



Floor Mat Bench Friction 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. To develop a fixture and a test procedure to:

- a. Assess the friction force between a floor mat sample and the floor carpet.
- b. Determine the friction force acceptance ranges to ensure the mat sample will not move relative to the floor pan carpet during customer's normal operating conditions.
- c. Determine the nibs pattern friction capability to provide enough retention to prevent floor mat movement.

1.2 Applicability. This procedure applies to all floor mats.

1.3 Remarks. Floor mats are an integral part of the vehicle flooring system and should provide a minimum friction force to the carpet to prevent them from sliding forward and potentially interfering with the pedals.

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

2.3 Additional References.

- Festo. (festo.com)
- Velcro. (velcro.com)

3 Resources

3.1 Facilities. The test should be performed in a test lab with pneumatic equipment at controlled ambient temperature.

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. Fixture components and exploded view shown in Figure 1 and Figure 2.

3.2.1 Cell load (200 N more) and force indicator.

3.2.2 Test fixture in Figure 1.

3.2.3 Pneumatic pressure system: (Festo Programmable Logic Controller (PLC) with timers or similar).

3.2.4 Pneumatic: Festo DNC-32-PPV-A or similar.

3.2.5 Standard barbell-type calibrated weights: 9.07 kg (20 lb).

3.2.6 Roll of adhesive-backed hook/loop tape (e.g., Velcro (an adhesive backed hook and loop system) that is 10.1 cm (4 in) wide).

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3.2.7 Weight holder assembly of 4.5 kg (10 lb) (Figure 1).

3.2.8 Floor mat samples (3).

3.2.9 Floor carpet test piece (1).

3.2.10 Cell load couples (Figure 7 and Figure 13).

3.3 Test Vehicle/Test Piece.

3.3.1 The test can be performed with various combinations of floor mats in different types of carpets. This will enable the design engineer to select the best floor mat backing to interface with the floor carpet that would provide the best performance prior to vehicle testing.

3.4 Test Time.

Calendar time: 1 day

Test hours: 2 h

Coordination hours: 1 h

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills.

