SURFACE VEHICLE RECOMMENDED PRACTICE

J1117™ APR2026

Issued 1975-06
Reaffirmed 1986-03
Revised 2026-04

Superseding J1117 APR2019

Method of Measuring and Reporting the Pressure Differential Flow Characteristics of a Hydraulic Fluid Power Valve

RATIONALE

Updated document to remove U.S. customary units.

FOREWORD

As the flow passes through these valves, some power loss is experienced due to restrictions and directional changes of the fluid, resulting in a differential pressure. Flow is passed through the valve through the ports and in positions as specified. Pressure is recorded at flow increments to produce a well-defined curve. The tare loss of the test circuit is subtracted for final data presentation.

1. SCOPE

Applies to hydraulic fluid power valves as applied to Off-Road Self-Propelled Work Machines defined in SAE J1116.

1.1 Purpose

To provide a uniform procedure for measuring and reporting the pressure losses associated with the significant flow paths in a hydraulic fluid power valve.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of the 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 (U.S. and Canada only) or +1 724-776-4970 (Outside U.S. and Canada), www.sae.org.

ARP24 Determination of Hydraulic Pressure Drop

SAE J1116 Categories of Off-Road Self-Propelled Work Machines

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2.1.2 ISO Publications

Copies of these documents are available online at www.iso.org/store.

ISO 1219 Fluid power systems and components - Graphical symbols and circuit diagrams

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

ISO 80000-1 Quantities and units

3. DEFINITIONS

3.1 TEST FLOW

Any steady state flow rate required to conduct this test.

3.2 INPUT PORT

Any port into which flow is directed for the purpose of this test.

3.3 OUTPUT PORT

Any port from which flow exits for the purpose of this test.

3.4 TARE PRESSURE

The pressure loss between the pressure tapping points as generated by the test equipment exclusive of the test valve.

3.5 CONTROL

Any externally adjustable feature integral with the test valve that varies the flow path and/or flow rate.

3.6 SPECIFIED DATA

That basic information furnished in the request for the test as indicated in Section 7.

4. UNITS

4.1 The International System of Units (SI) is used herein in accordance with ISO 80000-1.

5. GRAPHIC SYMBOLS

5.1 Graphic symbols herein are in accordance with ISO 1219.

6. LETTER SYMBOLS

The following letter symbols are used in this document:

Table 1

		SI Unit
ΔP	Pressure differential (pressure drop)	kPa (kilopascal)
ΔPm	Measured pressure differential	kPa
ΔPt	Tare pressure differential	kPa
P1	Input pressure reading	kPa
P2	Output pressure reading	kPa
Q	Test flow	L/min
Qm	Specified maximum flow	L/min

Documents
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