

AEROSPACE MATERIAL SPECIFICATION

SAE

MAM 2602A

Issued 1 JAN 1985

Revised 1 JUL 1991

Superseding MAM 2602

Submitted for recognition as an American National Standard

PRESSURE TESTING 170 kPa

1. SCOPE: This specification provides requirements and procedures for air-pressure leak testing of parts.

- 1.1 AMS 2602 is the inch/pound version of this MAM.

2. APPLICABLE DOCUMENTS: Not applicable.

3. TECHNICAL REQUIREMENTS:

- 3.1 Equipment:

- 3.1.1 Fixtures: Test fixtures shall not seal off areas of possible leakage or create stresses on parts other than those induced by the pressure itself or by fittings acceptable to purchaser.

- 3.1.2 Gaskets: Suitable gasket material shall be used with plugs or blanking plates to prevent damage to finished surfaces. Flanges or fittings designed for use with specific O-rings or gaskets shall use those for test. Formed-in-place gaskets that could mask dimensional or surface flaws shall not be used except for raw castings.

- 3.1.3 Valves: Bleeder valves shall be provided to release entrapped air.

- 3.1.4 Gauges: Pressure gauges shall have dial divisions not more than 7 kPa apart; gauges shall have been calibrated within, one year of use, using either primary standards or standards traceable to the National Institute of Standards.

- 3.1.5 Test Media Source: The source of test media shall provide the required pressure and shall be equipped with a pressure regulator to control the pressure.

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- 3.1.6 Safety Tank or Screen: A suitable tank or screen shall be provided to
Ø protect the operator in case of failure of a part. (See 8.2).
- 3.1.7 Drying Oven: A circulating-air oven shall be provided for drying parts
subject to corrosion.
- 3.2 Test Media: Shall be compressed air, nitrogen, or inert gas for applying
Ø internal pressure to the part. In addition, a tank of tap water or other
transparent liquid shall be provided for parts tested by immersion; liquid
soap or commercial leak detector solution shall be used on parts not
immersed during test.
- 3.3 Preparation:
- 3.3.1 Cleaning: The part shall be thoroughly cleaned before testing so that any
Ø leaks will be visible. Loose particles, machine shop chips, oils,
inspection fluids, and other foreign materials shall be removed before
pressure testing.
- 3.3.2 Processes: The part shall be tested following all machining, forming,
Ø straightening, welding, brazing, etc, and prior to application of
protective finishes such as paint, plating, coating, or surface finishes
that may mask or blank off areas of possible leakage.
- 3.3.3 Impregnation: Impregnation of castings shall not be permitted except as
authorized by purchaser and then only to correct general seepage leaks.
Impregnation shall not be used to correct poor foundry techniques, visible
holes, or excessive porosity. Impregnation, when permitted or authorized
by purchaser, shall be conducted after all heat treatment, brazing, and
welding have been completed.
- 3.3.4 Preliminary Tests: Tests may be performed at any stage of manufacture in
Ø order to establish in-process integrity. However, requirements apply to
finished parts prior to finish coating (See 3.3.2).
- 3.3.5 Material Removal: Sand blasting, pickling, or any other operation which
may remove metal from surfaces shall be done before final pressure tests.
- 3.4 Procedure: All parts to be tested shall be fitted up for test and, while
Ø subjected internally to an air pressure of 170 – 240 kPa, shall be submerged
in tap water or other transparent liquid, or shall have the surfaces to be
tested completely coated with liquid soap or leak detecting fluid.
- 3.4.1 Duration: Parts shall be held under pressure for not less than 3 minutes
Ø to allow leakage indications to develop prior to visual inspection.
- 3.4.2 Cleaning: Parts shall be cleaned and dried, immediately after test, to
Ø prevent corrosion due to entrapment of moisture. Visible moisture shall
be removed by air blast. Parts containing areas of entrapment and all
magnesium parts shall be dried in a circulating-air oven at a temperature
not exceeding 121°C for sufficient time to ensure complete removal of
moisture.

3.4.3 Orientation: The part shall be exposed, during static pressure application, to permit overall visual inspection.

3.5 Acceptance Standards:

3.5.1 Parts which do not show visible signs of leakage under pressure, which meet a drawing specification, or which meet other purchaser designated leakage limits are acceptable.

3.5.2 The effect of any leakage of parts, other than as in 3.5.1, shall be reviewed by cognizant personnel and parts repaired and retested, or rejected.

3.5.3 Slight leakage from a casting or forging appearing in a line, as if indicating a crack or a cold shut, is not acceptable.

3.5.4 Magnesium alloy castings which leak in a 50-mm diameter area more than 25 drops of test fluid per minute or more than 180 mL of air per minute are not acceptable but those castings that leak less may be impregnated when so specified and the method to be used is acceptable to purchaser.

3.5.4.1 Those sections of magnesium alloy castings, impregnated or not, which leak in a 50-mm diameter area less than 5 drops of test fluid per minute or less than 40 mL of air per minute are acceptable unless the leakage is into the induction system of parts or through an external surface in which case leakage is not desirable but is acceptable to the extent of 0.1 mL of air per minute in a 50-mm diameter area.

3.6 Marking: When specified, each part that has passed the pressure test shall be marked with permanent ink, adjacent to other part markings, with the letter "L" unless other marking instructions are provided by purchaser.

4. QUALITY ASSURANCE PROVISIONS:

4.1 Reports: The pressure test vendor shall furnish with each shipment a report stating that the parts have been tested in accordance with the requirements of this specification and that they conform to the technical requirements. This report shall include the purchase order number, MAM 2602A, test pressure, part number, and quantity.

5. PREPARATION FOR DELIVERY:

5.1 Preservation: Parts which are subject to corrosion shall be suitably preserved prior to shipment.

6. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

7. REJECTIONS: Parts that do not meet the requirements of this specification, or modifications authorized by purchaser, will be subject to rejection.