

PRESSURE TESTING
170 kPag

1. SCOPE: This specification provides requirements and procedures for air-pressure leak testing of parts.
2. APPLICABLE DOCUMENTS: None.
3. TECHNICAL REQUIREMENTS:
 - 3.1 Equipment:
 - 3.1.1 Fixtures: Test fixtures shall not seal off areas of possible leakage or create excessive stresses on parts.
 - 3.1.2 Gaskets: Suitable gasket material shall be used with plugs or blanking plates to prevent damage to finished surfaces.
 - 3.1.3 Valves: Bleeder valves shall be provided to release entrapped air.
 - 3.1.4 Gauges: Pressure gauges shall have sufficient dial divisions to permit monitoring of pressure specified.
 - 3.1.5 Compressed Air Source: The source of compressed air shall provide the required pressure and shall be equipped with a pressure regulator to control the pressure.
 - 3.1.6 Safety Tank or Screen: A suitable tank or screen shall be provided to protect the operator in case of failure of a part.
 - 3.1.7 Drying Oven: A circulating-air oven is required for drying corrodible parts.
 - 3.2 Test Media: Shall be compressed air for applying internal pressure to the part. In addition, a tank of tap water or other transparent liquid shall be provided for parts tested by immersion or liquid soap solution shall be used on parts not immersed during test.

SAE Technical Board Rules provide that: "This report is published by SAE to advance the state of technical and engineering sciences. The use of this report is entirely voluntary, and its applicability and suitability for any particular use, including any patent infringement arising therefrom, is the sole responsibility of the user."

AMS documents are protected under United States and international copyright laws. Reproduction of these documents by any means is strictly prohibited without the written consent of the publisher.

3.3 Preparation:

- 3.3.1 Cleaning: The part shall be thoroughly cleaned before testing so that any leaks will be visible. Loose particles, machine shop chips, oils, and other foreign materials shall be removed before pressure testing.
- 3.3.2 Processes: The part shall be tested following all machining, forming, straightening, welding, brazing, anodizing, 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 order to establish in-process integrity.
- 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 subjected internally to an air pressure of 170 - 240 kPag, shall be submerged in tap water or other transparent liquid or shall have the surfaces to be tested completely coated with liquid soap.

- 3.4.1 Duration: Parts, other than castings, shall be held under pressure for not less than 3 min. to permit complete visual inspection while at the specified pressure. Unless a specific time is specified, castings also shall be held for not less than 3 min. at the specified pressure.
- 3.4.2 Magnesium Alloy Castings, Optional Method: The casting shall be fitted up for test, the surfaces opposite those under pressure shall be dried, and water under pressure of 170 - 240 kPag applied and held for not less than 5 minutes. All air shall be excluded by the water from the pressure side. This method does not apply to surfaces of parts leading to the induction system or when air only is against the surface as assembled.
- 3.4.3 Cleaning: Parts which have been tested with water or hydraulic fluid shall be cleaned and dried, immediately after test, to 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 $120^{\circ}\text{C} \pm 15$ for not less than one hour.
- 3.4.4 Orientation: The part shall be exposed to permit overall visual inspection during static pressure application.