



Stage Machinery Working Group

E1.72 - 202x, Powered Floor Machinery
Public Review 1 approved Comment Resolutions

Reference document: E1.72 - 202x, *Powered Floor Machinery* (DCN SM/2022-10001r1)

ANSI Public review period: 07 May through 26 July 2021

Question: In your opinion, do you think the requirements of E1.72 - 202x, *Powered Floor Machinery* (DCN SM/2022-10001r1) are reasonable, and adequately address the intended subject matter?

Please answer the question using one of the options below. Select “Yes”, “Yes, but...” (provide comments to support your opinion), or “No, with reasons” (the document’s requirements are unacceptable or unreasonable).

Responses:

Bruce Darden, InterAmerica Stage, Inc	No, with reasons
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Individual Comments:

No	Reference section	Comment	Proposed resolution
1	1.2 Purpose.	I object to this clause. A better written statement is lifted from E1.4-1 Counterweights (with some modification): <i>Intent</i> <i>The purpose of this standard is to establish minimum performance requirements for manual counterweight rigging systems Powered Floor Machinery. This standard establishes a basis for reasonable standards of care, for safety and for general welfare with the intent to minimize hazards associated with Manual Counterweight Rigging Systems Powered Floor Machinery.</i>	Accepted in principle. An edited version of the proposed text will be used. The word performance will not be used, as the standard does not establish those minimums.
2	Add new clause	<i>1.4 Types and Examples</i> <i>This standard covers all types of machinery in the entertainment environment where the floor moves, predominately in a horizontal direction. This includes turntables, wagons, and treadmills. Additional types of machinery are more typically show action, including jack-knife and trap covers. More</i>	Accepted in principle. Examples will be added to 1.1
3	2 Referenced publications	It is suggested that the following documents be added to the reference list. If these documents are not referred to within the standard, the question should be asked why not, since these references are used for E1.6-1, E1.42, E1.71: <i>ANSI/AWS D1.1/D1.1M:2020 American Welding Society - Structural Welding Code - Steel</i>	Partially accepted. ANSI/NEMA Z535.1-6:2017 <i>Safety color</i> code Added. NFPA standards already listed. American Welding Society is referenced in 5.4.1.2. UL 508A and Merriam-Webster’s Collegiate Dictionary rejected, and are not referenced in E1.61. E1.71 has yet to be

		ANSI/NFPA 70:2020 <i>National Fire Protection Association - National Electric Code</i> ANSI/NFPA 79:2021 <i>National Fire Protection Agency - Electrical Standard for Industrial Machinery</i> ANSI/NEMA Z535.1-6:2017 <i>Safety color code – Complete set</i> <i>Merriam-Webster’s Collegiate Dictionary, Eleventh Edition</i> UL 508A – 2018 <i>Underwriters Laboratories - Industrial Control Panels</i>	published.
4	3 Definitions	<i>3.14 Load Securing Device. Mechanical device that can bring a load to a stop and prevents unintentional movement. EXAMPLE A brake, self-braking worm gear, shut-off valve.</i> Corrected and enhanced: <i>“Examples: A motor brake, an output shaft brake, a self-locking worm gear, a shut off valve.”</i>	Examples will be deleted from the definition.
5	4.0	The document launches into the process of RA/RR without stating the requirement to use it. The following modified clauses are from draft E1.42 Entertainment Lifts, and should be inserted here: <i>“Risk assessment and risk reduction (RA/RR) for a Power Floor System shall be performed throughout design, fabrication, installation, and testing. Risk assessment and risk reduction shall be performed whenever the systems are modified. (See annex note.)</i> <i>It is preferable that risk assessment and risk reduction be performed by a group of two or more competent persons. When the risk assessment and risk reduction is completed by a single individual, that individual shall be a qualified person.”</i>	Accepted in principle. First Paragraph rejected due to similarities to existing language. Second paragraph will be added to the standard.
6	4.1	This is awkward, in so much it is a recitation of the same documents in 2.2 Referenced publications. I suggest either: <i>“Refer to salient information or chapters in these references”</i> or, delete them and use the following: <i>“Additional reading on the topic is available in the reference documents 2.2”</i>	Accepted in principle. Paragraph deleted.
7	5.2.4.1	This requirement needs to be reconciled with building code for permanently installed equipment and requirements for portable equipment. The International Building Code (IBC) requires a floor loading of 150 pounds per square foot minimum ESTA/ANSI E1.62 - Minimum specifications for mass-produced portable platforms, ramps, stairs, and choral risers for live performance events: <i>“Walking surfaces of Portable Units shall be designed to support an evenly distributed vertical load of at least 100 pounds/square foot (4.8 kN/m2).”</i>	Rejected. A floor surface that may be stepped on is not intended to be a stage floor or performance surface.
8	5.2.4.2	Confusing language. The word can is not properly expressing the hazard. For example, if a platform is not scissor lift rated, it would always have to barriers or fencing per this requirement. [sic]	Accepted in principle. Paragraph updated.

