP (PSI)	Tube Pressure 1.5X (PSI)	Tube MAWP 4X (PSI)	Rate (PSI/SEC)	Actual Burst Pressure (PSI)	Pass/Fail Both
5,130	7,695	20,520	416	28,417	PASS
Pass/Fail 1 minute hold	PASS	PASS			
Comment:	Burst			Torque in FT Lbs.	Cap 20 Body 20

Test equipment used

Item	Manufacturer	Asset No.	Last Cal.	Next Cal.
CSA Hydraulic Chamber	Hydro-pac	CH-92		
Pressure Transducer	Viatran	Z000001141	2017/09/18	2018/09/18
Pressure Gauge	Astragauge	PG-187	2017/02/26	2018/02/26

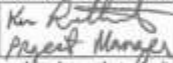
Burst Pressure Test Of Fittings By CSA Group (USA)

 CSA Group		CSA Group Laboratory Test Data - Hydrostatic Test Testing performed in CSA Group Cleveland office laboratories: 8503 E. Pleasant Valley Rd. Independence, OH 44131 ORIGINAL TEST DATA																									
This report shall not be reproduced, except in full, without the approval of CSA Group.																											
Date	2017-11-27	Project	70162731																								
Contact	Umay Vekariya Marketing Manager	Company	Panam Engineers Ltd Mumbai, India																								
Standard(s)	Reference to ASTM F1387-99 (R2012) A7 Hydrostatic Proof Test & A8 Hydrostatic Burst Test																										
Page number	5 of 15	Reviewed by: Title: Project Manager	Signature: 																								
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Assembly #	5																										
Part #/Brand#	205																										
Description	1/2 x .065																										
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Pressure Gauge	Astragauge	PG-187	2017/02/26	2018/02/26																							

Burst Pressure Test Of Fittings By CSA Group (USA)

 CSA Group		CSA Group Laboratory Test Data - Hydrostatic Test																											
		Testing performed in CSA Group Cleveland office laboratories: 8503 E. Pleasant Valley Rd. Independence, OH 44131 ORIGINAL TEST DATA																											
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Date	2017-11-27	Project	70162731	FC Code	807207																								
Contact	Umang Vekuriya Marketing Manager	Company	Panam Engineers Ltd Mumbai, India																										
Standard(s):	Reference to ASTM F1387-99 (R2012) A7 Hydrostatic Proof Test & A8 Hydrostatic Burst Test																												
Page number	7 of 15	Reviewed by:	<i>Am. Reddy</i> Title: <i>Project Manager</i>	Signature:	<i>[Signature]</i>																								
The results relate only to the items tested																													
																													
Test Description: - Place the test specimens into a burst chamber and secure them into place in accordance with the manufacturer's recommended procedures. Fill the test specimens with water or hydraulic fluid, bleeding air out. One end must be free to move. - Equip the chamber with calibrated pressure gages to permit visual readings of actual pressure being applied. - Perform the hydrostatic test at ambient temperature. Proof Pressure Test: Initially pressurize the test specimens to 0.690 MPa (100 psi) +/- 5 %. There shall be no evidence of leakage. If there is no evidence of leakage, gradually increase the pressure at an average rate not to exceed 172 MPa/min (25,000 psig/min) to 150 +/- 5 % of the rated pressure of the tube. Maintain this pressure for an additional period of 1 min. If leakage occurs, discontinue the test. If there is no evidence of leakage, during both pressurized periods, the test specimens have passed the hydrostatic proof test. Burst Pressure Test: Subject the test specimens to a gradual increase of pressure at an average rate not to exceed 127MPa/min (25,000psig/min; 416 psig/sec) to four times the rated pressure of the specimen assembly and hold for minimum of 1min. If tube burst occurs below four times the rated pressure of the specimen assembly, discontinue the test. The affected tubing test specimen has failed the test. If leakage occurs below four times the rated pressure of the specimen assembly, the affected fitting test specimen has failed the burst test. - The fitting and tubing test specimens have passed the hydrostatic burst test when four times the rated pressure of the specimen assembly has been attained.																													
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Part #/Brand#	207																												
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DNV GL

TYPE TEST COMPLIANCE REPORT

Certificate No.: BDA/2018/470B

Date: 2018-08-08

MANUFACTURER: M/s Panam Engineers Limited

TESTS CONDUCTED AT: Survey No 192, Near Sujai Agro, NH-8, At & Post: Piludra, Sabarkantha, Gujarat 383120

SCOPE OF TEST: To establish Type Test of Instrument Valves manufactured by M/s Panam Engineers Limited with Different type of Instrument Valves Size and Rating [Needle Valve, Ball Valve, Check Valve, Manifold Valve, Block and bleed valve, Gauge Root Valve, Relief Valves].

COMPLIANCE STANDARD: MSS SP-99-2016a For Instrument Valves & PEL Test Procedure Doc. No. WI/5.7.1.5/2-40, Rev. 00, Dated: 03/10/2013, Total Page 04.

MATERIAL GRADE: Stainless Steel (316 / 316L), Test Certificates Reviewed

INSTRUMENT VALVES USED FOR TESTING:

Refer Attached Annexure A to Type Testing Compliance Report No. BDA/2018/470B, Dated: 2018-08-08.

TEST METHOD: The above Instrument Valves were assembled in different configuration of Panam with Identically rated Instrument Valves as indicated in the attached test report. The Instrument Valves were then assembled with suitably rated and each Instrument Valves was Subjected to a hydrostatic Proof test [Shell, Seat] Pneumatic test [Shell, Seat] & Burst Test [Except Relief Valve] to applicable pressure as per the attached report for 1 minutes.

CONCLUSION: M/s Panam Instrument Valves were Pressure testing was satisfactory with no visible signs of leakage or pressure drop.

ATTACHMENTS:

- 1) Quality Certificate / Mill Certificate No. PEL/MTC-TYPE TEST/18-19, Dated: 16/07/2018, Page No. 1 to 7 of M/s Panam Engineers Limited.
- 2) Pressure Test Report [Witness] No. PEL/TEST REPORT/18-19, Dated: 20/07/2018 Page No. 1 to 03 of M/s Panam Engineers Limited.
- 3) Final Inspection Report [Witness] No. PEL/FIR-007-18-19, Dated: 27/07/2018, Page No. 1 to 27 of M/s Panam Engineers Limited.

For DNV GL Business Assurance India



Issued at **Vadodara** on **2018-08-08**

(Narpat R. Ravalji / Nikunj Patel)
Surveyor

Except for the obligations under section 12.1 or in case of fraud or fraudulent misrepresentation or other similar circumstances for which a party may not lawfully limit its liability under this Agreement's applicable law, DNV GL's BA total maximum liability (and whether in contract, tort including without limitation negligence, breach of statutory duty, under any indemnity or otherwise howsoever) arising out of or in relation to this Agreement and the performance or non-performance of any Work or Deliverables shall be limited to a sum equal to ten times the remuneration paid to DNV GL BA under this Agreement, up to a maximum aggregate sum of USD 300,000 (three hundred thousand).

OP-IND-15-S-17-INSPI-1-f 008, Rev. 0, 2017-02

Page 1 of 1

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Helium Leak Test Reports For Fittings & Valves

1203, BUTTERCUP, HIRANANDANI MEADOWS,
GLADYS ALWARES ROAD, POKHARAN 2,
THANE (WEST) - 400 610.
TEL - 21739269 • 26795611.
Cell - 9820067369 • 9820067669
Email: stachndt@gmail.com

SCIENTIFIC TECHNICAL NDT SERVICES

HELIUM LEAK TESTING REPORT.

