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US Department of Transportation  
Federal Railroad Administration

Sample Car Inspection Checklist For: S-2044 Appendix B-1  
Safety Appliances for Covered Hopper Cars and Other House Cars with Roof Hatches

OMB No. 2130-0565  
FRA F6180.161 B

Inspector(s):		Inspection Location:		Date:	Region:	
Builder:		Car Initial and Number:		Car Type:	No. of cars to be Built:	Builder Job No.
ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes			
Hand Brake	Each car shall have at least one AAR-approved vertical-wheel hand brake that complies with MSRP Section E, Standard S-475, and that operates in harmony with the power brake equipment on the car. Total braking force applied to the brake shoes by the hand brake shall comply with the requirements of MSRP Section E, Standard S-401, but in any event shall be not less than that developed by 50 psi brake cylinder pressure. The hand brake wheel and chain drum of vertical-wheel hand brakes shall be arranged so that both will revolve when applying and gradually releasing the hand brake. The hand brake shall be provided with means to prevent application of the brake by turning the brake wheel in a counterclockwise direction.	Appendix B1, 2.1.1				
	The hand brake wheel shall have a nominal diameter of 22 in. The brake wheel shall be of shallow configuration and shall be of steel or other material of equivalent strength.	Appendix B1, 2.1.2				
	The hub of the hand brake wheel shall be 2 5/8 in. deep with a square tapered fit to the shaft. The taper on the brake wheel hub and shaft shall be 1 in. in 12 in. on each side, or 2 in. in 12 in. total, with the small end of the shaft opening 7/8 in. square. The brake wheel shall be secured to the brake shaft with an American National Standard 7/8—9 heavy hex nut and 3/16 in. x 1 1/2 in. cotter, or their equivalent.	Appendix B1, 2.1.3				
Location	The hand brake shall be located so that it can be safely operated from the horizontal end platform while the car is in motion. The center of the hand brake shaft on cars equipped with one hand brake shall be located on the B end of the car to the left of, and not less than 17 in. nor more than 22 in. from, the centerline of the car and shall be not less than 28 in. nor more than 40 in. above the platform-support surface of the end-platform mounting brackets. The hand brakes on cars equipped with more than one hand brake shall be located as specified in paragraph 9.0 of the base standard.	Appendix B1, 2.2.1				
	Clearance around the rim of the hand brake wheel shall be not less than 4 in. Clearance between the grip portion of the release lever, if used, throughout its full range of travel and any part of the car shall be not less than 2 1/2 in.	Appendix B1, 2.2.2				
	The outside edge of the hand brake wheel shall not extend more than 8 in. beyond the striker or end of the center sill, whichever extends farther, and not more than 8 in. beyond the outboard edge of the end platform. The outside edge of the hand brake wheel shall be not less than 1 in. and not more than 18 in. outboard of the inside surface of the horizontal end-platform handhold.	Appendix B1, 2.2.3				



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Manner of Application	<p>If the hand brake application is such that the requirements of paragraph 2.2.2 can be met only with hand brakes having short hand brake release levers or only with long release levers, but not both, the car shall be marked adjacent to the hand brake in 1 1/2 in. high letters "SHORT (LONG) RELEASE LEVER BRAKE ONLY."</p>	Appendix B1, 2.2.4	
Sill Steps	<p>The hand brake housing shall be securely fastened. The hand brake application, including bolt hole pattern, shall conform to MSRP Section E, Standard S-475.</p> <p>The hand brake chain shall conform to the requirements of S-475, but in any event shall have minimum working load of 5,875 lb and minimum proof test of 11,750 lb.</p> <p>Hand brake rods shall be not less than 3/4 in. diameter.</p>	Appendix B1, 2.3.1 Appendix B1, 2.3.2 Appendix B1, 2.3.3	
Dimensions	<p>There shall be four sill steps.</p> <p>Sill steps shall conform to the requirements of Standard S-2042. Minimum usable length of tread shall be not less than 12 in.</p> <p>Sill steps shall be of steel not less than 1/2 in. thick and not less than 2 in. wide.</p> <p>Sill steps shall have sufficient treads such that the top tread is not more than 21 in. below the lowest adjacent side handhold. Sill step treads shall be spaced not more than 21 in. apart.</p> <p>The clear depth above the entire usable length of all sill step treads shall be not less than 8 in., and the clear width of the lowest sill step tread shall be not less than 6 in. for both loaded and empty conditions with the trucks rotated to simulate the maximum curvature specified for the uncoupled car.</p>	Appendix B1, 3.1 Appendix B1, 3.2.1 Appendix B1, 3.2.2 Appendix B1, 3.2.3 Appendix B1, 3.2.4	
Location	<p>One sill step shall be applied near each end of each side of the car. The sill steps shall be located in the longitudinal direction such that the inside face of the outboard vertical leg of the sill step is not more than 2 in. inboard of the outboard clearance point of any side handhold. The inside face of the inboard vertical leg of the sill step shall be not less than 10 in. from the outboard clearance point of any side handhold.</p> <p>In the transverse direction, the outside edge of any sill step tread shall be not more than 6 in. inboard or outboard of the inside surface of the lowest adjacent side handhold. In addition, the outside edge of any sill step tread shall be not more than 4 in. inboard of any car structure below the clear length of the lowest adjacent side handhold.</p> <p>The lowest tread shall be not more than 24 in., preferably not more than 22 in., above the top of rail.</p>	Appendix B1, 3.3.1 Appendix B1, 3.3.2 Appendix B1, 3.3.3	



