SAE Aerospace
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AEROSPACE RECOMMENDED PRACTICE

SAE ARP603G

Issued 1960-03
Revised 1985-09
Reaffirmed 2007-01
Cancelled 2008-06

Superseded by AS603

Impulse Testing of Hydraulic Hose, Tubing, and Fitting Assemblies

RATIONALE

ARP603 has been replaced with AS603 and therefore should be cancelled.

CANCELLATION NOTICE

This document has been declared "CANCELLED" as of June 2008 and has been superseded by AS603. By this action, this document will remain listed in the Numerical Section of the Aerospace Standards Index noting that it is superseded by AS603.

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RATIONALE

This document has been reaffirmed to comply with the SAE 5-year Review policy.

1. SCOPE

This Aerospace Recommended Practice (ARP) establishes the requirements and procedures for impulse testing of hose, tubing, and fitting assemblies for use in aerospace hydraulic systems of 8000 psi nominal operating pressure or less. It also refers to standard impulse test equipment to be used in conducting these impulse tests.

2. APPLICABLE DOCUMENTS

AIR 1228	- Standard Impulse Machine Equipment and Operation
MA 2002-ISO 6772	- Impulse Testing of Hydraulic Hose, Tubing and Fitting Assemblies
MIL-H-83282	- Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft, NATO Code H-537
MIL-L-7808	- Lubrication Oil, Aircraft Turbine Engine, Synthetic Base

3. REQUIREMENTS

3.1 SHAPE OF THE IMPULSE TRACE

When observed on an oscilloscope, the impulse traces show as approximate pressure-time cycles. It is mandatory that these pressure-time curves be confined to the shaded area indicated in Figure 1, and that the dynamic impulse trace produced by the test machine shall be in conformance with the trace illustrated in Figure 1.

3.2 CALCULATIONS

The rate of rise will be calculated as follows:

$$\text{Rate of pressure rise} = \frac{0.9p - 0.1p}{t \text{ at } 0.9\,p - t \text{ at } 0.1p}$$

Where: p = peak pressure in psi or kPa (see Table 1)
t = time in seconds

Notes:

(1) The rate of rise is defined as the slope of the pressure-time curve in the straight portion of the pressure rise. For purposes of definition, the rate of rise shall be determined between 10% of the total rise above back pressure and 10% of the total rise below peak pressure.

(2) The peak pressure is defined as the maximum pressure reached during the test pressure surge to 125, 135 or 150 percent of the specified operating pressure, as appropriate.

(3) Sweep rate on the oscilloscope or recorder shall be adjusted so that the slope of the pressure rise shall take advantage of the full size of the screen. The trace or photograph of the impulse cycle shall be an accurate record of the impulse cycle and shall show a grid or other means to permit accurate checking.

3.3 PREPARATION OF SPECIMENS

The preparation of test specimens shall be defined in the applicable specification of the component. Specimens shall be subjected to the applicable treatments and production test requirements of the component specification.

3.4 EQUIPMENT

The testing shall be conducted on equipment in accordance with and instrumented per AIR 1228. Equivalent equipment may be used.

3.5 TEST FLUID

Unless the component materials or other considerations prevent it, MIL-H-83282 or MIL-L-7808 oil shall be used as the test fluid.