3.6.1 Personnel should have working knowledge of the equipment required to perform the test.

3.7 Figures.

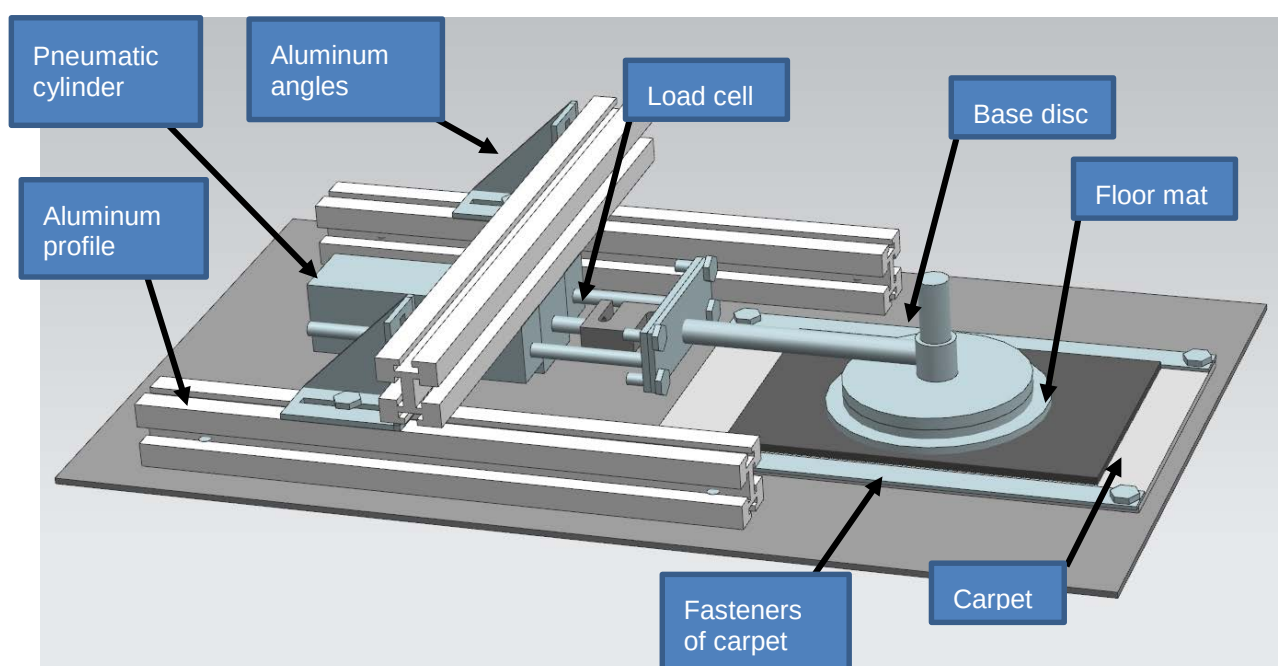


Figure 1: Floor Mat Friction Tester

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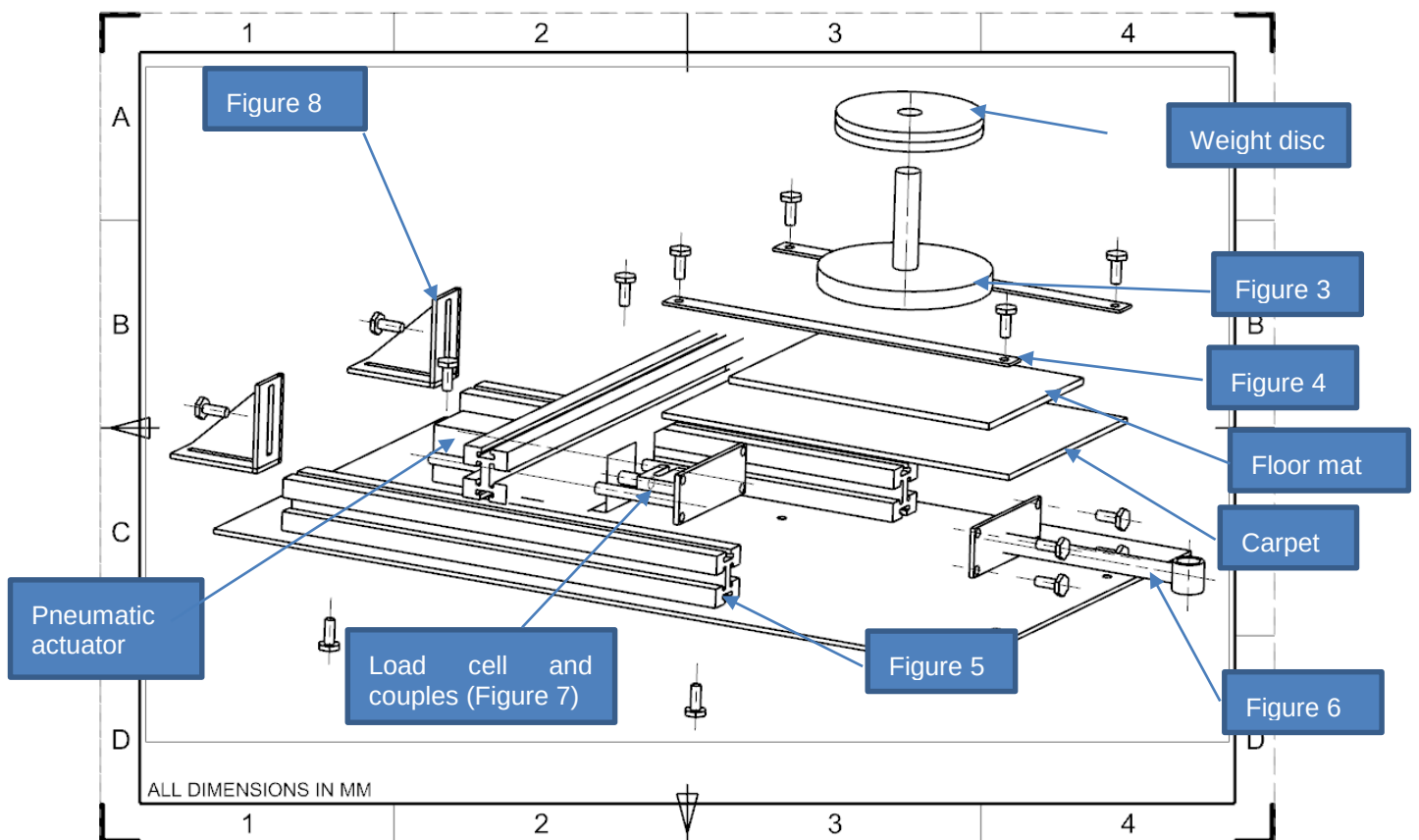


