

To: Whom It May Concern
From: Dave Panning
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Subject: **Loss of Serviceability Guideline & Proof Evaluation Guideline**

BIFMA offers the following guidance as an acknowledgement of the subjective nature of evaluating **loss of serviceability**.

Note: If specific requirements are given in a test's acceptance level, those requirements take precedence over these general guidelines

1. Definitions

1.1. Loss of Serviceability: The failure of any product to carry its intended load or to perform its normal function or adjustments. Cracked or broken glass is considered a loss of serviceability unless specifically allowed by the standard. This pertains to the product's ability to provide the "service" for which it was designed; it does not refer to the products ability to be serviced/repared after testing.

Clarification: In previous versions of BIFMA standards, prior to 2012, the loss of serviceability definition included the phrase "or component". BIFMA standards released after 2012 omit the phrase "or component" to align with the intent of this guideline. BIFMA engineering committees intend to harmonize with the definition provided in section 1.1 of this guideline in future revisions.

BIFMA's use of "Loss of Serviceability" does not imply that a product can or cannot be serviced or repaired. Therefore, when loss of serviceability is observed at the conclusion of a test, the result is loss of serviceability even if a product can be repaired to an acceptable use condition.

1.2. Major changes: Visual changes in the appearance of the products such as excessive deflection, sloping of horizontal surfaces, obvious asymmetry in structural or design features, excessive permanent deflection or "set" in the product or components, excessive or uneven gapping, obvious separation in joints, open "cracks", or obviously broken features are all considered "major changes". Inoperable adjustment mechanisms as a result of proof load applications are not considered to be a major change.

1.3. Normal Function: Ability to fulfill the intended use and perform adjustments of the product as designed.

1.4. Proof load: The level of loading or force in excess of hard use.

1.5. Sudden changes: Structural changes that happen slowly (such as slow deflection/creep during or after load application) are not considered sudden. Sudden changes are typically

those that would “startle” a user and are often accompanied by noises such as popping or cracking.

2. Interpretation of Results for Loss of Serviceability

- 2.1 Generally, after functional and cyclic (not proof) testing, there should be no objectionable visual difference from the pre-test state. The determination of ‘visually objectionable’ should be based on reasonable customer expectations. The general guidance for “visual difference” in relation to “loss of serviceability” is understood to be subjective. The overall expectation at the endpoint of any test is that the product is not expected to look “brand new”. Wear that is typical of that caused by the test itself (wear due to test fixtures, etc.) is acceptable. Permanent deflection (“set”), wobble, stress marking, aesthetic cracks, etc., are not *necessarily* considered loss of serviceability – further assessment is necessary. In general, the structure and function of the product should not be compromised at the end of the test.
- 2.2. Post-test evaluation of cyclic tests may show the product to be worn, but as long as the product functions normally, supports the intended load[‡], and does not introduce a new hazard[†] it is acceptable.
- 2.3. The following guidance is offered to address typical observations during and after testing. Some interpretations require the observer to perform a secondary evaluation provided in 3.3.

	Condition Observed	Secondary Evaluation	Functional Interpretation Guidance
1	Squeaks, rattles, other sounds	None	Not a loss of serviceability
2	Stress whitening	None	Not a loss of serviceability
3	Cracking (of plastics, metal, wood)	Supports intended load No new hazard present [†]	Not a loss of serviceability except as per 3.1
4	Cracked or broken glass	None	Loss of serviceability
5	Broken caster	Product is stable (would still pass the stability test)	Not a loss of serviceability
6	Disengagement [†]	Not physically separated Supports intended load	Not a loss of serviceability
7	Spot weld breakage, fastener breakage, spring breakage, joint cracking/separation	Supports intended load No new hazard present [†]	Not a loss of serviceability
8	Discoloration, fading, color change	None	Not a loss of serviceability
9	Excessive adjustment force [†]	Moderately beyond normal Adjusts through intended means (i.e. no new tool or special techniques required)	Not a loss of serviceability
10	Loosening of fastener	Supports intended load	Not a loss of serviceability
11	Torn fabric	None	Not a loss of serviceability
12	Wobble [†]	None	Not a loss of serviceability

13	Deflection [†]	Moderate permanent deflection (“set”)	Not a loss of serviceability
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Note(s):

[†] Refer to section 3 for additional clarification.