CLIENT	: Panam Engineers, Rabale, Navi Mumbai.	Report No.: 1062/18-19.
CUSTOMER	: ISRO Propulsion Complex	Date: 22 & 23.03.2019.
Ref P.O.No.	: IPRC-PUR-2018E023270201	P.O.Date: 31.12.2018
Description	: As per Annexure (Item Description / MOC / Panam Part No.)	
EQUIPMENT	: Make/Model MSLD – Pfeiffer Vacuum Adixen ASM 310 - Made in France	
TECHNIQUE USED	: Detector Probe (Sniffer Probe)	
TRACER GAS	: Helium Gas Purity 99.995%.	
PRESSURE	: Helium 0.15 kg/cm ²	
CALIBRATION DONE	: 1.3×10^{-7} mbar/ l/ sec.	
REF. PROCEDURE	: ASME Sec V, Article 10, Appendix IV, Test pressure of 0.1 MPa(g) with a leak rate not exceeding $1\text{E-}06$ std cm ³ /s.	
ACCEPTANCE	: 1.0×10^{-6} mbar-cc/sec.	
PRESSURE GUAGE	: 0 – 1 Kg Serial No: UCS 51 & 52	
Test Conducted by	: K. Shivaji. Level II	
OBSERVATION	: As per the annexure attached	

Scientific Technical NDT Services

Authorized Signatory



Test Witnessed by

M.S.Naim, QCD,
PANAM Engineers

- Specialised Services in NDT : Ultrasonic Flaw Detection • Ultrasonic Thickness Gauging Survey • Magnetic Particle Inspection
- Eddy Current Testing • Digital Hardness Testing • Dye Penetrant Testing • Radiography Inspection • In-situ Metallography
- Positive Material Identification (PMI) • Helium Leak Testing • DF Thickness • Material Segregations • Pre & Post Heat Treatment
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CUSTOMER: ISRO Propulsion Complex

Date: 22 & 23.03.2019.

Ref P.O.No. : IPRC-PUR-2018E023270201

P.O.Date: 31.12.2018.

NO.	ITEM DESCRIPTION	MOC	PANAM PART NO	Background (A) m.bar cc/sec	Observed Reading (B) m.bar cc/sec	Leak Rate (B-A)	Remark
1	SS Union: 8mm	SS316	PU-M08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
2	SS Union: 12.7mm (1/2")	SS316	PU-08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
3	Adapters: 1/4" Male NPT X 8mm Tube	SS316	PMA-M08-4N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
4	Adapters: 1/2" Male NPT X 8mm Tube	SS316	PMA-M08-8N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
5	Adapters: 3/8" Male NPT X 8mm Tube	SS316	PMA-M08-6N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
6	Adapters: 1/8" Male NPT X 8mm Tube	SS316	PMA-M08-2N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
7	Adapters: 1/4" Male NPT X 12.7mm Tube (1/2")	SS316	PMA-08-4N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
8	Adapters: 1/2" Male NPT X 12.7mm Tube (1/2")	SS316	PMA-08-8N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
9	Adapters: 3/8" Male NPT X 12.7mm Tube (1/2")	SS316	PMA-08-6N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
10	Adapters: 1/8" Male NPT X 12.7mm Tube (1/2")	SS316	PMA-08-2N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
11	SS Male Elbow 1/2" Male NPT X 8mm Tube	SS316	PME-M08-8N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
12	SS Male Elbow 3/8" Male NPT X 8mm Tube	SS316	PME-M08-6N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
13	SS Male Elbow 1/8" Male NPT X 8mm Tube	SS316	PME-M08-2N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
14	SS Male Elbow 1/4" Male NPT X 12.7mm Tube (1/2")	SS316	PME-08-4N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
15	SS Male Elbow 1/2" Male NPT X 12.7mm Tube (1/2")	SS316	PME-08-8N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
16	SS Male Elbow 3/8" Male NPT X 12.7mm Tube (1/2")	SS316	PME-08-6N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
17	SS Male Elbow 1/8" Male NPT X 12.7mm Tube (1/2")	SS316	PME-08-2N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
18	SS Reducing Union: 12.7mm (1/2") X 6mm Tube	SS316	PRU-M08-08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
19	SS Reducing Union: 12.7mm (1/2") X 8mm Tube	SS316	PRU-M08-08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
20	SS Reducing Union: 12.7mm (1/2") X 12mm Tube	SS316	PRU-M12-08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
21	SS Union Tee: 12.7mm (1/2")	SS316	PUT-08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
22	SS Union Tee: 8mm	SS316	PUT-M08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
23	Conversion Adapters: 1" Male NPT X 8mm Tube	SS316	PMA-M08-16N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
24	Adapters: 1" Male NPT X 12.7mm Tube (1/2")	SS316	PMA-08-16N-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
25	End closer: 6mm cap	SS316	PTC-M08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
26	End closer: 8mm plug	SS316	PTP-M08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
27	End closer: 8mm cap	SS316	PTC-M08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
28	End closer: 8mm plug	SS316	PTP-M08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
29	End closer: 12.7mm cap (1/2")	SS316	PTC-08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable
30	End closer: 12.7mm plug (1/2")	SS316	PTP-08-SS	5.0×10^{-8}	5.0×10^{-8}	No Changes	Acceptable

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Authorized Signatory



Test Witnessed by

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Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO. MI/PEL/2019/01/204	
	DATE 09-01-2019	
	PAGE NO. 01 of 02	
HELIUM LEAK TEST REPORT (VACUUM / TRACER GAS METHOD)		
Customer	M/s. Panam Engineers Ltd., Mumbai - India	
Inspecting Authority	M/s. Panam Engineers Ltd., Mumbai - India	
Project / Customer :	M/s. Oil India Ltd., PO Number 7120597/JFS Dtd. 12/10/2018	
Product / Equipment Description	Stainless Steel Coupling (Size : ½" NPT – Male, 2" Long)	Qty : 02 Nos.
Job Number,	Not Applicable	
Drawing No.	Panam Part Number - PHLN-8N-SS-L2	
Material of Construction:	Stainless Steel AISI 316	
Job Dimension's / Thickness :	As per Approved / Panam Engineers Ltd., Drawing.	
Reference Standards / Documents :	ASME Section V Article 10, Edition 2010.	
Scope	Helium Leak Testing of Stainless Steel Nipple (1/2" NPT – Male, 2" Long) by Tracer Gas / Vacuum Method.	
Helium Leak Test Proc. No.	As per Standard Helium Leak Testing Procedure.	
Examination Stage	After Final Assembly & Successful Hydro-Test.	Helium Test Mode Vacuum Method
Acceptable Limit	4.0 x 10 ⁻⁹ atm-cc/sec.	Date of Examination 09/01/2018.
Test Condition :	After Successful Pneumatic Strength Test of of Stainless Steel Nipple (1/2" NPT – Male, 2" Long)	
HELIUM LEAK DETECTOR EQUIPMENT DETAILS :		
Make	ALCATEL ADIXEN, FRANCE	Model ASM 310
Helium Leak Detector Serial Number :	HLD1501032	Helium Leak Detector Part Number : BSAA0000MM9A
Required Helium Leak Detector Machine Sensitivity :	1.0 x 10 ⁻⁹ atm-cc/sec.	
Actual Helium Leak Detector Machine Sensitivity used for Leak Testing :	5.0 x 10 ⁻¹¹ atm-cc/sec.	
HELIUM LEAK DETECTOR CALIBRATION DETAILS AT THE START OF HELIUM LEAK TEST:		
Manufacturer	M/s. Cincinnati Test Systems, USA	Model Number : 9GPHKF25
Calibrated Stad. Leak Sr. No.	G01062	Calibration Certificate Number :
Calibration Date :	30/07/2018	Next Calibration Due Date :
Depletion Rate	0.1% per Year	Temp. Coefficient 4.0% per Deg C.
CALIBRATION OF HELIUM LEAK DETECTOR	LEAK RATE VALUE	UNIT
Leak rate of calibrated Leak – In Vacuum	1.3 x 10 ⁻⁹	mbar ltr / sec in Vacuum
Target Leak Rate – In Vacuum	1.3 x 10 ⁻⁹	mbar ltr / sec in Vacuum
Actual Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak in Vacuum Condition	1.4 x 10 ⁻⁹	mbar ltr / sec in Vacuum
Background Leak Rate Value – In Vacuum	5.4 x 10 ⁻¹¹	mbar ltr / sec in Vacuum
ACCESSORIES / EQUIPMENT DETAILS		
Tracer Gas	HELIUM GAS (99.995% Pure or 4.5 Grade Gas)	Tracer Gas Concentration 99.995% Pure Helium.
TYPICAL SKETCH OF THE STAINLESS STEEL NIPPLE – SIZE – ½" NPT (MALE), 2" LONG.		
		