Figure 2: Explode View System

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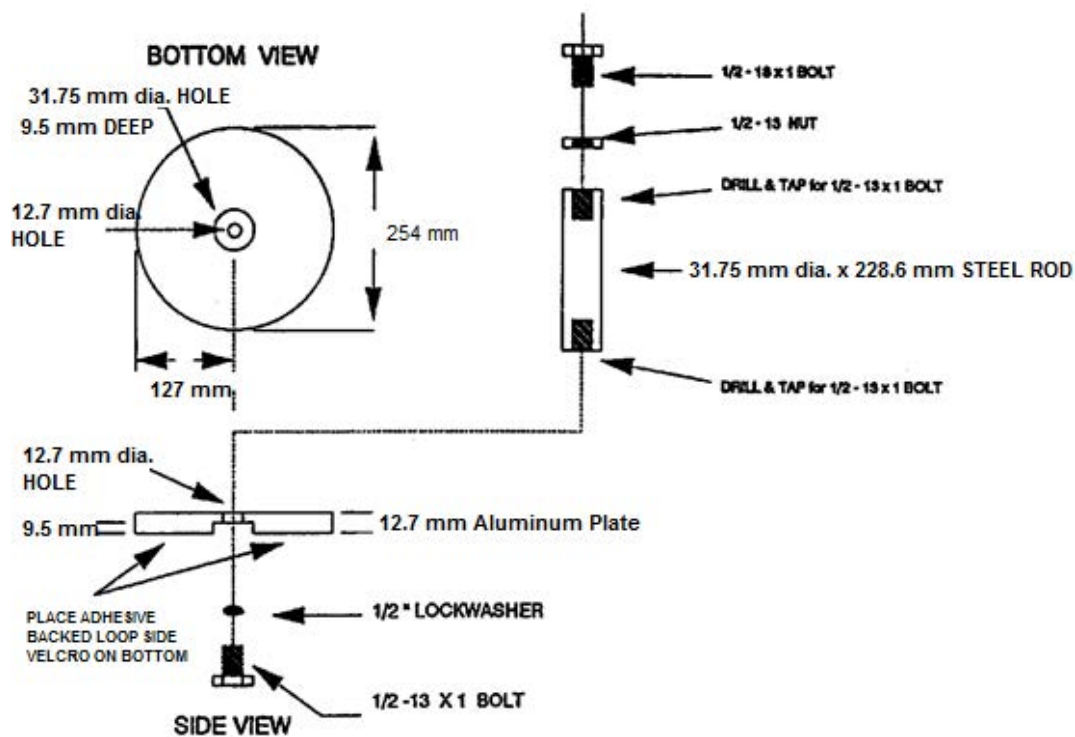


Figure 3: Disc Base Example

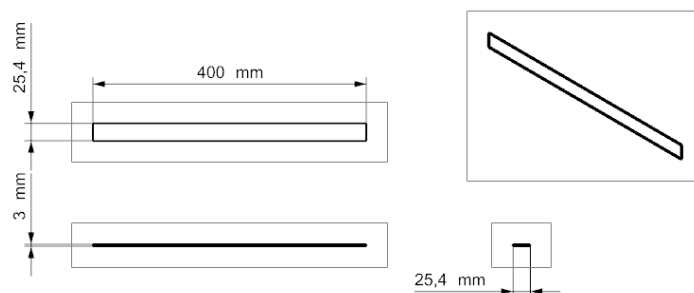


Figure 4: Attachments Bar

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