



SURFACE VEHICLE STANDARD

J343™**OCT2023**

Issued 1968-06
Revised 2017-12
Reaffirmed 2023-10

Superseding J343 DEC2017

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

RATIONALE

The pressure impulse wave forms for the high pressure and low-pressure tests in Figures 2 and 3 were inconsistent and the support notes were presented differently. This was the same situation in ISO 6605 and was corrected in the latest version - ISO 6605:2017.

The pressure impulse wave forms for the high pressure and low-pressure tests in Figures 2 and 3 were redrawn and a key was added along with supporting notes.

SAE J343 has been reaffirmed to comply with the SAE Five-Year Review policy.

FOREWORD

SAE J343 has been revised to be technically equivalent to ISO 6605, except that additional tests in 4.9 to 4.14 were included.

1. SCOPE

This SAE Standard gives methods for testing and evaluating performance of the SAE 100R series of hydraulic hose and hose assemblies (hose and attached end fittings) used in hydraulic fluid power systems.

Specific tests and performance criteria for evaluating hose assemblies used in hydraulic service are in accordance with the requirements for hose in the respective specifications of SAE J517.

This document further establishes a uniform means of testing and evaluating performance of hydraulic hose assemblies.

SAE Technical Standards 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."

SAE reviews each technical report at least every five years at which time it may be revised, reaffirmed, stabilized, or cancelled. SAE invites your written comments and suggestions.

Copyright © 2023 SAE International

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted, in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of SAE.

TO PLACE A DOCUMENT ORDER: Tel: 877-606-7323 (inside USA and Canada)
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
http://www.sae.org

SAE WEB ADDRESS:

Full document details: SAE J343_202310

For more information on this standard, visit
https://www.sae.org/standards/content/J343_202310/

Documents
Document Sharing Hub

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 Publication

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 J517 Hydraulic Hose

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM D380 Standard Methods of Testing Rubber Hose

ASTM D5964 07 Standard Practice for Rubber IRM 901, IRM 902, and IRM 903 Replacement Oils for ASTM No. 1, ASTM No. 2, and ASTM No. 3 Oils

2.1.3 ISO Publications

Copies of these documents are available online at <http://webstore.ansi.org/>

ISO 3448 Industrial liquid lubricants - ISO viscosity classification

ISO 6605 Hydraulic fluid power - Hose assemblies - Method of test

3. TEST PROCEDURES

The test procedures described in the current issue of ASTM D380 shall be followed. However, in cases of conflict between the ASTM specifications and those described as follows, the latter shall take precedence. Unless otherwise specified in this document, or other SAE standards, tests shall be conducted at the prevailing ambient temperature of the testing facility.

4. STANDARD TESTS

WARNING: Water or another liquid suitable for the hose under test shall be used as the test medium. The use of air and other gaseous materials as testing media should be avoided because of the risk to operators. In special cases where such media are required for the tests, strict safety measures are imperative. Furthermore, it is stressed that when a liquid is used as the test medium, it is essential that all air is expelled from the test piece because of the risk of injury to the operator due to the sudden expansion of trapped air released when the hose bursts.

4.1 Dimensional Check Test

The hose shall be inspected for conformity to all dimensions tabulated in the applicable specification.

Determine finished outside diameters and reinforcement diameters, where required, by calculation from measurement of the respective circumference.

As an alternative, use a flexible tape graduated to read the diameter directly.

Measure the inside diameter by means of a suitable expanding ball or telescoping gage.

Measure concentricity over both the reinforcement and the finished outside diameters using either a dial indicator gage or a micrometer.

Round the foot of the measuring instrument to conform to the inside diameter of the hose.

Take readings at 90° intervals around the hose.

NOTE: Acceptability is based on the total variation between the high and the low readings.

Take inside and outside diameter measurements at a minimum of 25 mm from the hose ends and concentricity measurements at a minimum of 13 mm from the hose ends.

4.2 Proof Test

Test the hose assemblies hydrostatically to the specified proof pressure for a period of not less than 30 seconds nor more than 60 seconds.

There shall be no indication of failure or leakage.

4.3 Change in Length Test

Conduct measurements for the determination of elongation or contraction on a previously untested, unaged hose assembly having at least 600 mm length of free hose between hose fittings.

Attach the hose assembly to the pressure source in an unrestricted straight position. If the hose is not straight due to its natural curvature, it may be fastened laterally to achieve a straight position. Pressurize to the specified operating pressure for a period of 30 seconds, then release the pressure.

Place accurate reference marks 500 mm apart on the outer cover of the hose, midway between fittings, after allowing the hose assembly to restabilize for a period of 30 seconds following pressure release.

Repressurize the hose assembly to the specified operating pressure for a period of 30 seconds.

Measure the final length while the hose is pressurized. The final length is the distance between reference marks while the hose is pressurized.

Complete the determination of the change in length using Equation 1:

$$\Delta l = \frac{\ell_1 - \ell_0}{\ell_0} \times 100 \quad (\text{Eq. 1})$$

where:

ℓ_0 = distance between the reference marks when the hose was not pressurized following the initial pressurization

ℓ_1 = distance between the reference marks under pressure

Δ_ℓ = percentage change in length, which will be positive (+) in the case of an increase in length and negative (-) in the case of a decrease in length