GM WORLDWIDE ENGINEERING STANDARDS	General Specification	GMW15173

Reversible Screwdriver

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 provide technical terms of delivery that contain the requirements imposed on the material of the blade and handle plus strength requirements of the reversible screwdriver.

1.2 Applicability. These technical terms of delivery apply to combi-screwdrivers with interchangeable handle, as used in passenger car on-board tool kits.

2 References

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

2.1 External Standards/Specifications.

CSN EN 10083-1 ISO 2380-1 ISO 2380-2 ISO 8764-1
CSN EN 10083-2

2.2 GM Standards/Specifications.

GMW3059

3 Test Preparation and Evaluation

3.1 Resources.

3.1.1 Facilities. As found in a material test laboratory.

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

3.1.1.2 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.

3.1.2 Equipment. Torque testing equipment for performance of the torque test.

3.1.2.1 A graph plotter (x-y plotter) to record the torque/angle of rotation diagrams.

3.1.2.2 Torque display unit with a read-out accuracy of ± 0.1 Nm.

3.1.2.3 Suitable mounting device to test the blade without the handle.

3.1.2.4 Tests discs for the torque test as per ISO 8764-1 or ISO 2380-1/ISO 2380-2 for the respective screwdriver tips or flat edges.

3.1.3 Test Vehicle/Test Piece.

3.1.3.1 The screwdriver assembly or individual parts of the latter are used as test piece.

3.1.3.2 If not otherwise specified, at least five (5) screwdriver assemblies shall be tested as first samples and in arbitration cases, at least three (3) assemblies for current quality monitoring.

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3.1.4 Test Time.

Calendar time:	1 d
Test time:	8 h
Coordination time:	4 h

3.1.5 Test Required Information. Not applicable.

3.1.6 Personnel/Skills. Test technician with jack and tools background.

3.2 Preparation. Not applicable.

3.3 Conditions.

3.3.1 Environmental Conditions. If not otherwise specified, the tests are undertaken at +23 °C ± 5 °C without any preconditioning.

3.3.2 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.

3.4 Instructions. See individual procedures in Section 4.

3.5 Data. See 3.7.

3.6 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.

3.7 Documentation. Samples of components or material released to this standard shall be tested for conformity with the requirements of this standard and approved by the responsible GM Department prior to the start of delivery of production level components or materials.

Any change to the component or material, e.g., design, function, properties, manufacturing process and/or location of manufacture requires a new release of the product. It is the sole responsibility of the supplier to provide the customer, unsolicited, with documentation of any change or modification to the product/process, and to apply for a new release.

If not otherwise agreed to, the entire verification test shall be repeated and documented by the supplier prior to start of delivery of the modified or changed product. In some cases, a shorter test can be agreed to between the responsible GM department and the supplier.

3.7.1 Test Results. Provide all results of the test (Section 4) in a test report.

4 Requirements and Procedure

4.1 General.

4.1.1 Performance of the Torque Test. The torque test is undertaken on blades with and without handles.

In the test without the handle, the screwdrivers must be held in the mounting device in such a way that the depth of insertion corresponds to that of the handle.

The test force shall be applied to the blade on the torque-testing device at a turning speed of ≤ 1 rpm, increasing constantly, not fluctuating or applied suddenly, until the required test torque is reached or until a fracture or deformation of the screwdriver occurs. Care should be taken that the tip or flat end of the screwdriver is fully seated in the test disc and that no bending moments occur.

4.1.2 Materials.

4.1.2.1 Blade. Heat-treatable steel, e.g., C 55 complying with CSN EN 10083-1/CSN EN 10083-2.

4.1.2.2 Handle. Polypropylene. Recycled materials may not be used.

4.1.3 Test Torques. The screwdrivers shall withstand the torques listed 4.1.3.1 and 4.1.3.2 with and without handle.

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