



Hydraulic Power Steering Contamination Test

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. The purpose of this standard is to determine the contamination level of hydraulic power steering system components.

1.2 Applicability. For all hydraulic power steering systems/components.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

None

3 Resources

3.1 Facilities.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Rinsing and washing solution (Naphtha, chlorinated solvent or equivalent).

3.2.2 Diaphragm filter, 5 µm.

3.3 Test Vehicle/Test Piece. The steering system components to be tested shall be selected at random from a population of representative components that have successfully passed final test and certification as ready for shipment.

3.4 Test Time.

Calendar time: 1 days

Test time: 4 hours

Coordination time: 2 hours

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Experienced lab personnel trained in the application of this procedure and in all appropriate safety practices and procedures.

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4 Procedure

4.1 Preparation. Plug pressure and return ports or inlet and outlet of test sample. Thoroughly clean its exterior making sure not to remove any interior particle matter. Discard the washing solution.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions.

4.3.1 For a dynamic component (e.g., steering gear).

4.3.1.1 Rinse the interior of test sample with washing solution while cycling the sample at least ten (10) times. Drain and collect all fluids.

4.3.1.2 Disassemble the test sample to allow washing of all interior surfaces that come in contact with hydraulic power steering fluid during normal operation. Collect all residual fluid in the test sample. Components to be removed shall include gear cylinder lines and any other attached hydraulic lines, rack assembly, valve assembly, and variable effort actuator if present. Further disassemble valve assembly.

4.3.1.3 Wash all components, excluding threaded areas, and collect all fluids.

4.3.2 For a static component (e.g., reservoir, hose).

4.3.2.1 Fill the test sample one-third ($\frac{1}{3}$) to one-half ($\frac{1}{2}$) full with washing solution.

4.3.2.2 Agitate the sample for at least 1 minute with all its openings sealed.

4.3.2.3 Drain and collect all fluids.

4.3.3 The collected fluid sample with particle matter shall be agitated for at least 1 minute and then filtered through a 5 μ m diaphragm filter with a known weight. Additional solution shall be used to remove any residual particle matter from the fluid container.

4.3.4 The filter shall be weighed and result recorded.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. Provide the completed test report to the requestor.

5.3 Test Documentation. The weight of the particle matter on the filter element shall be documented in the test report, along with a reference to this test procedure.

6 Safety

This Engineering Standard may involve safety requirements for hazardous materials, the method of operations and equipment. This standard does not propose to address all the safety issues associated with its use. It is the responsibility of the user of this standard to ensure compliance with all appropriate safety and health practices. This would include any specific training that may be required. The safety and health standards include site specific rules and procedures, company rules and procedures, and Government Standards. Contact shall be made with the appropriate site Safety and Health personnel for further direction and guidance in these matters.

7 Notes

7.1 Glossary. Not applicable.

7.2 Acronyms, Abbreviations, and Symbols.

GSSLT Global Subsystem Leadership Team

8 Coding System

This standard shall be referenced in other documents, drawings, etc., as follows:

Test to GMW14330

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