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Manner of Application	Sill steps shall be securely fastened to the car.	Appendix B1, 3.4	
Side Handholds	There shall be 16 side handholds, 4 near each end on each side of the car.	Appendix B1, 4.1	
Dimensions	Handholds shall be of steel not less than 3/4 in. diameter and shall conform to the requirements of Standard S-224. Minimum clear length shall be 16 in. Minimum clearance shall be 2 in., preferably 2 1/2 in. The lowest side handhold at each corner shall have a foot guard or upward projection not less than 2 in. in height at its inboard end.	Appendix B1, 4.2	
Location	The side handholds shall be oriented horizontally and spaced not more than 19 in. apart, with the lowest handhold located not more than 21 in. above the top tread of the sill step. Spacing between side handholds shall be uniform within a maximum variation of 2 in.	Appendix B1, 4.3.1	
	There shall be a side handhold aligned with each end handhold, up to and including the end handhold at each corner aligned with the end-platform handhold. Individual side handholds shall coincide in height with corresponding end handholds within a maximum variation of 2 in.	Appendix B1, 4.3.2	
	The clearance points of the outboard end of the side handholds shall be not more than 10 in. inboard of, and no farther outboard than, the inside surface of the end handholds.	Appendix B1, 4.3.3	
Manner of Application	Side handholds shall be securely fastened to the car.	Appendix B1, 4.4	
End Handholds	There shall be 16 end handholds, 4 near each side on each end of the car.	Appendix B1, 5.1	
Dimensions	Handholds shall be of steel not less than 3/4 in. diameter and shall conform to the requirements of Standard S-224. Minimum clear length shall be 16 in. Minimum clearance shall be 2 in., preferably 2 1/2 in. The lowest end handhold at each corner shall have a foot guard or upward projection not less than 2 in. in height at its inboard end.	Appendix B1, 5.2	
Location	The end handholds shall be oriented horizontally and spaced not more than 19 in. apart, with the lowest handhold located not more than 21 in. above the top tread of the sill step nor more than 45 in. above the top of rail. Spacing between end handholds shall be uniform within a maximum variation of 2 in.	Appendix B1, 5.3.1	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
Manner of Application	There shall be an end handhold aligned with each side handhold. Individual end handholds shall coincide in height with corresponding side handholds within a maximum variation of 2 in.	Appendix B1, 5.3.2	
Ladders	The clearance points of the outboard end of the end handholds shall be not more than 10 in. from the inside surface of the side handholds.	Appendix B1, 5.3.3	
Dimensions	End handholds shall be securely fastened to the car.	Appendix B1, 5.4	
Location	There shall be two ladders, one on each end of the car.	Appendix B1, 6.1	
Manner of Application	Ladder treads shall be of steel not less than 3/4 in. diameter and shall conform to the requirements of Standard S-224. Minimum clear length shall be 16 in. Minimum clearance shall be 2 in., preferably 2 1/2 in.	Appendix B1, 6.2	
Location	The ladders shall be located on the ends of the car above the end handholds. One shall be applied on the B end at the left side of the car and one on the A end at the right side of the car.	Appendix B1, 6.3.1	
Manner of Application	The ladder treads shall be oriented horizontally and spaced not more than 19 in. apart. Spacing between ladder treads and end handholds shall be uniform within a maximum variation of 2 in.	Appendix B1, 6.3.2	
Location	The top ladder tread shall be not less than 12 in. nor more than 18 in. below the mounting surface of the outboard end of the adjacent roof handhold.	Appendix B1, 6.3.3	
Manner of Application	The clearance points of the outboard end of the ladder treads shall be not more than 10 in. from the inside surface of the side handholds. The clearance points of the inboard ends of the ladder treads and the end handholds beneath them shall be in vertical alignment in the transverse direction.	Appendix B1, 6.3.4	
Location	On each end of the car, each end handhold and ladder tread shall be not more than 3 in. inboard of a plane extending from the lowest handhold to the highest ladder tread. Each handhold or ladder tread shall be not more than 3 1/2 in. inboard or outboard of the handholds or ladder treads immediately above and below it. No ladder tread or handhold shall be more than 3 in. outboard of the lowest handhold.	Appendix B1, 6.3.5	
Manner of Application	Ladders shall be securely fastened.	Appendix B1, 6.4	
End Platforms	There shall be two end platforms.	Appendix B1, 7.0	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
Dimensions	<p>End platforms shall conform to the requirements of Standard S-226. The platform material shall have uniform antiskid surfaces and shall be of construction to provide at least 50% clear opening in a representative area to permit elimination of accumulated snow and ice. The thickness from the mounting surface to the top of tread shall be not less than 3/8 in. and not more than 2 in. End-platform width shall be not less than 8 in. The preferred length for end platforms is 60 in. Platforms shall not be shorter than 60 in. but may be longer if a longer length is necessary to comply with the requirements of paragraph 7.3.1.</p>	Appendix B1, 7.2	
Location	<p>One end platform shall be applied on each end of the car between end handholds. The center of the outer mounting holes shall be not more than 7 3/4 in. from the clearance points of the nearest end handholds. The end-platform shall be centered between the end handholds and, where practicable, at the center of the car end.</p> <p>Where conventional draft gears or cushioning devices having less than 6 in. longitudinal coupler travel in buff are used, the outside edge of the end platforms shall extend no farther from the end of the car than the striker or end of the center sill. Where draft gears or cushioning devices having 6 in. or greater longitudinal coupler travel in buff are used, the outside edge of the end platforms shall extend not more than 6 in. beyond the striker or end of the center sill with the cushioning device (if used) at full buff.</p> <p>The platform-support surface of the mounting brackets shall be not more than 3 in. above nor more than 4 3/8 in. below the top surface of the lowest end handhold.</p> <p>Minimum vertical clearance above the end platform, measured from the end-platform mounting brackets, shall be not less than 7 in., except for the hand brake rod, hand brake chain, bell crank, and sheave wheel. No part of the car end or fixture on the car end above the end platform and less than 84 in. above the end-platform mounting brackets, other than the hand brake, hand brake rod, hand brake chain, bell crank, sheave wheel, horizontal end-platform handhold, and end-platform handhold support, shall extend closer to the outside edge of the end platforms than 8 in. When car construction does not permit 8 in. clearance to be provided, not less than 5 in. clearance shall be provided.</p>	<p>Appendix B1, 7.3.1</p> <p>Appendix B1, 7.3.2</p> <p>Appendix B1, 7.3.3</p> <p>Appendix B1, 7.3.4</p>	