..... Continuation Sheet		

D-17/5, Sahyadri CHS, Plot 50, Sector 8, Sanpada, Navi Mumbai – 400 705 Contact Number : 9820119880 / 9820718901

Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO.	MI/PEL/2019/01/204		
	DATE	09-01-2019		
	PAGE NO.	01 of 02		
HELIUM LEAK TEST REPORT (TRACER GAS / VACUUM METHOD) – CONTINUATION SHEET				
MEASUREMENT OF SYSTEM SENSITIVITY AT THE START OF THE HELIUM LEAK TEST :				
01	Background Reading displayed on HLT during Test with Standard Leak Valve Closed.	A	6.2×10^{-13}	atm-cc/sec
02	Leak Rate of Calibrated Leak	B	1.3×10^{-10}	atm-cc/sec
03	Leak Rate Displayed on HLT (Sensing Calibrated Leak Connected on Test Component / Standard Leak Valve Opened)	C	7.5×10^{-11}	atm-cc/sec
04	Response Time	T	< 10	Seconds
05	Duration for Stable Reading	—	> 10	Seconds
06	Initial System Calibration Factor (ICSF)	ICSF = {B/(C-A)}	1	—
HELIUM LEAK TEST RESULTS FOR STAINLESS STEEL NIPPLE (SIZE – ½" NPT MALE, 2" LONG) TAG NO. 01 :				
01	Background Reading before start of Helium Leak Test	X	6.2×10^{-13}	atm-cc/sec
02	Maximum Leak Rate Observed after 10 Min Hold Time.	W	8.2×10^{-13}	atm-cc/sec
03	Actual Maximum Leak Rate	(W-X) x ICSF	2.0×10^{-11}	atm-cc/sec
04	Allowable / Acceptable Helium Leak Rate	—	4.00×10^{-9}	atm-cc/sec
HELIUM LEAK TEST RESULTS FOR STAINLESS STEEL NIPPLE (SIZE – ½" NPT MALE, 2" LONG) TAG NO. 02 :				
01	Background Reading before start of Helium Leak Test	X	6.2×10^{-13}	atm-cc/sec
02	Maximum Leak Rate Observed after 10 Min Hold Time.	W	8.2×10^{-13}	atm-cc/sec
03	Actual Maximum Leak Rate	(W-X) x ICSF	2.0×10^{-11}	atm-cc/sec
04	Allowable / Acceptable Helium Leak Rate	—	4.00×10^{-9}	atm-cc/sec
RESULT: - THE OBSERVED HELIUM LEAK RATE ARE WITHIN THE SPECIFIED LIMITS OF 4.0×10^{-9} atm-cc/sec.				
HELIUM LEAK TEST OF STAINLESS STEEL NIPPLE, SIZE – ½" NPTM, 2" LONG (QTY – 02 NOS.) FOUND SATISFACTORY.				
  				
LT PERFORMED BY (ASNT -LT- Level-2)		WITNESSED / APPROVED BY		
MANOJ INDUSTRIES, NAVI MUMBAI		M/S. PANAM ENGINEERS LTD., MUMBAI		

End :

1. Calibration Certificate for Vacuum Type Helium Calibrated Leak.
2. ASNT Level II Certificate of Mr. Subhash Bolwar

Helium Leak Test Reports For Fittings & Valves



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TEST REPORT - HELIUM LEAK TESTING									
Report No : PITS/07/001					Report Date : 04-07-2019				
Client : LPSC, ISRO					Testing Equipment : LEYBOLD QUADRO				
Manufacturer : PANAM ENGINEERS LTD					Calibrated Leak : 17480				
Item : Needle Valve - PNV-SB-S-06-MF-G					Code / Standard : ISRO specification				
P O Reference: PO NO. TL05-20180319170101-LO Dated :-12-02-2019					Qualification : He Leak Rate <1.0x10 ⁻⁸ std cc/s at body-bonnet joint,gland seal, seat				
Leak Detector and Probe Calibration									
1	Standard Leak Value			Observed Leak Value			Instrument Sensitivity		
	2.87x 10 ⁻⁸ std cc/s			~ 2.7 x 10 ⁻⁸ std cc/s			CF = 1.0 Response < 5 s		
2	Test Pressure : 5 Kg/cm ² He					Soaking Time : 10 Minutes			
3	Leak Rate (std cc/s)								
PR SR NO.	Serial No	Size	Material	Class	Type	Body/Bonnet Joint	Seat	Gland Seal	
1	1906P19894	3/8" BSPP (MXF)	ASTM A 479 - 316	MAX WP - 50BAR	Needle Valve - PNV-SB-S-06-MF-G	< 10 ⁻⁸	1.2 x 10 ⁻⁸	< 10 ⁻⁸	
2	1906P19897	3/8" BSPP (MXF)	ASTM A 479 - 316	MAX WP - 50BAR	Needle Valve - PNV-SB-S-06-MF-G	< 10 ⁻⁸	1.1 x 10 ⁻⁸	< 10 ⁻⁸	
Final Remarks : The Helium leak rate observed was within acceptable limit (Note : 1 std cc/s = 1 mbar l/s = 0.1 Pa m ³ /s = 1 (atm) cc/s = 0.76 Torr l/s)									
Testing Agency		Manufacturer			Inspection Authority			Client	



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Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO. MI/PEL/2019/01/205	
	DATE 09-01-2019	
	PAGE NO. 01 of 02	
HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD)		
Customer	M/s. Panam Engineers Ltd., Mumbai - India	
Inspecting Authority	M/s. Panam Engineers Ltd., Mumbai - India	
Customer / Project :	M/s. Oil India Ltd.	
Product / Epm Description	STAINLESS STEEL NEEDLE VALVE MATERIAL - AISI 316, SIZE : ½" NPT - FEMALE	Qty. : 02 Nos.
Job Number.	M/s. Oil India Ltd., PO Number 7120597/JFS Dtd. 12/10/2018	
Drawing No.	Panam Needle Valve Part Number : PNV-UB-S-08-FF	
Material of Construction:	Stainless Steel AISI 316	
Thickness :	Not Applicable	
Reference Standards / Documents :	ASME Section V Article 10, Edition 2010.	
Scope	Helium Leak Testing of Needle Valve (Size - ½" NPT Female).	
Helium Leak Test Proc. No.	As per Standard Helium Leak Testing Procedure.	
Examination Stage	After Final Assembly and Pneumatic Testing.	Helium Test Mode DETECTOR PROBE METHOD.
Acceptable Limit	1 X 10 ⁻⁶ std-cc/sec	Date of Examination 09.01.2019
HELIUM LEAK DETECTOR EQUIPMENT DETAILS :		
Make	ALCATEL ADIXEN, FRANCE	Model ASM 310
Helium Leak Detector Serial Number :	HLD1501032	Helium Leak Detector Part Number : BSAA0000MM9A
HELIUM LEAK DETECTOR CALIBRATION DETAILS :		
Manufacturer	M/s. Laco Technologies, USA	Model Number : CM511.081111v0/4
Calibrated Stad. Leak Sr. No.	14822	Calibration Certificate Number : 970455
Calibration Date :	10/04/2018	Next Calibration Due Date : 10/04/2019
Depletion Rate	0.1% per Year	Temp. Coefficient 0.1 per Deg C.
CALIBRATION OF HELIUM LEAK DETECTOR		LEAK RATE VALUE
Leak rate of calibrated Leak		1.08 x 10 ⁻⁸ at 23°C.
Calculated Leak rate arrived after considering above Depletion rate of 0.1% year		1.078 x 10 ⁻⁸
Calculated Leak Rate arrived after considering above Temp Coefficient of 0.1% per Deg C.		1.087 x 10 ⁻⁸ at 32°C.
Uncertainty after age and temperature correction as per calibration certificate ± 8%		1.0 X 10 ⁻⁸ to 1.17 X 10 ⁻⁸ at 32°C
Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak in Vacuum Condition		1.2 x 10 ⁻⁸ at 32°C
Machine sensitivity as recorded on HLT IN VACUUM MODE		5.0 x 10 ⁻¹²
SYSTEM / SNIFFER PROBE CALIBRATION DETAILS :		
Manufacturer	M/s. Laco Technologies, USA	Model Number : CM519.0630DAQ/4
Calibrated Stad. Leak Sr. No.	14828	Calibration Certificate Number : 970468
Calibration Date :	12/04/2018	Next Calibration Due Date : 12/04/2019
Depletion Rate :	Not Applicable	Temp. Coefficient 0.1 per Deg C.
SYSTEM CALIBRAION DETAILS :		LEAK RATE VALUE
Leak rate of Sniffer Calibrated Leak @ 21.6 Deg C		3.5 x 10 ⁻⁵ @ Helium Inlet Pressure of 50 psig
Calculated Leak Rate arrived after considering above Temp Coefficient of 0.1% per Deg C.		3.6 x 10 ⁻⁵ at 32 Deg C.
Uncertainty after age and temperature correction as per calibration certificate ± 10%		3.45 X 10 ⁻⁵ to 4.21 X 10 ⁻⁵ at 32 Deg C.
Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak by HLD Sniffer Probe.		3.4 x 10 ⁻⁵ @ Helium Inlet Pressure of 50 psig
Response Time :		< 1 Minute.
Note: Above noted Response time is derived after keeping Sniffer Probe Calibrated Leak with Value of 3.8 x 10⁻⁵ mbar-ltr/sec with Helium Reservoir (Filled at 50 psig pressure) is kept in similar volume of Polythene bag to be used for HLD Exchanger Test for the test Hold time of 12 hrs similar to the U-Tube Heat Exchanger Helium Leak Detection Test Condition.		
ACCESSORIES / EQUIPMENT DETAILS		
Tracer Gas	HELIUM (99.995% Pure or 4.5 Grade Gas)	Tracer Gas Concentration 100% Helium.
Test Pressure	20 kg/cm ²	Soaking Time Minimum 30 Minutes.
Helium Filling Date	09/01/2019	Time & Atm. Room Temp 4.30 PM & 30 Deg C
Helium Test Date	09/01/2019	Time & Atm. Room Temp. 5.30 PM & 30 Deg C.

