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Include Ballot Rationale Here (Required for all Ballots):

Draft Number (if applicable):

**Standard Practice for
Inspections and Maintenance of Permanently Installed INDOOR
Gymnasium Equipment¹**

This standard is issued under the fixed designation X XXXX; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This standard provides guidance for inspection, maintenance and service for permanently installed indoor gymnasium equipment including ceiling suspended and wall mounted basketball backstops, ceiling suspended volleyball systems, gymnasium divider curtains, wrestling mat lifting, and storage systems and wall attached player protection padding.

1.2 Unlike a specification that dictates specific criteria and tolerances, this Guide offers a broad perspective of considerations for inspection, maintenance and service for permanently installed indoor gymnasium equipment to aid in improved safety and performance.

1.3 This guide is intended to reduce the potential hazards resulting from a mechanical failure of permanently installed indoor gymnasium equipment including ceiling suspended and wall mounted basketball backstops, ceiling suspended volleyball systems, gymnasium divider curtains, wrestling mat lifting, and storage systems and wall attached player protection padding.

¹ This practice is under the jurisdiction of ASTM Committee E55 on Manufacture of Pharmaceutical Products and is the direct responsibility of Subcommittee E55.04 on General Biopharmaceutical Standards.



1.4 Permanently installed gymnasium equipment discussed in this standard are mechanical devices and require periodic inspections maintenance and service to ensure continued safe operation. Failure to provide such attention may result in failures that may result in property damage or personal harm to participants.

1.5 *Units* - The values stated in SI units are to be regarded as the standard. No other units of measurement are included in this standard.

1.6 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.7 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of international Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*

3. Terminology

3.1 *Definitions:*

4. Summary of Practice



4.1 Gymnasium Equipment of the listed types should be inspected at least once per year and more often in high use facilities. Inspection should include the following items and any concerns with those items should be addressed in a timely manner.

4.1.1 CEILING SUSPENDED BASKETBALL BACKSTOPS

4.1.1.1 OVERHEAD SUPERSTRUCTURE

4.1.1.1.1 Confirm that all attachment hardware, mounting brackets and beam clamps are present, secure, free of visual defect and have not shifted in any manner. Extra attention should be paid to any cast fitting to ensure they are structurally sound.

4.1.1.1.2 Confirm that all structure span pipes and are free of defects.

4.1.1.1.3 Confirm all horizontal superstructure span-pipe that are connected to vertical cradle drop pipes are secured via through bolt, safety bolt or pin.

4.1.1.2 MAST ASSEMBLY

4.1.1.2.1 Confirm that all attachment hardware, mounting brackets and beam clamps are present, secure, free of visual defect and have not shifted in any manner.

4.1.1.2.2 Confirm that all stem hangers are secure, and all components of stem hangers are in good working order allowing the mast to fold without unnecessary friction.

4.1.1.3 JACKKNIFE BRACE

4.1.1.3.1 Confirm that all attachment hardware, mounting brackets, stop collars (if applicable) locking hammers (if applicable) and beam clamps are present, secure, free of visual defect and have not shifted in any manner.

4.1.1.3.2 Confirm that jackknife hinge is pinned / secured to upper and lower jackknife pipe.

4.1.1.3.3 Confirm that jackknife hinge is folding properly without unnecessary friction.



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71 4.1.1.3.4 Confirm that strap or cable if applicable on jackknife hinge is secured and free of
72 defect.

73 4.1.1.3.5 Confirm cable break bar on Jack knife hinge is free of defect if applicable.

74 4.1.1.3.6 Confirm both upper and lower jackknife pipes are free of defect.

75 4.1.1.3.7 Confirm telescopic jackknives are lubricated if applicable.

76 4.1.1.3.8 Confirm all Jackknives are operating per manufacturer's standard.

77 4.1.1.4 BACKBOARD

78 4.1.1.4.1 Confirm all hardware is secure / tightened to manufactures specification.

79 4.1.1.4.2 Confirm that backboard is free of visual defects. (Cracking, splitting, warping)

80 4.1.1.4.3 Confirm that backboard is plumb, level, square and set at proper height.

81 4.1.1.4.4 Confirm that all attachment hardware and mounting brackets are present, secure,
82 free of visual defects and have not shifted in any manner.