Manner of Application	<p>Each end platform shall be supported by four mounting brackets. The mounting brackets shall be of steel not less than 3/8 in. thick nor less than 2 in. wide and shall conform to Standard S-226. The mounting brackets shall be securely fastened to the car body. The end platforms shall be securely fastened with two fasteners at each mounting bracket.</p>	Appendix B1, 7.4	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
Horizontal End Platform Handholds Dimensions	<p>There shall be two horizontal end-platform handholds.</p> <p>Handholds shall be of steel not less than 3/4 in. diameter and shall conform to the requirements of Standard S-224. Handholds with unsupported length greater than 36 in. shall be not less than 1 in. diameter. The unsupported length of 1 in. diameter handholds shall not be greater than 72 in. It is preferred that the clear length of the end-platform handholds be not less than 60 in. Minimum clearance shall be 2 in., preferably 2 1/2 in.</p>	Appendix B1, 8.1	
Location	<p>One horizontal end-platform handhold shall be applied on each end of the car above the end platform and between end handholds. The transverse distance between the clearance points at the ends of the end-platform handholds and the clearance points at the inboard ends of the corresponding end handholds shall not exceed 6 in.</p> <p>Horizontal end-platform handholds shall preferably coincide in height with the top end handholds, but shall be within a maximum variation of 2 in. Height from the top of the end-platform handhold to the platform-support surface of the end-platform mounting brackets shall be not less than 50 in. nor more than 60 in.</p> <p>Horizontal end-platform handholds shall be located no farther than 6 in. in the longitudinal direction from the corresponding end handholds, measuring from inside surface to inside surface. This requirement applies to the entire length of end-platform handholds and end handholds.</p>	Appendix B1, 8.3.1  Appendix B1, 8.3.2  Appendix B1, 8.3.3	
Manner of Application	Horizontal end-platform handholds shall be securely fastened.	Appendix B1, 8.4	
Clearance at end of car	No part of the car above the end sill more than 30 in. from the longitudinal centerline of the car, except the hand brake wheel, hand brake shaft, end platform, or horizontal end handholds, shall extend beyond the striker or end of the center sill with the draft gear or cushioning device (if used) at full buff. No other part of the car end or fixtures on the end above the end sill and less than 84 in. above the end-platform mounting brackets, other than the exceptions herein noted, shall extend beyond the outer face of striker or end of the center sill.	Appendix B1, 9.0	
Running Boards	<p>Cars with roof hatches not located on the longitudinal centerline of the car shall have one longitudinal running board located on the centerline of the car.</p> <p>Cars with roof hatches located on the longitudinal centerline of the car shall have two longitudinal running boards, one on each side of the roof hatches.</p>	Appendix B1, 10.1.1  Appendix B1, 10.1.2	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
Dimensions	<p>All cars shall have two longitudinal running board extensions extending outboard of the longitudinal or transverse running boards, one at each end of the car. Longitudinal running boards that comply with the requirements for running board extensions shall be considered running board extensions.</p> <p>All cars shall have two transverse running boards, one at each end.</p> <p>Running boards shall conform to the requirements of Standard S-226. The running board material shall have uniform antiskid surfaces and shall be of construction to provide at least 50% clear opening in a representative area to permit elimination of accumulated snow and ice.</p>	<p>Appendix B1, 10.1.3</p> <p>Appendix B1, 10.1.4</p> <p>Appendix B1, 10.2.1</p>	
Location	<p>Longitudinal running boards and running board extensions shall be not less than 18 in. wide, preferably 20 in. wide.</p> <p>Transverse running boards shall be not less than 24 in. wide.</p> <p>Running boards shall be continuous from end to end and shall not be cut or hinged at any point, except that the length and width of the running boards may be made up of several pieces secured to mounting brackets.</p>	<p>Appendix B1, 10.2.2</p> <p>Appendix B1, 10.2.3</p> <p>Appendix B1, 10.2.4</p>	
Manner of Application	<p>Running boards shall extend for not less than the full length of the roof.</p> <p>The transverse running boards shall extend from the longitudinal running board(s) to the ladder locations, unless the longitudinal running boards themselves extend to the ladder locations, and between the two longitudinal running boards on cars with roof hatches on the centerline of the car.</p> <p>The running board extensions shall be located on the longitudinal centerline of the car, and their ends shall be not less than 2 in. nor more than 6 in. beyond the striker or end of the center sill. If the running board extensions extend more than 4 in. beyond the end of the roof, they shall be securely supported in such a manner that the application of a 200 lb load in a line contact distributed over the width of the board at its outer end will result in not more than 1/4 in. deflection. The top surface of the running board extensions shall be at the same height as the adjacent longitudinal or transverse running boards.</p>	<p>Appendix B1, 10.3.1</p> <p>Appendix B1, 10.3.2</p> <p>Appendix B1, 10.3.3</p>	
	<p>The running boards and running board extensions shall be securely fastened to supports with not less than 3/8 in. diameter fasteners. Bolts and nuts with locking features are acceptable securement. Running board supports may be welded to the roof.</p>	<p>Appendix B1, 10.4.1</p>	