..... Continuation Sheet



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Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO.	MI/PEL/2019/01/205				
	DATE	09-01-2019				
	PAGE NO.	01 of 02				
HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD) – CONTINUATION SHEET						
TYPICAL SKETCH OF PANAM NEEDLE VALVE :						
						
NOTE: PLASTIC HOOD WRAPED ON TEST LOCATION AND KEPT UPTO MIN. 30 MINUTES AFTER PRESSURING WITH HELIUM GAS.						
Location Area.	AREAS UNDER INSPECTION	Initial Background Reading before start of Helium Leak Test (std-cc/sec)	Helium Leak Rate Reading observed during Leak Testing (std-cc/sec)	Observed Leak Rate (100% Helium Pressure) (std-cc/sec)	Acceptable Helium Leak Rate (std-cc/sec)	RESULT
		A	B	(B-A)		
1	Body, Bonnet, Stem and End Joints Etc. – SR, NO. 01	2.7×10^{-6}	2.9×10^{-6}	$0.2 \times 10^{-6} = 2.0 \times 10^{-7}$	1×10^{-6}	Acceptable
2	Body, Bonnet, Stem and End Joints Etc. – SR, NO. 02	2.7×10^{-6}	3.1×10^{-6}	$0.4 \times 10^{-6} = 4.0 \times 10^{-7}$		
RESULT: - HELIUM LEAK TEST OF NEEDLE VALVE ARE WITHIN ACCEPTABLE LIMIT OF 1.0×10^{-6} ATM-CC/SEC.						
						
LT PERFORMED BY (ASNT -LT- Level-2)				WITNESSED / APPROVED BY		
MANOJ INDUSTRIES, NAVI MUMBAI				M/S. PANAM ENGINEERS LTD., MUMBAI		

End :

1. Calibration Certificate for Vacuum Type Helium Calibrated Leak.
2. Calibration Certificate for Sniffer Type Helium Calibrated Leak.
3. ASNT Level II Certificate of Mr. Subhash Bolwar.

Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO. MI/PEL/2019/09/146	
	DATE 23-09-2019	
	PAGE NO. 01 of 02	
HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD)		
Customer	M/s. Panam Engineers Ltd., Mumbai - India	
Inspecting Authority	M/s. Panam Engineers Ltd., Mumbai - India	
Customer / Project :	M/s. Krohne Engineering LLC. - Russia	
Product / Epmt Description	STAINLESS STEEL MALE CONNECTOR MATERIAL - AISI 316, SIZE : 12MM OD X 1/2" NPTM	Qty. : 316 Nos.
Job Number.	M/s. Krohne Engineering LLC. - Russia, PO Number 2601/1-716 Dtd. 12/08/2018	
Drawing No.	MALE CONNECTOR Part Number : PMC-M12-BN-SS	
Material of Construction:	Stainless Steel AISI 316	
Thickness :	Not Applicable	
Reference Standards / Documents :	ASME Section V Article 10, Edition 2010.	
Scope	Helium Leak Testing of MALE CONNECTOR 12MM OD X 1/2" NPTM	
Helium Leak Test Proc. No.	As per Standard Helium Leak Testing Procedure.	
Examination Stage	After Final Assembly and Pneumatic Testing.	Helium Test Mode DETECTOR PROBE METHOD.
Acceptable Limit	1 X 10 ⁻⁴ std-cc/sec	Date of Examination 23-09-2019
HELIUM LEAK DETECTOR EQUIPMENT DETAILS :		
Make	ALCATEL ADIXEN, FRANCE	Model ASM 310
Helium Leak Detector Serial Number :	HL1501032	Helium Leak Detector Part Number : BSAA0000MM9A
HELIUM LEAK DETECTOR CALIBRATION DETAILS :		
Manufacturer	M/s. CINCINNATI TEST SYSTEMS, INC.	Model Number : 9GPHKF25
Calibrated Std. Leak Sr. No.	-	Calibration Certificate Number : G010622
Calibration Date :	28/07/2019	Next Calibration Due Date : 26/07/2020
Depletion Rate	0.1% per Year	Temp. Coefficient 4.0% per Deg C.
CALIBRATION OF HELIUM LEAK DETECTOR		
Leak rate of calibrated Leak	1.3 x 10 ⁻⁵ at 21.8°C.	UNIT mbar ltr / sec
Calculated Leak rate arrived after considering above Depletion rate of 0.1% year	1.224 x 10 ⁻⁵	mbar ltr / sec
Calculated Leak Rate arrived after considering above Temp Coefficient of 0.1% per Deg C.	1.318 x 10 ⁻⁵ at 36°C.	mbar ltr / sec
Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak in Vacuum Condition	1.4 x 10 ⁻⁵ at 36°C	mbar ltr / sec
Machine sensitivity as recorded on HLT IN VACUUM MODE	5.0 x 10 ⁻¹²	mbar ltr / sec
SYSTEM / SNIFFER PROBE CALIBRATION DETAILS :		
Manufacturer	M/s. CINCINNATI TEST SYSTEMS, INC.	Model Number : 9GPHKF25
Calibrated Std. Leak Sr. No.	-	Calibration Certificate Number : G010622
Calibration Date :	28/07/2019	Next Calibration Due Date : 26/07/2020
Depletion Rate :	0.1% per Year	Temp. Coefficient 4.0% per Deg C.
SYSTEM CALIBRATION DETAILS :		
Leak rate of Sniffer Calibrated Leak @ 21.6 Deg C	3.5 x 10 ⁻⁵ @ Helium Inlet Pressure of 50 psig	UNIT mbar ltr / sec
Calculated Leak Rate arrived after considering above Temp Coefficient of 0.1% per Deg C.	3.6 x 10 ⁻⁵ at 32 Deg C.	mbar ltr / sec
Uncertainty after age and temperature correction as per calibration certificate ± 10%	3.45 x 10 ⁻⁵ to 4.21 x 10 ⁻⁵ at 32 Deg C.	mbar ltr / sec
Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak by HLD Sniffer Probe.	3.4 x 10 ⁻⁵ @ Helium Inlet Pressure of 50 psig	mbar ltr / sec
Response Time :	< 1 Minute.	
Note: Above noted Response time is derived after keeping Sniffer Probe Calibrated Leak with Value of 3.8 x 10⁻⁵ mbar-ltr/sec with Helium Reserve (filled at 50 psig pressure) is kept in smaller volume of Polythene bag to be used for HLD Exchanger Test for the test Hold time of 12 hrs similar to the U-Tube Heat Exchanger Helium Leak Detection Test Condition.		
ACCESSORIES / EQUIPMENT DETAILS		
Tracer Gas	HELIUM (99.995% Pure or 4.5 Grade Gas)	Tracer Gas Concentration 100% Helium.
Test Pressure	7 kg/cm ²	Soaking Time Minimum 10 Minutes.
Helium Filling Date	23/09/2019	Time & Atm. Room Temp 14.00 PM & 36 Deg C.
Helium Test Date	23/09/2019	Time & Atm. Room Temp 15.00 PM & 36 Deg C.
..... Continuation Sheet		

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Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO.	Mi/PEL/2019/09/146				
	DATE	23-09-2019				
	PAGE NO.	02 of 02				
HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD) – CONTINUATION SHEET						
TYPICAL SKETCH OF PANAM FLANGE ADAPTOR:						
						
