



Vehicle Level Extraction Test for Flange Mounted Weatherstrips

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. This standard describes the test to determine the extraction (pull-off) forces of sealing profiles on metal flanges. This test is intended to be used for finished parts, installed on a vehicle, prior to interior trim installation.

1.2 Applicability. This standard is applicable to all flange mounted weatherstrips.

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 Destaco Clamping Device (or equivalent). Suitable for securely attaching to the carrier of the weatherstrip to be tested. Clamping device shall have blades 100 mm in length, must be capable of closing to a gap of 6 mm, and have a locking feature. See Figures A1 through A5.

3.2.2 Digital Force Gage (IMADA P/N DS2-500N or equivalent). Gage must have a 500 N capacity, 0.2 N gradations, and ± 0.75 N accuracy. See Figure A6.

Note: A Force Retention Kit (part number CET-FR-10-V1) containing all necessary equipment to perform this test can be purchased from Magna Co-Ex-Tec, Concord, Ontario, Canada.

3.3 Test Vehicle/Test Piece. Test pieces shall consist of full seals installed on a vehicle.

3.4 Test Time. About 1 d. Time will vary based on the number of locations measured. See 4.3 for further details.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Test technician familiar with test facilities and equipment.

4 Procedure

4.1 Preparation. Select/obtain vehicle(s) to be tested. Seals must be checked **prior to** the installation of any interior trim. Determine the location where measurements are to be taken (diagram test locations); see Figures A7, A8 and A9 for examples of locations.

The intent is to check retention at the critical retention areas. These include the top edge of the body side openings where gravity can act on a loose seal, as well as the thickest and thinnest flange stackups. Check per Figures A7, A8, and A9. These figures are guidelines only. Flange thickness stackups and panel break locations can vary from vehicle to vehicle, so the locations to check retention may also vary. On any vehicle, the following areas must be checked at a minimum:

- a. Side Doors:
 1. A-pillar above belt (front door)
 2. C-pillar above belt (rear door)
 3. Header (front and rear door)
 4. Thickest flange stackup in opening (usually at rocker)
 5. Thinnest flange stackup in opening (usually at B-pillar below belt on front door, C-pillar below belt on rear door)
- b. Liftgate:
 1. Header, thinnest area (both sides of opening)
 2. Header, thickest area (both sides of opening)
 3. Thickest flange stackup in opening on sides (both sides of opening)
 4. Thinnest flange stackup in opening on sides (both sides of opening)
 5. Bottom edge, thickest area (both sides of opening)
- c. Decklid:
 1. Forward edge, thinnest area (both sides of opening)
 2. Forward edge, thickest area (both sides of opening)
 3. Thickest flange stackup in opening on sides (both sides of opening)
 4. Thinnest flange stackup in opening on sides (both sides of opening)
 5. Rearward edge, thickest flange stackup (both sides of opening)

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 Attach clamping device securely to the carrier of the weatherstrip, such that the seal can be pulled off parallel to the flange.

4.3.2 Lock clamping device.

4.3.3 Attach force measuring gage to the clamping device.

4.3.4 Zero the force measuring device.

4.3.5 Using the force gage, pull the weatherstrip parallel to the flange at a slow even rate, until the seal is removed from the flange. Record the peak force.

4.3.6 Remove the clamping device and reinstall the weatherstrip securely on to the flange.

4.3.7 Repeat 4.3.1 through 4.3.6 for the remaining areas of the seal to be checked. See Figures A7, A8, and A9 for examples of areas to check retention. The minimum distance between checking points is 600 mm.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results. The peak force may be used as an indicator of proper retention of the part on the flange and to improve retention of seals on the flange.

5.3 Test Documentation. Data to be presented in report form and should include: vehicle identification, location diagram, and peak force. (Data Sheets A1 and A2 show examples of data collection format.)

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

P/N Part Number

8 Coding System

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

Test to GMW16643

9 Release and Revisions

This standard was originated in July 2011. It was first approved by the Weatherstrip GSSLT in February 2012. It was first published in February 2012.

Issue	Publication Date	Description (Organization)
1	FEB 2012	Initial publication.
2	JAN 2018	Updated template for 5 year refresh. (Body – Weatherstrips Global Subsystem Leadership Team (GSSLT))