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Roof Handholds	<p>Supports for running board extensions shall preferably be securely fastened to the car body. If necessary to avoid penetrating the car body interior, supports for running board extensions may be securely fastened to mounting brackets that are welded to the car body. The mounting brackets shall be applied with sufficient weld to support a 1200 lb design load applied at the end of the running board extension.</p> <p>There shall be two roof handholds, one over each ladder.</p>	Appendix B1, 10.4.2	
Dimensions	<p>Roof handholds shall be of steel not less than ¾ in. diameter and shall conform to the requirements of Standard S-224. Minimum clear length shall be 16 in. Minimum clearance shall be 2 in., preferably 2 ½ in.</p>	Appendix B1, 11.2	
Location	<p>Roof handholds shall be mounted on the running boards over the ladders and shall be parallel to the vertical planes passing through the top ladder treads.</p> <p>In the transverse direction, the clearance points of the inboard end of roof handholds shall be not more than 8 in. inboard from and no further outboard than the clearance point of the inboard end of the top ladder tread.</p> <p>In the longitudinal direction, the inside surface of roof handholds shall be not less than 8 in. from the outboard edge of the running boards to which they are mounted and not more than 15 in. from the inside surface of the top ladder tread.</p>	Appendix B1, 11.3.1 Appendix B1, 11.3.2 Appendix B1, 11.3.3	
Manner of Application	<p>Roof handholds shall be securely fastened to the running boards. Roof handholds shall be painted a contrasting color.</p>	Appendix B1, 11.4	
Uncoupling Devices	<p>There shall be a minimum of two uncoupling devices that conform to the requirements of the base standard.</p> <p>Uncoupling devices and their application shall conform to MSRP Section S, Part III, Standard S-129, S-131, S-133, or S-134; or Specification M-961.</p> <p>One uncoupling device shall be applied at the left side of the B end of the car (BL corner) and one at the right side of the A end of the car (AR corner).</p> <p>Under all operating conditions, the outside surface of the uncoupling device handles shall be not more than 12 in. closer to the car center than the inside surface of the adjacent side handholds.</p>	Appendix B1, 12.0 S-2044 6.1 (Base Standard) S-2044 6.2 S-2044 6.3	