83 4.1.1.4.5 Confirm that mast assembly is equipped with a lock / positive stop mechanism to
84 prevent backboard attachment hardware from sliding down the mast tube.

85 4.1.1.4.6 Confirm Edge Padding is present, secure and free of defects. (All rectangular
86 Competition Backboards / refer back to ASTM Standard)

87 4.1.1.4.7 Confirm bottom of backboard and 15" on both sides of backboard are covered by
88 edge padding.

89 4.1.1.5 BASKETBALL GOAL

90 4.1.1.5.1 Confirm basketball goal breakaway feature operates as intended by manufacture if
91 applicable.



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92 4.1.1.5.2 Confirm all basketball goal no-ties, eyelets, rings and attachment retainer rings used
93 to attach net are present and free of defect.

94 4.1.1.5.3 Confirm net is present and free of defect.

95 4.1.1.5.4 Confirm basketball goal height from playing surface to top of basketball goal ring is
96 set at the proper height.

97 4.1.1.5.5 Confirm basketball goal is plumb and level.

98 4.1.1.5.6 Confirm basketball goal cover plate is present and secured if applicable.

99 4.1.1.6 HEIGHT ADJUSTER (IF PRESENT)

100 4.1.1.6.1 Confirm that all attachment hardware and mounting brackets are present, secure,
101 free of visual defects and have not shifted in any manner.

102 4.1.1.6.2 Confirm that manual height adjuster threaded rods, bearings and associated
103 components are operating correctly and have no signs of significant wear.

104 4.1.1.6.3 Confirm manual height adjuster threaded rod and height adjuster slide tubes are
105 lubricated.

106 4.1.1.6.4 Confirm all tools (Manual and Powered) used to operate the height adjusters are
107 present and free of visual defects.

108 4.1.1.6.5 Confirm all electric actuator height adjusters are operating correctly and free of
109 defects.

110 4.1.1.6.6 Confirm all limit switches on electric actuators are working properly.

111 4.1.1.6.7 Confirm Height Adjuster and all mounting hardware are securely attached to
112 backboard and mast, per manufacturer's standard.



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4.1.1.6.8 Confirm Height Adjuster vibration nylon bolts (if applicable) for slide tubes are set to the proper tension. (Tighten then reverse $\frac{1}{4}$ turn)

4.1.1.6.9 Confirm any power wires, if applicable, are free from defects and are positioned to avoid damage while in operation.

4.1.1.6.10 Confirm that mast assembly is equipped with a lock / positive stop mechanism to prevent height adjuster attachment hardware from sliding down the mast tube.

4.1.1.7 SAFETY STRAP

4.1.1.7.1 Confirm that safety strap is present, and all attachment hardware / mounting brackets are present, secure, free of visual defect and have not shifted in any manner. Per ASTM Standard #####, every upward folding basketball backstop should have a safety strap.

4.1.1.7.2 Confirm that the safety strap operates as intended and that the casing and strap of safety strap is free of defect.

4.1.1.7.3 Confirm the age of the safety strap via serial number if applicable and recommend replacement after 15 years from date of manufacture.

4.1.1.7.4 If applicable, confirm that warning ribbons are not deployed or present indicating an activation of the safety strap.

4.1.1.7.5 Confirm by pulling downward on the safety strap that the strap engages (PULL TEST)

4.1.1.8 BACKSTOP HOIST

4.1.1.8.1 Confirm that winch and all attachment hardware and mounting brackets are present, secure, free of visual defect and have not shifted in any manner.



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4.1.1.8.2 Confirm that limit switches are present, secure, free of visual defect and set properly.

4.1.1.8.3 Confirm that winch is operating normally and not making any unusual noises.

4.1.1.8.4 Confirm winch is not leaking any fluid.

4.1.1.8.5 Confirm cable is wrapping on cable drum correctly. The hoist should be of design that does not cause damage or premature wear to the hoisting cable.

4.1.1.8.6 Confirm all electrical connections are secure and that all power wire is routed in a manner that eliminates potential damage.

4.1.1.8.7 Confirm that the winch shows no sign of premature wear in the form of metal or plastic shavings.

4.1.1.9 HOISTING CABLE

4.1.1.9.1 Confirm proper sized cable is being used on the associated winch per manufactures specifications. Typical cable is ¼" 7 x 19 galvanized aircraft cable with a breaking strength of 7000 lbs.

