INTERNATIONAL STANDARD

ISO 6772

Second edition
1988-10-15

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION
ORGANISATION INTERNATIONALE DE NORMALISATION
МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ

Aerospace — Fluid systems — Impulse testing of hydraulic hose, tubing and fitting assemblies

Aéronautique et espace — Systèmes de fluides — Essai d'impulsion des tuyauteries flexibles, tubes et raccords

Reference number
ISO 6772 : 1988 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6772 was prepared by Technical Committee ISO/TC 20, *Aircraft and space vehicles.*

This second edition cancels and replaces the first edition (ISO 6772 : 1981), of which it constitutes a technical revision.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Aerospace — Fluid systems — Impulse testing of hydraulic hose, tubing and fitting assemblies

1 Scope and field of application

This International Standard specifies the requirements and the procedures for impulse testing of hose, tubing, and fitting assemblies for use in aerospace hydraulic systems. Requirements may apply, when appropriate, to components used in other aerospace fluid systems.

2 References

ISO 6771, *Aerospace — Fluid systems and components — Pressure and temperature classifications.*

ISO 8575, *Aerospace — Fluid systems — Hydraulic system tubing.*[1)]

3 Requirements

3.1 Shape of 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 the figure, and that the dynamic impulse trace produced by the test machine shall be in conformity with the trace illustrated in the figure.

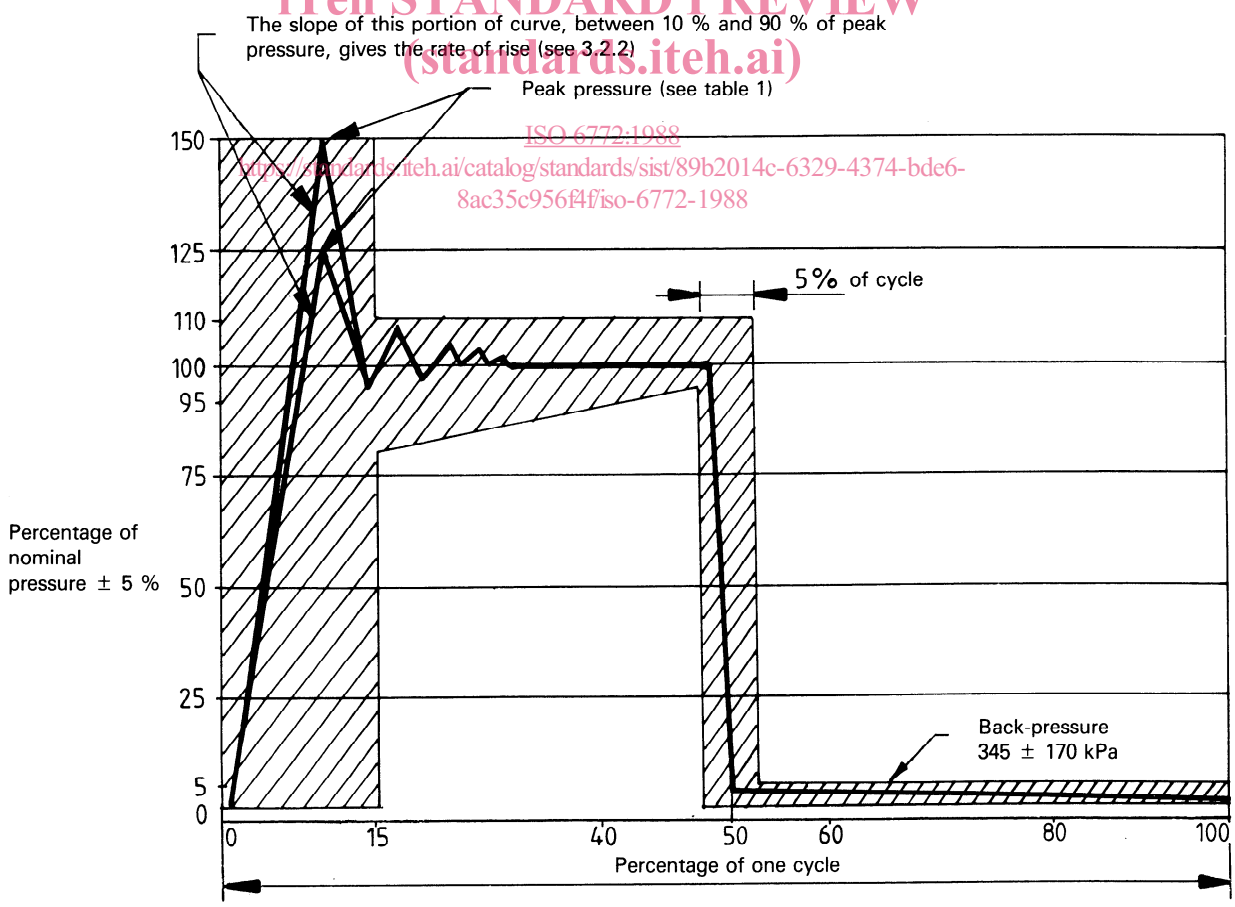

Figure — Impulse trace

1) At present at the stage of draft.