[‡] Refer to section 4 for additional clarification.

3. Additional Clarification of Secondary Evaluations for Loss of Serviceability

3.1 Cracking

Large cracks that are easily visible from a normal viewing distance are considered a loss of serviceability.

3.2 Disengagement

If physically separated, then yes, it is a loss of serviceability. If it is unclear if disengagement has occurred, apply the intended functional load. If the product supports the load, then there is not a loss of serviceability.

3.2. Excessive adjustment force

Significantly beyond normal is loss of serviceability. For example, if an adjustment knob is meant to be adjusted by hand and a tool is required to make the adjustment after testing, this would be a loss of serviceability.

3.3. Deflection

It may be a loss of serviceability if the deflection is permanent and excessive. Note: deflection during testing is not a loss of serviceability.

3.4. Wobble

Not a loss of serviceability unless severe and product performance is compromised.

3.5. New hazards

Occasionally, an observed condition such as a broken spring or fastener may result in a new hazard present to the end user of the product. Emphasis should be focused on the likelihood that the end user would be directly exposed to the new hazard under normal or foreseeable use scenarios. Examples of hazards may include, exposed sharp edges, pinch points, or changes in product stability.

4. Determining Intended Functional Load for Secondary Evaluations of Loss of Serviceability

4.2. Depending upon the test and test result consider applying the appropriate functional static evaluation to determine serviceability:

- 4.1.1 For non-seating products the functional load (either distributed or concentrated based on the judgment of the evaluator) should be used to determine serviceability if the product is in question after durability testing. Evaluation loads should be applied slowly, then may be removed once the load is achieved (no minimum time limit).
- 4.1.2 For seating units, the functional static load that applies to the item tested should be used for the secondary evaluation. For seat surfaces, where no functional static load test is given, the load stated in the scope of the standard (eg, 275 lbs. for ANSI/BIFMA X5.1-2017) OR the manufacturer's stated load capacity whichever is GREATER should be applied. Evaluation loads should be applied with evenly distributed loads. Evaluation loads should be applied slowly, then may be removed once the load is achieved (no minimum time limit).

5. Interpretation of Results for Proof Evaluation

- 5.1 Acceptance levels – Sudden and Major Change: Many acceptance levels, most typically for proof loads, require there be no sudden AND major change in the structural integrity of the unit. When making this assessment, it is necessary that the unit accept/support the full load required (both functional and proof) for the specified duration without external support except as noted below. If the unit will not accept and maintain, as specified, the proof load during load application it does not meet the requirements.
- 5.2 After proof testing, there may be objectionable visual difference from the pre-test state. This is acceptable. The overall expectation at the endpoint of any proof test is that the product may be visually compromised. In general, the structure and function of the product may be compromised at the end of the proof test.
- 5.3 Post-test evaluation of cyclic tests may show the product to be worn, but as long as the product functions normally, supports the intended load[‡], and does not introduce a new hazard[†] it is acceptable.
- 5.4 The following guidance is offered to address typical observations during and after proof testing.

	Condition Observed	Proof Interpretation Guidance
1	Loss of Serviceability	Acceptable
2	Squeaks, rattles, other sounds	Acceptable
3	Failure to hold the load / force	Not Acceptable
4	Abrupt structural failure yet maintains the load	Not Acceptable
5	Slow structural failure yet maintains the load	Acceptable
6	Stress whitening	Acceptable
7	Cracking (of plastics, metal, wood)	Acceptable
8	Cracked or broken glass	Acceptable

9	Broken caster	Acceptable
10	Disengagement	Acceptable if not completely physically separated. Not Acceptable if completely separated.
11	Spot weld breakage, fastener breakage, spring breakage, joint cracking/separation	Acceptable
12	Discoloration, fading, color change	Acceptable
13	Excessive adjustment force	Acceptable
14	Loosening of fastener	Acceptable
15	Torn fabric	Acceptable
16	Wobble	Acceptable
17	Deflection - Minor	Acceptable
18	Slow Deflection - Major	Acceptable
19	Abrupt Deflection - Major	Not Acceptable

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