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<p>Stenciling</p> <p>Reflectorization.</p> <p>Coupler Height</p> <p>Power Brakes</p>	<p>There shall be not less than 2 in. clearance, preferably 2 ½ in., around the uncoupling device handles for a length not less than the lowest 4 in. of straight handles and not less than 4 in. in the grip portion of handles having clearly defined grip portions. The lower ends of the handles shall be not less than 12 in. nor more than 15 in. below the top surface of the uncoupling device at the device support and not less than 15 in. above the top of rail.</p> <p>Uncoupling device mounting brackets shall be securely fastened to the car with fasteners not less than 5/8 in. diameter.</p> <p>Car initial, numbers and built date stenciled on the car.</p> <p>Reflectorization must meet all requirements. Attached Drawing</p> <p>Verify coupler height 31½ inch minimum, 34½ inch maximum.</p> <p>Except for cars equipped with nominal 12-inch stroke (8 ½ and 10-inch diameters) brake cylinders, all cars shall have a legible decal, stencil, or sticker affixed to the car or shall be equipped with a badge plate displaying the permissible brake cylinder piston travel range for the car at Class I brake tests and the length at which the piston travel renders the brake ineffective, if different from Class I brake test limits. The decal, stencil, sticker, or badge plate shall be located so that it may be easily read and understood by a person positioned safely beside the car.</p>	<p>S-2044 6.4</p> <p>S-2044 6.5</p> <p>49 CFR Part 215.301 49</p> <p>CFR Part 224</p> <p>49 CFR Part 231.31(a)</p> <p>(1) 49 CFR Part 232. 103</p>	



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SCT	<p>All equipment ordered on or after August 1, 2002, or placed in service for the first time on or after April 1, 2004, shall have train brake systems designed so that an inspector can observe from a safe position either the piston travel, an accurate indicator which shows piston travel, or any other means by which the brake system is actuated. The design shall not require the inspector to place himself or herself on, under, or between components of the equipment to observe brake actuation or release.</p> <p>A single car air brake test shall be performed on each new car prior to placing or using the car in revenue service.</p>	49 CFR Part 232.305	

Miscellaneous

Check for any sharp or protruding objects or areas on the equipment that may create a safety concern or personal injury.

Check for potential pinch points at all safety appliance arrangements.

Digital Photos

General Arrangement Photo Sheet ~ No Deviations Noted (six photos minimum, A & B ends, each corner at 45 degree angle)

Deviation Photo Sheet ~ Deviations Noted: As many photos as necessary to fully depict, document and illustrate deviations of S-2044 Appendix B1 or CFR Parts(e.g. 215, 224 & 232)