



SURFACE VEHICLE RECOMMENDED PRACTICE

J1405™

MAY2023

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Reaffirmed 2017-01
Revised 2023-05

Superseding J1405 JAN2017

Optional Test Procedures for Hydraulic Hose Assemblies

RATIONALE

Certain users of SAE standards are requesting that another Optional Test Method V be added to SAE J1405. The primary user base is requesting this modification to SAE J1405 as a function of the U.S. Govt. Paperwork Reduction Act (c. 1995), stating that use of industry standards is preferred over development of other U.S. standards. This was voted upon in the September 2021 meeting with approval to proceed by the committee.

1. SCOPE

The procedures contained in this SAE Recommended Practice have been developed to establish uniform methods for impulse and high temperature circulation testing of hydraulic hose assemblies under special conditions not specified in SAE J343 for SAE J517 hoses. Basic test procedures shall be in accordance with SAE J343 except as modified in this document.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J343 Test and Test Procedures for SAE 100R Series Hydraulic Hose and Hose Assemblies

SAE J517 Hydraulic Hose

SAE J1176 External Leakage Classifications for Hydraulic Systems

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Full document details: SAE J1405_202305

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Documents

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3. OPTION I - COMPARATIVE FLEX IMPULSE PROCEDURE

3.1 Purpose

To generate comparative impulse test data, with and without flexing. This test procedure minimizes impulse test variables to provide comparative data between flexing and nonflexing to determine the effect on the ultimate life of hose. This test is not a requirement for SAE J517.

3.2 Test Procedure

For optimum validity of comparison, test specimens shall be cut from a continuous length of hose with alternate samples along the length designated for flexing and nonflexing impulse test.

Those specimens designated for nonflexing shall be tested in accordance with SAE J343. Those specimens designated for flexing are to be made up with free hose length in accordance with the following equation:

$$\text{Free hose length} = 4.142 (\text{minimum bend radius}) + 3.57 (\text{hose OD}) \quad (\text{Eq. 1})$$

Performance of the flex-impulse test requires a supplementary rig capable of moving one test manifold in a continuous circular pattern as shown in Figure 1. This manifold is geared so that the center lines of the hose fittings at hose attachment stay parallel at all times. A variable drive is provided, and the number of revolutions per minute are to be controlled to $36\% \pm 2\%$ of the impulse cycles per minute. This maintains a proportionality between the number of cycles of flexing and impulse and assures that the test specimen is in a different configuration of each succeeding impulse.

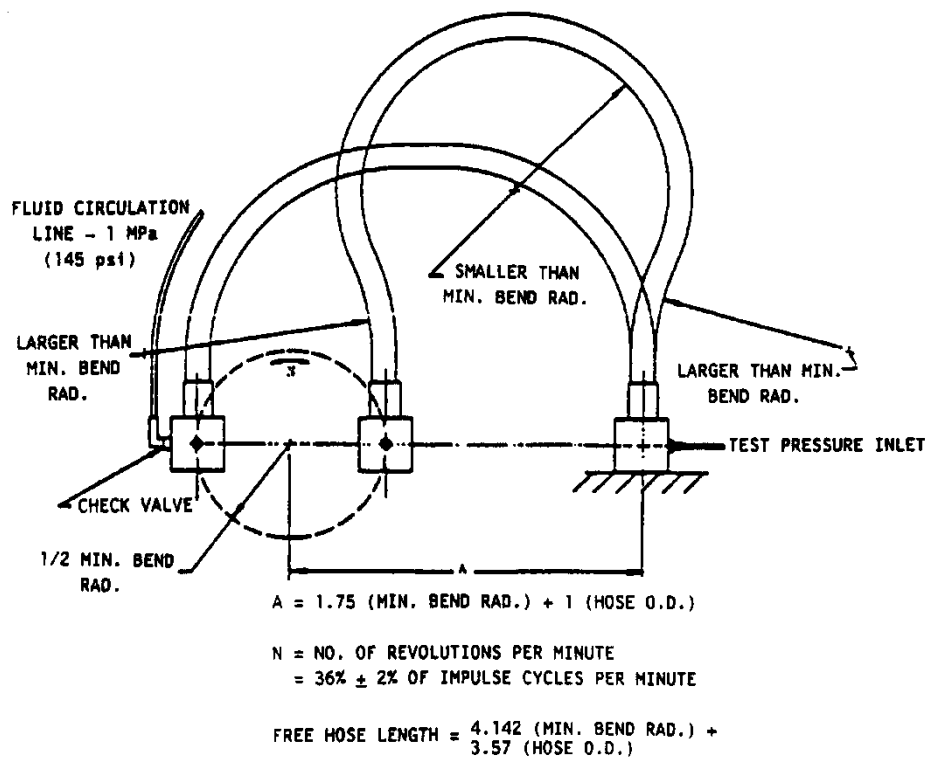


Figure 1 - Flex impulse test hose geometry