NOTE: PLASTIC HOOD WRAPPED ON TEST LOCATION AND KEPT UPTO MIN. 10 MINUTES AFTER PRESSURING WITH HELIUM GAS.						
Location Area.	AREAS UNDER INSPECTION	Initial Background Reading before start of Helium Leak Test (std-cc/sec)	Helium Leak Rate Reading observed during Leak Testing (std-cc/sec)	Observed Leak Rate (100% Helium Pressure) (std-cc/sec)	Acceptable Helium Leak Rate (std-cc/sec)	RESULT
		A	B	(B-A)		
1	Body and End Joints Etc.	1.1×10^{-6}	1.3×10^{-6}	$0.2 \times 10^{-6} = 2.0 \times 10^{-7}$	1×10^{-6}	Acceptable
RESULT: - HELIUM LEAK TEST OF MALE CONNECTOR ARE WITHIN ACCEPTABLE LIMIT OF 1.0×10^{-6} ATM-CC/SEC.						
 LT PERFORMED BY (ASNT -LT- Level-2) MANOJ INDUSTRIES, NAVI MUMBAI		 WITNESSED / REVIEWED BY M/S. PANAM ENGINEERS LTD. PRANTH		 WITNESSED / APPROVED BY M/S. TUV INDIA PVT.LTD., AHMEDABAD		

End:

1. Calibration Certificate for Vacuum Type Helium Calibrated Leak.
2. Calibration Certificate for Sniffer Type Helium Calibrated Leak.
3. ASNT Level II Certificate of Mr. Subhash Boiwar.

Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO.	MI/PEL/2019/09/147	
	DATE	23-09-2019	
	PAGE NO.	01 of 02	
HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD)			
Customer	M/s. Panam Engineers Ltd., Mumbai - India		
Inspecting Authority	M/s. Panam Engineers Ltd., Mumbai - India		
Customer / Project :	M/s. Krohne Engineering LLC. - Russia		
Product / Epm Description	STAINLESS STEEL FLANGE ADAPTOR MATERIAL - AISI 316, SIZE : 12MM OD X 1/2" X 2500 #, RTJ	Qty. :	72 Nos.
Job Number.	M/s. Krohne Engineering LLC. - Russia, PO Number : 2501/1-716 Dtd. 12/08/2018		
Drawing No.	FLANGE ADAPTOR Part Number : PFLA-M12-F08-2500-RTJ-SS		
Material of Construction:	Stainless Steel AISI 316		
Thickness :	Not Applicable		
Reference Standards / Documents :	ASME Section V Article 10, Edition 2010.		
Scope	Helium Leak Testing of FLANGE ADAPTOR 12MM OD X 1/2" X 2500 #, RTJ		
Helium Leak Test Proc. No.	As per Standard Helium Leak Testing Procedure.		
Examination Stage	After Final Assembly and Pneumatic Testing.	Helium Test Mode	DETECTOR PROBE METHOD.
Acceptable Limit	1 X 10 ⁻⁸ std-cc/sec	Date of Examination	23-09-2019
HELIUM LEAK DETECTOR EQUIPMENT DETAILS :			
Make	ALCATEL ADIXEN, FRANCE	Model	ASM 310
Helium Leak Detector Serial Number :	HLD1501032	Helium Leak Detector Part Number :	BSAA0000MM9A
HELIUM LEAK DETECTOR CALIBRATION DETAILS :			
Manufacturer	M/s. CINCINNATI TEST SYSTEMS, INC.	Model Number :	9GPHKF25
Calibrated Stad. Leak Sr. No.	-	Calibration Certificate Number :	G010622
Calibration Date :	28/07/2019	Next Calibration Due Date :	26/07/2020
Depletion Rate	0.1% per Year	Temp. Coefficient	4.0% per Deg C.
CALIBRATION OF HELIUM LEAK DETECTOR		LEAK RATE VALUE	UNIT
Leak rate of calibrated Leak		1.3 x 10 ⁻⁸ at 21.8°C.	mbar ltr / sec
Calculated Leak rate arrived after considering above Depletion rate of 0.1% per year		1.224 x 10 ⁻⁸	mbar ltr / sec
Calculated Leak Rate arrived after considering above Temp Coefficient of 0.1% per Deg C.		1.318 x 10 ⁻⁸ at 36°C.	mbar ltr / sec
Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak in Vacuum Condition		1.4 x 10 ⁻⁸ at 36°C	mbar ltr / sec
Machine sensitivity as recorded on HLT IN VACUUM MODE		5.0 x 10 ⁻¹⁴	mbar ltr / sec
SYSTEM / SNIFFER PROBE CALIBRATION DETAILS :			
Manufacturer	M/s. CINCINNATI TEST SYSTEMS, INC.	Model Number :	9GPHKF25
Calibrated Stad. Leak Sr. No.	-	Calibration Certificate Number :	G010622
Calibration Date :	28/07/2019	Next Calibration Due Date :	26/07/2020
Depletion Rate :	0.1% per Year	Temp. Coefficient	4.0% per Deg C.
SYSTEM CALIBRATION DETAILS :		LEAK RATE VALUE	UNIT
Leak rate of Sniffer Calibrated Leak @ 21.6 Deg C		3.5 x 10 ⁻⁸ @ Helium Inlet Pressure of 50 psig	mbar ltr / sec
Calculated Leak Rate arrived after considering above Temp Coefficient of 0.1% per Deg C.		3.6 x 10 ⁻⁸ at 32 Deg C.	mbar ltr / sec
Uncertainty after age and temperature correction as per calibration certificate ± 10%		3.45 X 10 ⁻⁸ to 4.21 X 10 ⁻⁸ at 32 Deg C.	mbar ltr / sec
Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak by HLD Sniffer Probe.		3.4 x 10 ⁻⁸ @ Helium Inlet Pressure of 50 psig	mbar ltr / sec
Response Time :	< 1 Minute.		
Note: Above noted Response time is derived after keeping Sniffer Probe Calibrated Leak with Value of 3.8 x 10 ⁻⁵ mbar ltr/sec with Helium Reservoir (filled at 50 psig pressure) is kept in similar volume of Polythene bag to be used for HLD Exchanger Test for the test Hold time of 12 hrs similar to the U-Tube Inlet Exchanger Helium Leak Detection Test Condition.			
ACCESSORIES / EQUIPMENT DETAILS			
Tracer Gas	HELIUM (99.995% Pure or 4.5 Grade Gas)	Tracer Gas Concentration	100% Helium.
Test Pressure	7 kg/cm ²	Soaking Time	Minimum 10 Minutes.
Helium Filling Date	23/09/2019	Time & Atm. Room Temp	14.00 PM & 36 Deg C
Helium Test Date	23/09/2019	Time & Atm. Room Temp.	15.00 PM & 36 Deg C.

..... Continuation Sheet

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Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI – 400 705	REPORT NO.	MI/PEL/2019/09/147				
	DATE	23-09-2019				
	PAGE NO.	02 of 02				
HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD) – CONTINUATION SHEET						
TYPICAL SKETCH OF PANAM FLANGE ADAPTOR:						
						
NOTE: PLASTIC HOOD WRAPPED ON TEST LOCATION AND KEPT UPTO MIN. 10 MINUTES AFTER PRESSURING WITH HELIUM GAS.						
Location Area.	AREAS UNDER INSPECTION	Initial Background Reading before start of Helium Leak Test (std-cc/sec)	Helium Leak Rate Reading observed during Leak Testing (std-cc/sec)	Observed Leak Rate ((100% Helium Pressure)) (std-cc/sec)	Acceptable Helium Leak Rate (std-cc/sec)	RESULT
		A	B	(B-A)		
1	Body and End Joints Etc.	1.1×10^{-6}	1.2×10^{-6}	$0.1 \times 10^{-6} = 1.0 \times 10^{-7}$ ✓	1×10^{-8}	Acceptable
RESULT: - HELIUM LEAK TEST OF FLANGE ADAPTOR ARE WITHIN ACCEPTABLE LIMIT OF 1.0×10^{-8} ATM-CC/SEC.						
 LT PERFORMED BY (ASNT -LT- Level-2) MANOJ INDUSTRIES, NAVI MUMBAI		 WITNESSED / REVIEWED BY M/S. PANAM ENGINEERS LTD. PRANTU		 WITNESSED / APPROVED BY M/S. TUV INDIA PVT.LTD , AHMEDABAD		

Encl :

1. Calibration Certificate for Vacuum Type Helium Calibrated Leak.
2. Calibration Certificate for Sniffer Type Helium Calibrated Leak.
3. ASNT Level II Certificate of Mr. Subhash Boiwar.

Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO. MI/PEL/2019/09/145	
	DATE 23-09-2019	
	PAGE NO. 01 of 03	
HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD)		
Customer	M/s. Panam Engineers Ltd., Mumbai - India	
Inspecting Authority	M/s. Panam Engineers Ltd., Mumbai - India	
Customer / Project :	M/s. Krohne Engineering LLC - Russia	
Product / Equip Description	STAINLESS-STEEL MONOFLANGE TYPE SINGLE BLOCK AND BLEED MATERIAL - AISI 316, SIZE : 1/2" X 2500 # RTJ X 12MM OD X 1/4"NPTF VENT	Qty. : 14 Nos.
Job Number.	M/s. Krohne Engineering LLC - Russia, PO Number 2601/1-716 Dtd. 12/08/2018	
Drawing No.	MONOFLANGE TYPE SINGLE BLOCK AND BLEED Part Number : PSBB-NB-SS-01-15-2500-RTJ-M12-4NF-H	
Material of Construction:	Stainless Steel AISI 316	
Thickness :	Not Applicable	
Reference Standards / Documents :	ASME Section V Article 10, Edition 2010.	
Scope	Helium Leak Testing of MONOFLANGE TYPE SINGLE BLOCK AND BLEED, SIZE : 1/2" X 2500 # RTJ X 12MM OD X 1/4"NPTF VENT.	
Helium Leak Test Proc. No.	As per Standard Helium Leak Testing Procedure.	
Examination Stage	After Final Assembly and Pneumatic Testing.	Helium Test Mode DETECTOR PROBE METHOD.
Acceptable Limit	1 X 10 ⁻⁴ std-cc/sec	Date of Examination 23-09-2019
HELIUM LEAK DETECTOR EQUIPMENT DETAILS :		
Make	ALCATEL ADIXEN, FRANCE	Model ASM 310
Helium Leak Detector Serial Number :	HLD1501032	Helium Leak Detector Part Number : 85AA0000MM9A
HELIUM LEAK DETECTOR CALIBRATION DETAILS :		
Manufacturer	M/s. CINCINNATI TEST SYSTEMS, INC.	Model Number : 9GPHKF25
Calibrated Stad. Leak Sr. No.	-	Calibration Certificate Number : G010622
Calibration Date :	28/07/2019	Next Calibration Due Date : 26/07/2020
Depletion Rate	0.1% per Year	Temp. Coefficient 4.0% per Deg C.
CALIBRATION OF HELIUM LEAK DETECTOR		
Leak rate of calibrated Leak	1.3 x 10 ⁻⁴ at 21.8°C.	mbar ltr / sec
Calculated Leak rate arrived after considering above Depletion rate of 0.1% year	1.224 x 10 ⁻⁴	mbar ltr / sec
Calculated Leak Rate arrived after considering above Temp Coefficient of 0.1% per Deg C.	1.318 x 10 ⁻⁴ at 36°C.	mbar ltr / sec
Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak in Vacuum Condition	1.4 x 10 ⁻⁴ at 36°C	mbar ltr / sec
Machine sensitivity as recorded on HLT IN VACUUM MODE	5.0 x 10 ⁻¹³	mbar ltr / sec
SYSTEM / SNIFFER PROBE CALIBRATION DETAILS :		
Manufacturer	M/s. CINCINNATI TEST SYSTEMS, INC.	Model Number : 9GPHKF25
Calibrated Stad. Leak Sr. No.	-	Calibration Certificate Number : G010622
Calibration Date :	28/07/2019	Next Calibration Due Date : 26/07/2020
Depletion Rate :	0.1% per Year	Temp. Coefficient 4.0% per Deg C.
SYSTEM CALIBRATION DETAILS :		
Leak rate of Sniffer Calibrated Leak @ 21.6 Deg C	3.5 x 10 ⁻⁵ @ Helium Inlet Pressure of 50 psig	mbar ltr / sec
Calculated Leak Rate arrived after considering above Temp Coefficient of 0.1% per Deg C.	3.6 x 10 ⁻⁵ at 32 Deg C.	mbar ltr / sec
Uncertainty after age and temperature correction as per calibration certificate ± 10%	3.45 X 10 ⁻⁵ to 4.21 X 10 ⁻⁵ at 32 Deg C.	mbar ltr / sec
Leak rate displayed on Helium Leak Detector Sensing Calibrated Leak by HLD Sniffer Probe.	3.4 x 10 ⁻⁵ @ Helium Inlet Pressure of 50 psig	mbar ltr / sec
Response Time :	< 1 Minute.	
Note: Above noted Response time is obtained after keeping Sniffer Probe Calibrated Leak with Value of 3.4 x 10⁻⁵ mbar-ltr/sec with Helium Reservoir (filled at 50 psig pressure) is kept in similar volume of Polythene bag to be used for HLD Exchanger Test for the test Hold time of 12 hrs under the U-Tube Heat Exchanger Helium Leak Detection Test Condition.		
ACCESSORIES / EQUIPMENT DETAILS		
Tracer Gas	HELIUM (99.995% Pure or 4.5 Grade Gas)	Tracer Gas Concentration 100% Helium.
Test Pressure	7 kg/cm ²	Soaking Time Minimum 10 Minutes.
Helium Filling Date	23/09/2019	Time & Atm. Room Temp 11.30 PM & 36 Deg C
Helium Test Date	23/09/2019	Time & Atm. Room Temp. 14.30 PM & 36 Deg C
..... Continuation Sheet		

D-17/5, Sahyadri CHS, Plot 50, Sector-8, Sanpada, Navi Mumbai - 400 705, Tel : 9820119880, E-mail : prasoma@yahoo.com



Helium Leak Test Reports For Fittings & Valves

 MANOJ INDUSTRIES, NAVI MUMBAI - 400 705	REPORT NO.	MI/PEL/2019/09/145
	DATE	23-09-2019
	PAGE NO.	02 of 03

HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD) – CONTINUATION SHEET

TYPICAL SKETCH OF PANAM MONOFLANGE TYPE SINGLE BLOCK AND BLEED:



NOTE: PLASTIC HOOD WRAPPED ON TEST LOCATION AND KEPT UPTO MIN. 10 MINUTES AFTER PRESSURING WITH HELIUM GAS.

Location Area.	AREAS UNDER INSPECTION	Initial Background Reading before start of Helium Leak Test (std-cc/sec)	Helium Leak Rate Reading observed during Leak Testing (std-cc/sec)	Observed Leak Rate (100% Helium Pressure) (std-cc/sec)	Acceptable Helium Leak Rate (std-cc/sec)	RESULT
		A	B	(B-A)		
1	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31148	1.1×10^{-6}	1.2×10^{-6}	$0.1 \times 10^{-6} = 1.0 \times 10^{-7}$	1×10^{-4}	Acceptable
2	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31149	1.1×10^{-6}	1.3×10^{-6}	$0.2 \times 10^{-6} = 2.0 \times 10^{-7}$	1×10^{-4}	Acceptable
3	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31150	1.1×10^{-6}	1.2×10^{-6}	$0.1 \times 10^{-6} = 1.0 \times 10^{-7}$	1×10^{-4}	Acceptable
4	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31151	1.1×10^{-6}	1.2×10^{-6}	$0.1 \times 10^{-6} = 1.0 \times 10^{-7}$	1×10^{-4}	Acceptable
5	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31152	1.1×10^{-6}	1.3×10^{-6}	$0.2 \times 10^{-6} = 2.0 \times 10^{-7}$	1×10^{-4}	Acceptable
6	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31153	1.1×10^{-6}	1.4×10^{-6}	$0.3 \times 10^{-6} = 3.0 \times 10^{-7}$	1×10^{-4}	Acceptable
7	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31154	1.1×10^{-6}	1.2×10^{-6}	$0.1 \times 10^{-6} = 1.0 \times 10^{-7}$	1×10^{-4}	Acceptable
8	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31155	1.1×10^{-6}	1.2×10^{-6}	$0.1 \times 10^{-6} = 1.0 \times 10^{-7}$	1×10^{-4}	Acceptable
9	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31156	1.1×10^{-6}	1.3×10^{-6}	$0.2 \times 10^{-6} = 2.0 \times 10^{-7}$	1×10^{-4}	Acceptable
10	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31157	1.1×10^{-6}	1.5×10^{-6}	$0.4 \times 10^{-6} = 4.0 \times 10^{-7}$	1×10^{-4}	Acceptable
11	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31158	1.1×10^{-6}	1.4×10^{-6}	$0.3 \times 10^{-6} = 3.0 \times 10^{-7}$	1×10^{-4}	Acceptable
12	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31159	1.1×10^{-6}	1.2×10^{-6}	$0.1 \times 10^{-6} = 1.0 \times 10^{-7}$	1×10^{-4}	Acceptable
13	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31160	1.1×10^{-6}	1.3×10^{-6}	$0.2 \times 10^{-6} = 2.0 \times 10^{-7}$	1×10^{-4}	Acceptable
14	Body, Bonnet, Stem and End Joints Etc. - SR. NO. 1909P31161	1.1×10^{-6}	1.2×10^{-6}	$0.1 \times 10^{-6} = 1.0 \times 10^{-7}$	1×10^{-4}	Acceptable

RESULT: - HELIUM LEAK TEST OF MONOFLANGE TYPE SINGLE BLOCK AND BLEED VALVE ARE WITHIN ACCEPTABLE LIMIT OF 1.0×10^{-4} ATM-CC/SEC.

