



CERTIFICATE NUMBER 22-2257410-PDA  
EFFECTIVE DATE 26-May-2022  
EXPIRATION DATE 25-May-2027  
ABS TECHNICAL OFFICE Singapore Engineering Services

## CERTIFICATE OF Product Design Assessment

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

### **FLUID CONTROLS PVT LTD**

located at

**GAT NO 378/1, TALEGAON CHAKAN ROAD,, VILLAGE –  
KHARABWADI, TALUKA – KHED,, PUNE, PUNE, MAHARASHTRA,  
INDIA, 410501**

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

**Product Tube Fittings**

**Model End Closure, Union, Connector, Elbow, Tee, Reducer, Adaptor, Plug**

This Product Design Assessment (PDA) Certificate remains valid until 25-May-2027 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

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

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

American Bureau of Shipping

Vibin Chandrabose, Senior Engineer

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

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**Product:** Tube Fittings  
**Model:** End Closure, Union, Connector, Elbow, Tee, Reducer, Adaptor, Plug  
**Endorsements:**

**Intended Service:**

Marine and Offshore Hydraulic/Pneumatic Applications - Tubing/Piping Systems.

**Description:**

Item: End Closure, Union, Connector, Elbow, Tee, Reducer, Adaptor, Plug

Size: 1/16" to 2" (2 – 50mm);

Material: ASTM A182 (F304, F304L, F316, F316L), ASTM A276 (304, 304L, 316, 316L), ASTM A105, ASTM B16/B16M(C360), ASTM B124/B124M(C377), IS319/320

**Rating:**

For pressure ratings, sizes, configurations, materials refer to attached tubing charts.

**Service Restriction:**

1. Unit Certification is not required for this product. If the manufacturer or purchaser request an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
2. Brass fittings are not to be used to convey flammable fluids or fluids having a temperature greater the 200 °C.
3. For sea water piping systems in which sea water may be retained within the piping system in a stagnant or low flow condition (i.e., less than 1 m/sec), the following grades are not to be used for the piping or piping components:
  - 304 and 304L stainless steels
  - 316 and 316L stainless steels with a molybdenum content of less than 2.5%
  - Other stainless grades when used are to be confirmed suitable for the application by the manufacturer.

**Comments:**

1. The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.
2. Threaded joints where used in Classes I and II Piping Systems are to be subject to the requirements of 4-6-2/5.5.5 of the ABS Marine Vessel Rules. Pressure rating of threaded end is to be suitable for the piping system design pressure.
3. Socket welded joints where used in Classes I and II Piping Systems are to be subject to the requirements of 4-6-2/5.5.2 of the ABS Marine Vessel. Fillet weld leg size between socket-welding fittings and pipes is to be at least 1.1 times the nominal thickness of the pipe. Welding gap and minimum flat dimensions for socket-welding fittings are to comply with ASME B16.11-2016. Pressure rating of socket-welded end is to be suitable for the piping system design pressure.
4. Butt welded joints, where complete penetration at the root is achieved, may be used for all classes of piping. Degree of verification of sound root penetration is to be in accordance with 2-4-4/5 of the Rules for Materials and Welding.

**Notes/Drawing/Documentation:**

Drawing No. FC-ABS-Fittings-01-Type of Fittings, FC-ABS-Fittings-01-Type of Fittings, Revision: 00, Pages: 1

Drawing No. FC-ABS-Fittings-02-Annexure I Pressure Rating of Fittings, FC-ABS-Fittings-02-Annexure I Pressure

Rating of Fittings, Revision: 00, Pages: 2

Drawing No. FC-ABS-Fittings-03-Sample drawing of each type and each series of fittings, FC-ABS-Fittings-03-

Sample drawing of each type and each series of fittings, Revision: 00, Pages: 3

Drawing No. FC-ABS-Fittings-04-Test Certificates (ASTM F1387), FC-ABS-Fittings-04-Test Certificates (ASTM F1387), Revision: 00, Pages: 4

Drawing No. 45 DEG.MALE ELBOW NPT-inch, 45 DEG.MALE ELBOW NPT-inch, Revision: 1, Pages: 1

Drawing No. 45 DEG.POSITIONABLE MALE ELBOW -SAE, 45 DEG.POSITIONABLE MALE ELBOW -SAE,

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Revision: 1, Pages: 1

Drawing No. 45 DEG.POSITIONABLE MALE ELBOW BSPP, 45 DEG.POSITIONABLE MALE ELBOW BSPP,  
Revision: 1, Pages: 1

Drawing No. 45 DEGREE MALE ELBOW, 45 DEGREE MALE ELBOW, Revision: 1, Pages: 1

Drawing No. ABS and ASTM, ABS and ASTM F1387 Four Test clarification1, Revision: 1, Pages: 1

Drawing No. As per attached document no.FC-ABS-Fittings-03, FC-ABS-Fittings-03-Sample drawing of each type  
and each series of fittings, Revision: 00, Pages: 3

Drawing No. Fluid Controls Catalogue, Fluid Controls Catalogue Fittings, Revision: 1, Pages: 1

