



SURFACE VEHICLE RECOMMENDED PRACTICE

J1336™

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Superseding J1336 SEP2014

Hydraulic Cylinder Leakage Test

RATIONALE

This standard was revised to remove imperial equivalents, include the location for the referenced ISO documents, and to move stroke length description from 3.10 to 3.1 since it is referenced in 3.2.

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 capability of a cylinder to seal fluid under specified cycling or holding 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 J1176 External Leakage Classifications for Hydraulic Systems

SAE J1276 Standardized Fluid for Hydraulic Component Tests

2.1.2 ISO Publications

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

ISO 4406 Hydraulic Fluid Power - Fluids - Method for Coding the Level of Contamination by Solid Particles

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Full document details: SAE J1336_202110

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Documents

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3. DEFINITIONS

3.1 STROKE LENGTH

The total distance traveled by the piston in completing one-half cycle.

3.2 CYCLE

The movement of the piston and rod from its starting point and return to its original position for a specified test stroke length.

3.3 CYCLE RATE

The number of cycles per unit of time.

3.4 DRIFT

Rod movement while holding a constant load.

3.5 DYNAMIC LEAKAGE

The volume of fluid leaking past a seal under cycling conditions.

3.6 DYNAMIC LEAKAGE COEFFICIENT

A measure of dynamic leakage volume per unit of swept area.

K_a = dynamic leakage coefficient for piston end to rod end leakage

K_b = dynamic leakage coefficient for rod end to piston end leakage

K_c = dynamic leakage coefficient for external leakage

3.7 EXTERNAL SEAL

A seal or seal set configuration which restricts leakage flow to the outside of a cylinder.

3.8 INTERNAL SEAL

A seal or seal set configuration which restricts leakage flow when pressurized fluid is applied on either side of the piston.

3.9 "N"

The number of cycles measured to determine dynamic coefficients K_a , K_b , or K_c .

3.10 RATED PRESSURE

The continuous duty operating pressure specified by the manufacturer.

4. TESTING CONDITIONS

4.1 Accuracy of Measurement

The accuracy of measurements unless otherwise stated shall be: Temperature ± 3 °C, pressure $\pm 2\%$, leakage $\pm 2\%$, time $\pm 2\%$, and length $\pm 2\%$.

4.2 Test Fluid

The test fluid shall be per SAE J1276 unless otherwise specified.