9	5.2.4.3	The use of the word may in the sentence also means that it is allowed. Needs to be re-written.	Assuming the section referenced was 5.4.2.3... Accepted. Paragraph updated.
10	5.4.4.3.1	Unclear (to me) what this means.	Accepted in principle. Paragraph updated. New section number is 5.4.4.3
11	5.4.4.3.1	Discourage using the clause numbering system more than 5 numbers deep. These can likely stand as un-numbered clauses under the previous heading: 5.4.4.3.3.1 5.4.4.3.3.2 5.4.4.3.4.1 5.4.4.3.4.2	Accepted. Sections renumbered. 5.4.4.3.3.1 is now 5.4.4.5 5.4.4.3.3.2 is now 5.4.4.6 5.4.4.3.4.1 is now 5.4.4.7 5.4.4.3.4.2 was redundant and has been absorbed into 6.5.5.5
12	5.5.2.1	This requirement is onerous for low-speed shafts.	Rejected. The task group has decided the requirement is reasonable.
13	5.5.2.2	This is a very particular hazard about something. The context of the application should be identified. Most likely an Annex note is also required. The phrase “the bearings shall be securely capped” does not make sense to me in terms of typical machinery assembly. Explain.	Accepted in principle. Paragraph updated. Annex note not needed due to explanation of hazard.
14	5.5.2.3	This is a run on sentence containing three independent clauses. Rephrased: <i>“If accessible by personnel, the driving point of all friction drives shall be guarded. Arm or spoke friction drives and web friction drives with holes in the web shall be entirely enclosed. Projecting belts on friction drives exposed to contact shall be guarded.”</i>	Accepted.
15	5.5.3	The word <u>could</u> should be changed to <u>must</u> . If there is no compelling reason for walking on something, then making it to support this load is onerous.	Rejected. The requirement is accounting for foreseeable misuse.
16	5.5.8 Guard Materials	The sentence can be easily mis-interpreted. Re-written and expanded: <i>“5.5.8 Guards shall be constructed of the following materials: Expanded metal, perforated metal, sheet metal, wire mesh, clear or tinted plastic, wood or similar durable materials.”</i>	Accepted.
17	5.6 Controls and Electrical Components	Renumber as stand alone, preferably Section 7. There has been a general format that controls be in its own stand-alone section. This is a standing request from the E1.64 task group for Controls. If the world was perfect, it would also be numbered Section 7. Why: This is so that edits to non-controls requirements in the document do not change the numbering system within controls section. This part of a multi-year harmonization process.	Accepted in principle. Controls will become chapter 6.
18	5.6.5.5.5	This reads like a waiver of a requirement with an annex note embedded. I can't find the clause it is waiving, nor the clause that indicates that other sensors should be attached to the moving platform. The addition of requirements and/or annex notes demonstrating the use of sensors mounted to the moving platform and the fixed	Accepted in principle. Paragraph explaining placement of position sensors on friction drive machines was removed from the power transmission section and included in the noted