Drawing No. MALE CONNECTOR, MALE CONNECTOR, Revision: 1, Pages: 1

Drawing No. MALE ELBOW, MALE ELBOW, Revision: 1, Pages: 1

Drawing No. O SEAL MALE ADAPTER, O SEAL MALE ADAPTER, Revision: 1, Pages: 1

Drawing No. O SEAL MALE CONNECTOR, O SEAL MALE CONNECTOR, Revision: 1, Pages: 1

Drawing No. POSITIONABLE MALE BRANCH TEE-BSPP, POSITIONABLE MALE BRANCH TEE-BSPP,  
Revision: 1, Pages: 1

Drawing No. POSITIONABLE MALE BRANCH TEE-SAE, POSITIONABLE MALE BRANCH TEE-SAE,  
Revision: 1, Pages: 1

Drawing No. POSITIONABLE MALE ELBOW BSPP, POSITIONABLE MALE ELBOW BSPP, Revision: 1,  
Pages: 1

Drawing No. POSITIONABLE MALE ELBOW SAE-INCH, POSITIONABLE MALE ELBOW SAE-INCH,  
Revision: 1, Pages: 1

Drawing No. POSITIONABLE MALE RUN TEE BSPP, POSITIONABLE MALE RUN TEE BSPP, Revision: 1,  
Pages: 1

Drawing No. POSITIONABLE MALE RUN TEE SAE, POSITIONABLE MALE RUN TEE SAE, Revision: 1,  
Pages: 1

Drawing No. Pressure Rating Chart for Fittings, Pressure Ratings for Fittings, Revision: 2, Pages: 1

Drawing No. REDUCER, REDUCER, Revision: 1, Pages: 1

Drawing No. REDUCING BRANCH TEE, REDUCING BRANCH TEE, Revision: 1, Pages: 1

Drawing No. REDUCING RUN BRANCH TEE, REDUCING RUN BRANCH TEE, Revision: 1, Pages: 1

Drawing No. REDUCING RUN TEE, REDUCING RUN TEE, Revision: 1, Pages: 1

Drawing No. REDUCING UNION, REDUCING UNION, Revision: 1, Pages: 1

Drawing No. SOCKET WELD TUBE CONNECTOR, SOCKET WELD TUBE CONNECTOR, Revision: 1, Pages: 1

Drawing No. SOCKET WELD TUBE ELBOW CONNECTOR, SOCKET WELD TUBE ELBOW CONNECTOR1,  
Revision: 1, Pages: 1

Drawing No. TUBE END CLOSURE, TUBE END CLOSURE, Revision: 1, Pages: 1

Drawing No. UNION, UNION, Revision: 1, Pages: 1

Drawing No. UNION CROSS, UNION CROSS, Revision: 1, Pages: 1

Drawing No. UNION ELBOW, UNION ELBOW, Revision: 1, Pages: 1

Drawing No. UNION TEE, UNION TEE, Revision: 1, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 01 - Test Calculations and details Part 2 dated 22 Nov 2014,  
Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 02 - Hydrostatic Proof Test dated 20 Feb 2013, Revision: -,  
Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 03 - Rotary Flex Test dated 14 Aug 2012, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 04 - Vibration Test dated 11 Nov 2014, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 Test reports - Brass 1-16 and 2 Inch dated 18 Jul 2013,  
Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 Test reports - Brass Metric fittings dated 26 Jul 2013, Revision:  
-, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 Test reports - CS Metric fittings dated 3 Aug 2013, Revision: -,  
Pages: 1

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Fluid Controls PVT. LTD., Report No. ASTM F1387 Test reports - CS Fractional fittings dated 10 Feb 2014, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 Test reports - Brass Fractional fittings dated 16 Jul 2013, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 Test reports - SS Fractional fittings dated 17 Jul 2013, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F1387 Test reports - SS Metric fittings dated 18 Jul 2013, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F 1387 Examination of Specimen Test A2 dated 19 Jul 2013, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F 1387-1 Certification Programme dated 22 Nov 2014, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. ASTM F 1387-2 Certification Programme dated 22 Nov 2014, Revision: -, Pages: 1

Fluid Controls PVT. LTD., Report No. Pneumatic and Hydrotest report dated 20 Sep 2014, Revision: -, Pages: 1

**Terms of Validity:**

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**STANDARDS**

**ABS Rules:**

2022 Rules for Conditions of Classification 1-1-4/7.7, 1-1-A3 and A4, which covers the following:

2022 Rules for Building and Classing Marine Vessel Rules: 4-1-1/3.3, 4-3-4/9.5.2, 4-3-4/9.7.3, 4-6-1/7.1.2, 4-6-1/7.5.2, 4-6-1/Table 1, 4-6-1/Table 2, 4-6-2/5.9, 4-6-7/3.5.1, 4-6-7/Table 1.

2022 Rules for Conditions of Classification - Offshore Units and Structures 1-1-4/9.7, 1-1-A2 and A3, which covers the following:

2022 Rules for Building and Classing Mobile Offshore Units: 4-2-1/11.13, 6-16/5.1.6

2022 Rules for Conditions of Classification - Light and High Speed Craft 1-1-4/11.9, 1-1-A2 and A3, which covers the following:

2022 Rules for Building and Classing High Speed Crafts: 4-4-1/1.3, 4-4-1/5.1, 4-4-2/13.7

**National:**

NA

**International:**

ANSI/ASME B31.1(2020), ANSI/ASME B31.3 (2020)

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Threading: ANSI B 1.20.1(2013)/ ISO 228(2000) /ISO-7/1(1994);  
Testing: ASTM F1387 (2021)

**Government:**

NA

**EUMED:**

NA

**OTHERS:**

NA