D-17/5, Sahyadri CHS, Plot 50, Sector-8, Sanpada, Navi Mumbai – 400 705, Tel : 9820119880, E-mail : prasoma@yahoo.com



Signature





MANOJ INDUSTRIES,
NAVI MUMBAI - 400 705

REPORT NO.	MI/PEL/2019/09/145
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DATE	23-09-2019
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PAGE NO. 03 of 03

HELIUM LEAK TEST REPORT (DETECTOR PROBE METHOD / SNIFFER METHOD) – CONTINUATION SHEET

 LT PERFORMED BY (ASNT -LT- Level-2) MANOJ INDUSTRIES, NAVI MUMBAI	 WITNESSED / REVIEWED BY M/S. PANAM ENGINEERS LTD. PRANTU	 WITNESSED / APPROVED BY M/S. TUV INDIA PVT. LTD., AHMEDABAD
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Ends:

1. Calibration Certificate for Vacuum Type Helium Calibrated Leak.
2. Calibration Certificate for Sniffer Type Helium Calibrated Leak.
3. ASNT Level II Certificate of Mr. Subhash Bolwar.



Type Approval Certificate

This is to certify that the undernoted product(s) has/have been tested with satisfactory results in accordance with the relevant requirements of the Lloyd's Register Type Approval System.

This certificate is issued to:

PRODUCER	Panam Engineers Ltd.
PLACE OF PRODUCTION	Survey No. 192, Near Sujal Agro, NH-8, At & Post - Piludra, Taluka-Prantij, District - Sabarkantha, Gujarat - 383120, India
DESCRIPTION	Stainless steel double ferrule compression type tube fittings, inch and metric sizes
TYPE	PANAM Tube Fitting
APPLICATION	High pressure tube connections for use in marine, offshore and industrial piping systems with hydraulic system fluids, fuel oil, lubricating oil, fresh water, salt water, sanitary, gas, steam and condensate.
STANDARD	Lloyd's Register's Rules and Regulations for the Classification of Ships, Part 5, Chapter 12 - July 2017 ASTM F-1387-99(2012): Standard Specification for Performance of Piping and Tubing Mechanically Attached Fittings

Certificate No.	17/10025
Issue Date	27 November 2017
Expiry Date	26 November 2022
Sheet	1 of 3

Lloyd's Register Group Limited
QTA 10F, 2-3-1, Minatomirai, Nishi-Ku, Yokohama, JAPAN



N. Terashita
Yokohama Technical Support Office
Lloyd's Register Group Limited

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Lloyd's Type Approval Certificate For Tube Fittings



RATINGS

Imperial Tubing:-

Tube O.D. (inch)

1/8"
3/16"
1/4"
5/16"
3/8"
1/2"
5/8"
3/4"
7/8"
1"

Nominal pressure ratings (psi)

8,500 to 10,900
5,400 to 10,200
4,800 to 10,200
4,000 to 8,000
3,300 to 6,500
2,400 to 6,200
2,900 to 6,000
2,400 to 5,800
2,000 to 4,800
2,400 to 4,700

Metric Tubing:-

Tube O.D.(mm)

3
4
6
8
10
12
16
18
20
22
25

Nominal pressure ratings (psi)

10,800 to 15,300
7,900 to 14,400
5,000 to 12,700
4,700 to 9,300
3,700 to 7,300
3,000 to 11,100
2,500 to 6,800
2,800 to 6,700
2,500 to 6,000
2,300 to 5,400
2,000 to 5,200

Pressure-temperature ratings : see the producer's catalogue

OTHER CONDITIONS

- 1) The fittings are to be installed in accordance with the manufacturer's instructions.
- 2) Attention is drawn to Section 1.3.6 of IMO MSC/Circ.1321 - Guidelines for Measures to prevent Fires in Engine-Rooms and Cargo Pump-Rooms which describes that compression couplings require careful attention to tightening procedures and torques to avoid leaks or damage to the pipe when subjected to over-tightening and they should not be used in the fuel supply line of the (oil engine) injection pumps and spill system.

Certificate No.

17/10025

Issue Date

27 November 2017

Expiry Date

26 November 2022

Sheet

2 of 3



N. Terashita
Yokohama Technical Support Office
Lloyd's Register Group Limited

Lloyd's Register Group Limited
QTA 10F, 2-3-1, Minatomirai, Nishi-Ku, Yokohama, JAPAN

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Lloyd's Type Approval Certificate For Tube Fittings



"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register Group Limited of any modification or changes to the equipment in order to obtain a valid certificate."

The Design Appraisal Document No. and its supplementary Type Approval Terms and Conditions form part of this Certificate.

Certificate No. 17/10025
Issue Date 27 November 2017
Expiry Date 26 November 2022
Sheet 3 of 3

Lloyd's Register Group Limited
QTA 10F, 2-3-1, Minatomirai, Nishi-Ku, Yokohama, JAPAN



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Yokohama Technical Support Office
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Cryogenic Test Report For Tube Fittings



purvainspection.com

CRYOGENIC TEST REPORT CUM CERTIFICATE Conformity with Cryogenic Test Acc. to Procedure No: PEL/TP/01

Test Report/Certificate No: PITS/PANAM/20/04

Date: 08/06/2020

Name & Address of the Manufacturer

PANAM ENGINEERS LIMITED

SURVEY NO. 192, NEAR SUJAL AGRO, NH-8, AT & POST - PILUDRA, TALUKA - PRANTIJ, DISTRICT - SABARKANTHA,
GUJARAT, PIN CODE: 383120, INDIA

Name & Address of the Testing Facility

PURVA INSPECTION & TESTING SERVICES

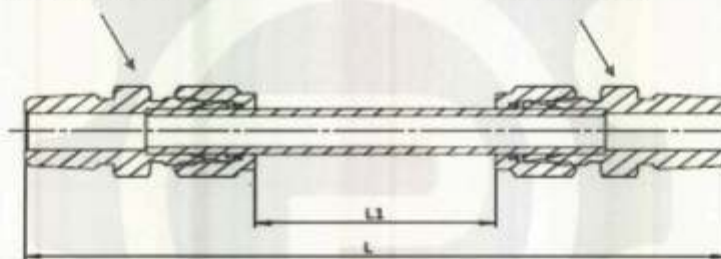
16, SATYAM ESTATE, STEEL TOWN, BESIDE HOF, MORAIYA, CHANGODAR, AHMEDABAD, GUJARAT, PIN CODE:
382213, INDIA

Reference Standards	ASME BVPC SECTION V EDITION 2019 ARTICLE 10
	NPCIL Specification No: PC-E-924/R1

Test Loop Details

MALE CONNECTOR

MALE CONNECTOR



TUBE	Connections	L1	L3
12 mm OD x 1.5 mm WT	1/2 " NPTM	60 mm	157.6 mm

Note: Test Specimen randomly selected by manufacturer as per procedure PEI/TP/01.