3.2 Rate of pressure rise

3.2.1 Definitions

3.2.1.1 rate of pressure rise : The slope of the pressure/time curve in the straight portion of the pressure increase portion.

For the purpose 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.

3.2.1.2 peak pressure : The maximum pressure reached during the test pressure surge to 125 % or 150 % of the specified nominal pressure, as appropriate.

3.2.2 Calculation

The rate of pressure rise shall be calculated using the following formula :

$$\frac{0{,}9\,p - 0{,}1\,p}{t_{0{,}9\,p} - t_{0{,}1\,p}}$$

where

p is the peak pressure, in kilopascals;

$t_{0,9\,p}$ is the time, in seconds, at 0,9 p;

$t_{0,1\,p}$ is the time, in seconds, at 0,1 p.

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 and photographs of the impulse cycle shall be an accurate record of the impulse cycle and 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 detail design specification of the component. Specimens shall be subjected to the relevant treatments and production test requirements of the component specification.

3.4 Test fluid

The test fluid shall be the specified aircraft system fluid or other hydraulic fluid which is compatible with the item being tested.

4 Principle of test

This method of testing is intended to determine the ability of flexible hose assemblies, tubing and fitting assemblies to withstand hydraulic impulse for qualification testing under simulated conditions.

5 Test method

For testing of hose, tubing and fitting assemblies, including boss or port fittings, the cycle rate shall be 70 ± 5 cycles/min. Unless otherwise specified, the peak pressure and the rate of pressure rise shall be as specified in table 1. Unless otherwise specified, the assembly shall be tested in the sequence shown in table 2.

Unless otherwise specified in the detail or procurement specification, the total number of cycles shall be 200 000.

After the temperature has stabilized at the maximum or minimum, as specified in table 2, a minimum soak time of 1 h is required before that portion of the test sequence is begun. If temperature control is required by the procurement specification, the fluid temperature shall be measured at the test manifold and the ambient temperature shall be measured approximately 150 mm from the test specimens. The peak pressure shall be measured at the test manifold.

Table 1 — Peak pressure and rate of pressure rise

Hoses, tubing and fitting assemblies		Peak pressure	Maximum rate of pressure rise
Pressure class[1]	Nominal outside diameter[2]	%	kPa/s (bar/s)
B 10 500 kPa (105 bar)	**DN14** and smaller	125	700 000 (7 000)
	DN16 to **DN25** (incl.)		520 000 (5 200)
	DN32		340 000 (3 400)
	DN40 and over		280 000 (2 800)
D 21 000 kPa (210 bar)	All diameters	150	2 100 000 (21 000)
E 28 000 kPa (280 bar)			

1) Pressure classes in accordance with ISO 6771.

2) Nominal outside diameters in accordance with ISO 8575.

DN = nominal outside diameter; example : **DN16** = nominal outside diameter of 16 mm

Table 2 — Sequence and duration of impulse testing at temperature[1)]

Sequence No.	Number of cycles as a percentage of the total number of cycles	Temperature (ambient and fluid)
1	50	Maximum
2	24	Room
3	1	Minimum
4	5	Maximum
5	20	To complete 200 000 cycles; these cycles may be added to any one sequence or divided among them

1) Unless otherwise specified in the detail or procurement specification.

6 Intended use

6.1 Standard

This test is intended to promote standardization of impulse test requirements, procedures and equipment for the standard qualification and evaluation impulse testing of hydraulic hose assemblies, tubing and fittings.

6.2 Reference

If reference is made to this International Standard in a specification as part of the requirements, the following additional requirements shall be specified :

a) nominal pressure;

b) operating temperature limits;

c) design of specimens.

This page intentionally left blank

This page intentionally left blank

UDC 629.7.063 : 621.643 : 620.1

Descriptors : aircraft, aircraft equipment, hydraulic systems, hydraulic equipment, hoses, pipes (tubes), pipe fittings, tests, hydraulic tests.

Price based on 3 pages