SURFACE VEHICLE RECOMMENDED PRACTICE

J1335™ NOV2023

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Superseding J1335 JUN2017

Hydraulic Cylinder No-Load Friction Test

RATIONALE

This standard was revised to remove the imperial equivalents for temperatures listed in 4.1 and 4.2. Test fluid revised to include SAE J1276, Sections 1 and 2 (see 4.3). ISO 4406 cleanliness code updated to 3-digit code (see 4.4). Updated 6.4.

1. SCOPE

Applies to hydraulic cylinders which are components of Off-Road Self-Propelled Work Machines defined in SAE J1116.

1.1 Purpose

To provide a laboratory method for determining the static and dynamic friction of a hydraulic cylinder at no-load conditions.

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 J1116 Categories of Off-Road Self-Propelled Work Machines

SAE J1276 Standardized Fluid for Hydraulic Component Tests

2.1.2 ISO Publications

Copies of these documents are available online at https://webstore.ansi.org/

ISO 4406 Hydraulic fluid power - Fluids - Method for coding the level of contamination by solid particles

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
SAE WEB ADDRESS: **http://www.sae.org**

For more information on this standard, visit
https://www.sae.org/standards/content/J1335_202311

3. DEFINITIONS

3.1 STATIC BREAKAWAY PRESSURE

The minimum pressure that initiates movement of the piston under no external load.

3.2 DYNAMIC DRAG PRESSURE

The minimum pressure differential across the cylinder that is required to maintain constant velocity after breakaway at no load.

4. TESTING CONDITIONS

4.1 Accuracy of Measurement

The accuracy of measurements unless otherwise stated shall be:

a. Temperature ±3 °C

b. Pressure ±2%

c. Flow ±2%

d. Time ±2%

e. Length ±2%

4.2 Test Temperature

The test temperature shall be 20 °C unless otherwise specified.

4.3 Test Fluid

The test fluid shall be SAE J1276-1 or SAE J1276-2 unless otherwise specified.

4.4 Contamination Level

Test system shall have a contamination level not to exceed ISO 4406 Code 19/17/14.

5. TEST EQUIPMENT

5.1 Use a fluid power source capable of delivering a pressure necessary to overcome the static breakaway pressure of the cylinder.

5.2 Use a means of indicating pressure at the rod and piston ports and flow into the piston port.

6. TEST PROCEDURE

6.1 Cycle the cylinder until the fluid and apparatus temperatures are stabilized.

6.2 Position the cylinder horizontally with the barrel restrained and the rod end free. Locate the piston at the stroke midpoint of the cylinder under test. Install pressure measuring instrumentation in the rod end and piston end port and install the flow meter at the piston end port of the cylinder.