TEST PERFORMED & EVALUATED BY:
DHAVAL CHAUHAN (NDT LEVEL II- LEAK TESTING)
PURVA INSPECTION & TESTING SERVICES



TEST WITNESSED BY:
PINKESH PARMAR
LLOYD'S REGISTER ASIA

3 New Tirupati Society,
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Page 1 of 3



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Cryogenic Test Report For Tube Fittings



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CRYOGENIC TEST REPORT CUM CERTIFICATE	
Conformity with Cryogenic Test	
Acc. to Procedure No: PEL/TP/01	
Test Report/Certificate No: PITS/PANAM/20/04	Date: 08/06/2020
Name & Address of the Loop Manufacturer PANAM ENGINEERS LIMITED SURVEY NO. 192, NEAR SUJAL AGRO, NH-8, AT & POST - PILUDRA, TALUKA - PRANTIJ, DISTRICT - SABARKANTHA, GUJARAT, PIN CODE: 383120, INDIA	
Name & Address of the Testing Facility PURVA INSPECTION & TESTING SERVICES 16, SATYAM ESTATE, STEEL TOWN, BESIDE HOF, MORAIYA, CHANGODAR, AHMEDABAD, GUJARAT, PIN CODE: 382213, INDIA	

Material of Construction						
Sr.No.	PART CODE	Description	Material	Standard	Heat No.	
1	PSSST-M12x1.5	SEAMLESS STAINLESS STEEL TUBE 12mm OD x 1.5mm WT	SS316L	ASTM A269	BODY	N180610AW04
2	PMC-M12-8N-SS	MALE CONNECTOR 12mm OD X 1/2" NPTM	SS316	ASTM A479 / ASTM A276	BODY	S-18422
					NUT	S-18422
					FRONT FERRULE	S-16722
					BACK FERRULE	S-16722

Test Equipment and Accessories Detail	Make	Model	Sr. No.
Helium Leak Detector: 5.00 x 10 ⁻¹² std. cc/sec (Min. Detection)	Leybold	PHOENIX Quadro	90001377601
Standard Leak Value: 2.88 X10 ⁻⁹ std. cc/sec	LACO	CM31L-91011V0/2	17480
Sniffer Probe Detail	Leybold	SL300	90001371479

 TEST PERFORMED & EVALUATED BY: DHAVAL CHAUHAN (NDT LEVEL II- LEAK TESTING) PURVA INSPECTION & TESTING SERVICES	 TEST WITNESSED BY: PINKESH PARMAR LLOYD'S REGISTER ASIA
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www.panam.in

Cryogenic Test Report For Tube Fittings



purvaininspection.com

CRYOGENIC TEST REPORT CUM CERTIFICATE Conformity with Cryogenic Test Acc. to Procedure No: PEL/TP/01

Test Report/Certificate No: PITS/PANAM/20/04

Date: 08/06/2020

Name & Address of the Loop Manufacturer

PANAM ENGINEERS LIMITED

SURVEY NO. 192, NEAR SUJAL AGRO, NH-8, AT & POST - PILUDRA, TALUKA - PRANTIJ, DISTRICT - SABARKANTHA, GUJARAT, PIN CODE: 383120, INDIA

Name & Address of the Testing Facility

PURVA INSPECTION & TESTING SERVICES

16, SATYAM ESTATE, STEEL TOWN, BESIDE HOF, MORAIYA, CHANGODAR, AHMEDABAD, GUJARAT, PIN CODE: 382213, INDIA

Helium Leak Detector Calibration

Stage	Target Leak Value	Calibration Achieved
Start of Test	2.88×10^{-9} std. cc/sec	2.8×10^{-9} std. cc/sec
End of Test	2.88×10^{-9} std. cc/sec	2.9×10^{-9} std. cc/sec

Testing Parameters Detail

Test Medium	Helium Gas - 99% Purity
Test Temperature	Ambient
Surface Condition	Clean & Dry
Test Technique	Vacuum Method
Soaking Time	Test loop soak for at least 10 minutes to assure thermal stabilization in liquid nitrogen insulated cooling bath

Test Observation

Test	Observed Leak (std. cc/sec)
At Room Temperature	1.7×10^{-9}
At -196°C	1.2×10^{-10}
At Room Temperature	2.3×10^{-9}
At -196°C	3.6×10^{-10}
At Room Temperature	4.7×10^{-9}
At -196°C	6.5×10^{-10}
At Room Temperature	5.8×10^{-9}

Acceptable Leak Rate: Leakage rate after thermal stabilization is equal to or less than the ambient temperature, considered test as "PASS the Cryogenic test".

Test Result: Acceptable

Instruments used:

Note: All Instruments used for Testing are calibrated. Calibration Certificates verified.

1. Pressure Gauge (-760 to 0 mmHg)
2. Thermocouple
3. Digital Temperature Controller

Note: Test performed and evaluated in accordance with Manufacturer's procedure no "PEL/TP/01"

 TEST PERFORMED & EVALUATED BY: DHAVAL CHAUHAN (NDT LEVEL II- LEAK TESTING) PURVA INSPECTION & TESTING SERVICES	 TEST WITNESSED BY: PINKESH PARMAR LLOYD'S REGISTER ASIA
---	---

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Page 3 of 3

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Non-Seismic Vibration Test Report For Manifolds

CENTRAL POWER RESEARCH INSTITUTE

TEST REPORT



Test Report Number : CPRI BLEVRCMISC20T0078 Date: 28 December 2020

Name and Address of the Customer : M/s. Panam Engineers Limited,
Survey No. 192, NH-8, At Post-Piludra, District - Sabarkantha,
Gujarat - 383 120, India.

Name and Address of the Manufacturer : M/s. Panam Engineers Limited,
Survey No. 192, NH-8, At Post-Piludra, District - Sabarkantha,
Gujarat - 383 120, India.

Particulars of sample tested : a) 3 Valve Manifold (Non-Integral),
b) 5 Valve Manifold (Non-Integral) and
c) 5 Valve Manifold (Integral)

Type : Refer sheet 2 of 7

Description of test sample : Refer sheet 2 of 7

Serial Number : Refer sheet 2 of 7

Number of samples tested : Three

Date(s) of Test(s) : 22 December 2020

CPRI Sample code Number(s). : EVRCMISC20S0153 to EVRCMISC20S0155

Particulars of tests conducted : Non – Seismic vibration test

Test in accordance with Standard/Specification : Nil

Sampling Plan : Not applicable

Customer's Requirement : As per clause 7 and 8.1 of DOCUMENT NO: R/5.7.1.5/2-24,
REV. NO : 00, ISSUE DATE : 20.01.2020

Deviations if any : Nil

Name of the witnessing persons

Customers representative : Mr. Santosh Shukla, VP- Sales and Marketing

Other than customer's representatives : Nil

Test subcontracted with address of the laboratory : Nil

Documents constituting this report (in words)

Number of Sheets : Seven

Number of Oscillogram(s) : Nil

Number of Graph(s) : Three

Number of Photograph(s) : Four

Number of Test Circuit Diagram(s) : Nil

Number of Drawing(s) : Four

(A. N. N. Nampoothiri)
Test Engineer



(R. Panneer Selvam)
Head of Division
Approved by

CENTRAL POWER RESEARCH INSTITUTE

TEST REPORT



Test Report Number : CPRI BLEVRCMISC20T0077 **Date:** 23 December 2020

Name and Address of the Customer : M/s. Panam Engineers Limited,
Survey No. 192, NH-8, At Post-Piludra,
District - Sabarkantha,
Gujarat - 383 120, India.

Name and Address of the Manufacturer : M/s. Panam Engineers Limited,
Survey No. 192, NH-8, At Post-Piludra,
District - Sabarkantha,
Gujarat - 383 120, India.

Particulars of sample tested : a) 3 Valve Manifold (Non-Integral) and
b) 5 Valve Manifold (Integral)

Type : Refer sheet 2 of 8

Description of test sample : Refer sheet 2 of 8

Serial Number : Refer sheet 2 of 8

Number of samples tested : Two

Date(s) of Test(s) : 21 December 2020

CPRI Sample code Number(s). : EVRCMISC20S0151 and EVRCMISC20S0152

Particulars of tests conducted : Resonance search test and Seismic test

Test in accordance with Standard/Specification : Nil

Sampling Plan : Not applicable

Customer's Requirement : As per clause 6.2, 6.3 and 6.4 of DOCUMENT NO: R/5.7.1.5/2-25,
REV. NO : 00, ISSUE DATE : 16.01.2020

Deviations if any : Nil

Name of the witnessing persons : Mr. Santosh Shukla, VP- Sales and Marketing

Customers representative : Nil

Other than customer's representatives : Nil

Test subcontracted with address of the laboratory : Nil

Documents constituting this report (in words)

Number of Sheets : Eight

Number of Oscillogram(s) : Nil

Number of Graph(s) : Six

Number of Photograph(s) : Five

Number of Test Circuit Diagram(s) : Nil

Number of Drawing(s) : Three


(A. N. N. Nampoothiri)
Test Engineer




(R. Panneer Selvam)
Head of Division
Approved by



PANAM ENGINEERS LTD.

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