

Summary of SAE Standard for Full-Scale Pedestrian Dummy

SAE Standards

SAE Standards for Pedestrian Dummy

- **J2782**: Performance Specifications for a Midsize Male Pedestrian Research Dummy (**based on existing technology**)
- **J2868**: Pedestrian Dummy Full-Scale Test Results and Resource Materials (showing J2782 is **achievable by existing technology**)

Documents are available on the following url:

J2782: https://www.sae.org/standards/content/j2782_201010/

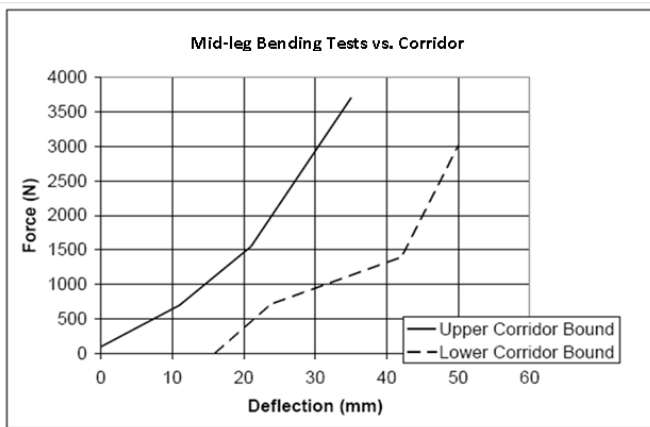
J2868: https://www.sae.org/standards/content/j2868_201010/

J2782

Overview

Component

- Geometric Properties
- Mass
- Biofidelity (response corridors)



Example of Response Corridor (Leg)

Full scale

- Geometric Properties
 - Mass
 - Durability
 - Test Procedure for Biofidelity*
- *No biofidelity corridors are specified. An example of test results are found in SAE J2868.

This standard defines performance requirements of a pedestrian dummy along with geometric and inertial properties at both component and full-scale levels

J2868

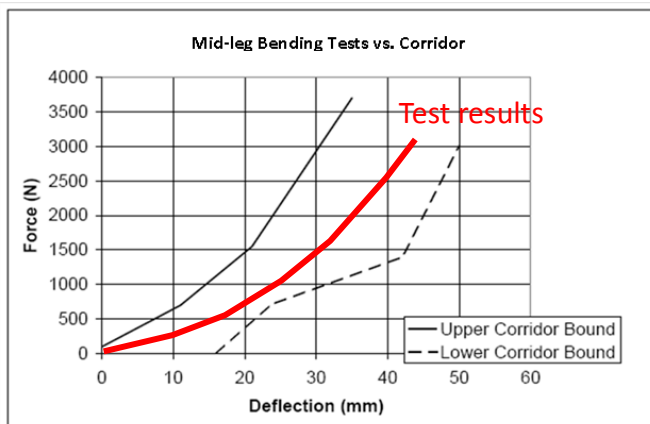
Overview

Component

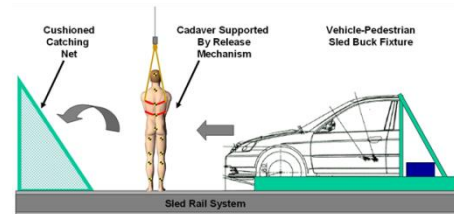
- Geometric Properties
- Mass
- Biofidelity (response corridors and test results of dummy)

Full scale

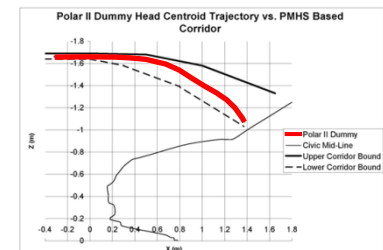
- Geometric Properties
- Mass
- Example of corridors and test results



Example of Response Corridor and Test results(Leg)



Example of Test Setup for Whole Body Biofidelity



Example of Trajectory Corridor and Test Results (Head)

This standard presents test results of existing pedestrian dummies to show that the requirements specified in J2782 are achievable using existing dummy technologies

Requirements and Resource Materials

		Geometric Properties	Mass	Biofidelity	Durability
Components	Head	✓	✓	✓	N/A
	Neck	N/A	✓	✓	N/A
	Shoulder	✓	N/A	✓	N/A
	Thorax	✓	✓	✓	N/A
	Upper Extremities	N/A	✓	N/A	N/A
	Abdomen and Pelvis	✓	✓	✓	N/A
	Thighs	✓	✓	N/A	N/A
	Knees	✓	N/A	✓	N/A
	Legs	✓	✓	✓	N/A
	Ankles and Feet	N/A	✓	N/A	N/A
Whole Body		✓	✓	An example is shown in J2868	✓

Requirements for Biofidelity

Component

	Requirement
Head	<ul style="list-style-type: none">• Peak acceleration corridors in both frontal and lateral drop test of an isolated head
Neck	<ul style="list-style-type: none">• Angle-Time and Moment-Time corridors in flexion-extension and lateral bending test of an assembled head and neck
Shoulder	Force-Time corridor in lateral pendulum shoulder impact test of a complete dummy
Thorax	<ul style="list-style-type: none">• Force-Deflection corridor in frontal pendulum thoracic impact test of a complete dummy• Force-Time corridor in lateral pendulum thoracic impact test of a complete dummy

Requirements for Biofidelity

Component (Cont'd)

	Requirement
Abdomen and Pelvis	<ul style="list-style-type: none">• Force-Velocity corridor in lateral pendulum pelvis impact test of a complete dummy• Force-Deflection corridors in dynamic lateral compression test of an isolated pelvis (proposed addition under review)
Thighs	Force-Deflection corridor in dynamic 3-point latero-medial bending test of an isolated thigh (proposed addition under review)
Knees	Moment-Angle corridor in dynamic 4-point Valgus bending of an isolated knee
Legs	Force-Deflection corridor in dynamic 3-point latero-medial bending test of an isolated leg (proposed modification under review)

Current version does not include those additions/modifications.
Proposals have been under review of SAE Pedestrian Dummy Task Force.

Requirements for Biofidelity

Whole Body

	Requirement
Trajectory	Motion corridors for head centroid, upper spine, midthorax, and pelvis in a full scale impact test using a generic buck (proposed addition under review)
Head Centroid Velocity	Velocity-Time corridor for head centroid in a full scale impact test using a generic buck (proposed addition under review)

Current version does not include those additions/modifications.
Proposals have been under review of SAE Pedestrian Dummy Task Force.