		structure would be meaningful.	paragraph. New section number is 6.5.5.5
19	6.2.4 Malfunction	I have re-read the whole of Chapter 7, and do not find any reference to the above requirement. In other words, what is to be done?	Accepted in principle. Sentence updated. New section number is 7.4.4. References to system log clarified in other sections. System log section is 8.3.1.
20	Add new clause	<i>“6.2.5 When a scissors lift, personnel lift, scaffolding or ladder is used on or straddles the platform, the axis must be locked out against movement. A LOTO station is one way of accomplishing this requirement.”</i>	Accepted in principle. Paragraph added to include lockout of hazardous energy sources. New section number is 7.2.5.
21	7.1.2	This is not applicable. The machinery is not covered in the scope, nor is it included as one of the referenced documents to use while inspecting the machinery.	Accepted. Paragraph deleted.
22	Add new clause	<i>“7.1.7 The presence of all mandatory signage and labeling as required in (new) Section 9 shall be verified.”</i>	Accepted. Paragraph added.
23	Add new sections	Following the format of previous ESTA standards for machinery, the following sections appear to be missing: <i>Section 8 Manuals</i> and <i>Section 9 Labeling, marking and signage</i> (Sample pasted from ANSI E1.6-1 – 2019): <i>“8 Manuals (See Annex note.) 8.1 General 8.1.1 The supplier shall furnish a system manual or manuals, covering operations and maintenance of the system. (See Annex note.) 8.1.2 The system manual may be composed of multiple volumes and be either in hard copy or electronic format. 8.1.3 Record drawings of the hoist system shall be included. 8.1.4 The system manual shall state the limits of use and include requirements that operation of the hoist system shall be restricted to competent persons who are trained in the system operation and who are familiar with the manual. 8.2 Operation The system shall be clearly described in this section and shall include, at minimum: 8.2.1 A description of each safety function. 8.2.2 Descriptions of fault indications, including system responses and corrective procedures. 8.2.3 Comprehensive operator instructions. 8.3 Maintenance The maintenance section shall include recommendations for inspection, testing, and maintenance of the system. A log for documenting inspections and work performed on the system shall be included.</i>	Accepted in principle. Chapters added.

		<p><i>9 Labeling, marking and signage</i></p> <p><i>9.1 Labeling and signage shall comply with the requirements of the following standards, where such requirements can be implemented with rigging components, assemblies, and systems:</i></p> <p><i>9.1.1 ANSI Z535.1-2017, Safety Color Code</i></p> <p><i>9.1.2 ANSI Z535.2-2011 (R2017), Environmental and Facility Safety Sign</i></p> <p><i>9.1.3 ANSI Z535.3-2011 (R2017), Criteria for Safety Symbols</i></p> <p><i>9.1.4 ANSI Z535.4-2011 (R2017), Product Safety Signs and Labels</i></p> <p><i>9.2 The hoist machine shall have a label affixed indicating the manufacturer's name, unique identification, date of manufacture, and rated capacity of the hoist.</i></p> <p><i>9.3 Hoist Moving Floor Systems shall be marked with their working load limit (WLL). (See Annex note.)</i></p> <p><i>9.4 Signage or label(s) shall indicate both WLL point load and WLL uniformly distributed load (UDL) of the system.</i></p> <p><i>9.5 The operating media size and type shall be clearly indicated either by a label affixed to the hoist or a sign or label directing the maintenance personnel to the system manual.</i></p> <p><i>9.6 The manufacturer's name or grade reference mark shall be permanently displayed on hardware. Or, where permanent labeling or marking of individual components is impractical; the load, manufacturer, or grade reference information shall be indicated in the system manual.</i></p> <p><i>9.7 Electrical equipment and control systems shall be marked and labeled in compliance with the requirements of NFPA 79. See 7.1.2.2 for operator controls exemptions.</i></p> <p><i>9.9 Signage shall be placed in clearly visible, accessible location(s).</i></p> <p><i>9.10 Signage shall state the operational limits.</i></p> <p><i>9.11 Signage shall state that operation of the hoist system shall be restricted to authorized persons.</i></p> <p><i>9.12 Signage shall list the contact information for the supplier of the system."</i></p>	
24	Add new section	<p>Following the format of previous ESTA standards for machinery, the following sections appear to be missing: <i>Installation and Commissioning</i></p> <p>It is acknowledged that there is some overlap between commissioning and the included section inspection.</p> <p>It is acknowledged that the requirements vary between permanently installed equipment and show or touring equipment. Different criteria might be developed for each type.</p>	Accepted in principle. Installation added to chapter 8. The inspection and testing criteria covered by 8.1.3 are considered by the Task Group to be commissioning activities.
25	Add an annex A	The addition of an annex A with written comments about some of the requirements would be helpful.	Rejected. The task group has decided that clarifications within the body of the document preclude the need for an annex with written

			comments.
26	Add an annex B	The addition of an annex B with diagrams of some of the machines would be extremely helpful.	Rejected. The commentor has not identified specific machines or components for which diagrams would help clarify the text in the body of the document. This standard covers a broad spectrum of machinery, and an incomplete list may do more harm than good.