4.1.1.9.2 Confirm cable is free of any visual defects such as kinks, flattening, frays or loose strands.

4.1.1.9.3 Confirm cable is passing through all pulleys correctly and not coming in contact with any obstructions in the cable pathway.

4.1.1.9.4 Confirm cable is properly placed to release breaking bar on jack knife hinge if applicable.

4.1.1.9.5 Confirm cable is securely attached to winch and final attachments.

4.1.1.9.6 Confirm all cable hardware is present, secure and free of visual defects.



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4.1.1.9.7 Confirm all cables are set to proper tautness. Winch cable should be set at proper tautness to eliminate excess slack in the cable that can cause potential issues with the cable shifting in the pulley causing the cable to become stuck or damaged as well as helping eliminate the cable from getting caught on other hardware and brackets.

4.1.1.10 PULLEYS

4.1.1.10.1 Confirm that all attachment hardware, mounting brackets and beam clamps are present, secure, free of visual defects and have not shifted in any manner.

4.1.1.10.2 Confirm Pulley operates freely without unnecessary friction and is aligned properly so that while put under pressure by the hoisting cable it does not cause wear on the pulley sheave or housing.

4.1.1.10.3 Confirm the proper size pulleys are in place for associated cable and loads per manufacturers specifications.

4.1.2 WALL MOUNTED BACKSTOPS

4.1.2.1 WALL MOUNT STRUCTURE

4.1.2.1.1 Confirm that all attachment hardware and mounting brackets are present, secure, free of visual defects and have not shifted in any manner.

4.1.2.1.2 Confirm that all wood mounting pads and anchors are present, secure, free of visual defects and have not shifted in any manner.

4.1.2.1.3 Confirm that all wall mount tubes, and steel structures are present, secure, free of visual defects and have not shifted in any manner.

4.1.2.1.4 Confirm that any folding structure, if applicable, is operating correctly per manufacturers standards.



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4.1.2.1.5 Confirm that all chain supports, if applicable, are present, secure, free of visual defects and have not shifted in any manner and are set to the proper tension in order to properly support backstop structure and backboard in playing position.

4.1.2.1.6 Confirm, if applicable, (Side Fold Units) that the telescopic diagonal braces are present, secure, free of visual defects and operating per manufacturers standards. Confirm that the hardware utilized to lock the telescopic brace in the playing position is present, secure and free of visual defects.

4.1.2.2 BACKBOARD

4.1.2.2.1 Confirm all hardware is secure / tightened to manufactures specification.

4.1.2.2.2 Confirm that backboard is free of visual defects. (Cracking, splitting, warping)

4.1.2.2.3 Confirm that backboard is plumb, level, square and set at proper height.

4.1.2.2.4 Confirm that all attachment hardware and mounting brackets are present, secure, free of visual defects and have not shifted in any manner.

4.1.2.2.5 Confirm that mast assembly is equipped with a lock / positive stop mechanism to prevent backboard attachment hardware from sliding down the mast tube.

4.1.2.2.6 Confirm Edge Padding is present, secure and free of defects. (All rectangular Competition Backboards / refer back to ASTM Standard)

4.1.2.2.7 Confirm bottom of backboard and 15” on both sides of backboard are covered by edge padding.

4.1.2.3 BASKETBALL GOAL

4.1.2.3.1 Confirm basketball goal breakaway feature operates as intended by manufacture if applicable.



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200 4.1.2.3.2 Confirm all basketball goal no-ties, eyelets, rings and attachment retainer rings used
201 to attach net are present and free of defect.

202 4.1.2.3.3 Confirm net is present and free of defect.

203 4.1.2.3.4 Confirm basketball goal height from playing surface to top of basketball goal ring is
204 set at the proper height.

205 4.1.2.3.5 Confirm basketball goal is plumb and level.

206 4.1.2.3.6 Confirm basketball goal cover plate is present and secured if applicable.

207 4.1.2.4 HEIGHT ADJUSTER (IF PRESENT)

208 4.1.2.4.1 Confirm that all attachment hardware and mounting brackets are present, secure,
209 free of visual defects and have not shifted in any manner.

210 4.1.2.4.2 Confirm that manual height adjuster threaded rods, bearings and associated
211 components are operating correctly and have no signs of significant wear.

212 4.1.2.4.3 Confirm manual height adjuster threaded rod and height adjuster slide tubes are
213 lubricated.

214 4.1.2.4.4 Confirm all tools (Manual and Powered) used to operate the height adjusters are
215 present and free of visual defects.

216 4.1.2.4.5 Confirm all electric actuator height adjusters are operating correctly and free of
217 defects.

218 4.1.2.4.6 Confirm all limit switches on electric actuators are working properly.

219 4.1.2.4.7 Confirm Height Adjuster and all mounting hardware are securely attached to
220 backboard and mast, per manufacturer's standard.



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4.1.2.4.8 Confirm Height Adjuster vibration nylon bolts (if applicable) for slide tubes are set to the proper tension. (Tighten then reverse $\frac{1}{4}$ turn)

4.1.2.4.9 Confirm any power wires, if applicable, are free from defects and are positioned to avoid damage while in operation.

4.1.2.4.10 Confirm that mast assembly is equipped with a lock / positive stop mechanism to prevent height adjuster attachment hardware from sliding down the mast tube.

4.1.2.5 SAFETY STRAP

4.1.2.5.1 Confirm that safety strap is present, and all attachment hardware / mounting brackets are present, secure, free of visual defect and have not shifted in any manner. Per ASTM Standard #####, every upward folding basketball backstop should have a safety strap.

4.1.2.5.2 Confirm that the safety strap operates as intended and that the casing and strap of safety strap is free of defect.

4.1.2.5.3 Confirm the age of the safety strap via serial number if applicable and recommend replacement after 15 years from date of manufacture.

4.1.2.5.4 If applicable, confirm that warning ribbons are not deployed or present indicating an activation of the safety strap.

4.1.2.5.5 Confirm by pulling downward on the safety strap that the strap engages (PULL TEST)

4.1.2.6 BACKSTOP HOIST

4.1.2.6.1 Confirm that winch and all attachment hardware and mounting brackets are present, secure, free of visual defect and have not shifted in any manner.



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4.1.2.6.2 Confirm that limit switches are present, secure, free of visual defect and set properly.

4.1.2.6.3 Confirm that winch is operating normally and not making any unusual noises.

4.1.2.6.4 Confirm winch is not leaking any fluid.

4.1.2.6.5 Confirm cable is wrapping on cable drum correctly. The hoist should be of design that does not cause damage or premature wear to the hoisting cable.

4.1.2.6.6 Confirm all electrical connections are secure and that all power wire is routed in a manner that eliminates potential damage.

4.1.2.6.7 Confirm that the winch shows no sign of premature wear in the form of metal or plastic shavings.

4.1.2.7 HOISTING CABLE

4.1.2.7.1 Confirm proper sized cable is being used on the associated winch per manufactures specifications. Typical cable is ¼” 7 x 19 galvanized aircraft cable with a breaking strength of 7000 lbs.

4.1.2.7.2 Confirm cable is free of any visual defects such as kinks, flattening, frays or loose strands.

4.1.2.7.3 Confirm cable is passing through all pulleys correctly and not coming in contact with any obstructions in the cable pathway.

4.1.2.7.4 Confirm cable is properly placed to release breaking bar on jack knife hinge if applicable.

4.1.2.7.5 Confirm cable is securely attached to winch and final attachments.

4.1.2.7.6 Confirm all cable hardware is present, secure and free of visual defects.



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4.1.2.7.7 Confirm all cables are set to proper tautness. Winch cable should be set at proper tautness to eliminate excess slack in the cable that can cause potential issues with the cable shifting in the pulley causing the cable to become stuck or damaged as well as helping eliminate the cable from getting caught on other hardware and brackets.

4.1.2.8 PULLEYS

4.1.2.8.1 Confirm that all attachment hardware, mounting brackets and beam clamps are present, secure, free of visual defects and have not shifted in any manner.

4.1.2.8.2 Confirm Pulley operates freely without unnecessary friction and is aligned properly so that while put under pressure by the hoisting cable it does not cause wear on the pulley sheave or housing.

4.1.2.8.3 Confirm the proper size pulleys are in place for associated cable and loads per manufacturers specifications.

4.1.3 GYMNASIUM DIVIDER CURTAINS

5. Significance and Use