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	US Department of Transportation Federal Railroad Administration	Sample Car Inspection Checklist For: S-2044 Appendix F-2 Safety Appliances for Low-Side and Hinged-End Gondola Cars and Bulkhead Flat Cars with Low Bulkheads	OMB No. 2130-0565 FRA F6180.161 J
Inspector(s):		Inspection Location:	Date:
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	<p>Each car shall have at least one AAR-approved vertical-wheel or lever 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.</p>	Appendix F2, 2.1.1	
	<p>The brake wheel of vertical-wheel hand brakes 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.</p>	Appendix F2, 2.1.2	
	<p>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. × 1 1/2 in. cotter, or their equivalent.</p>	Appendix F2, 2.1.3	
Location	<p>The hand brake shall be located so that it can be safely operated from the car while the car is in motion and safely operated from the ground while the car is stationary. Lever hand brakes on cars equipped with one brake shall be applied on the left side of the car at the B end. Vertical-wheel brakes on cars equipped with one brake shall be applied on the B end of the car at the left side. 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.</p>	Appendix F2, 2.2.1	
	<p>When the tip of the operating lever of lever hand brakes is swung through its arc of travel, the closest point of that arc shall be located in the longitudinal direction not less than 4 in. nor more than 6 in. from the inside surface of the inboard vertical leg of the sill step. In addition, the closest point of the arc of travel shall be not more than 11 in. from the inboard clearance point of the highest side handhold. When in the released position, the tip of the lever shall be not less than 4 in. above the lowest sill step tread nor more than 48 in. above the top of rail. On cars built prior to January 1, 2017, the tip of the lever shall be not more than 56 in. above the top of rail when in the released position.</p>	Appendix F2, 2.2.2	



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Manner of Application	<p>The center of the hand brake shaft of vertical-wheel hand brakes shall be located in the transverse direction not less than 12 in., nor more than 22 in., from the inside surface of the highest side handhold and shall be not less than 26 in. above the lowest sill step tread nor more than 46 in. above the highest sill step tread. In addition, the center of the hand brake shaft shall be not more than 65 in. above the top of rail.</p>	Appendix F2, 2.2.3	
	<p>The outside face of the hand brake wheel shall be not more than 16 in. in the longitudinal direction from the inside surface of the outboard vertical leg of the sill step and shall not extend more than 8 in. beyond the striker or end of the center sill, whichever extends farther.</p>	Appendix F2, 2.2.4	
	<p>Clearance around the rim of the hand brake wheel or the grip portion of the hand brake operating lever throughout its full range of travel 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.</p>	Appendix F2, 2.2.5	
	<p>If the hand brake application is such that the requirements of paragraph 2.2.5 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 F2, 2.2.6	
	<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>	Appendix F2, 2.3.1	
	<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>	Appendix F2, 2.3.2	
	Sill Steps	<p>Hand brake rods shall be not less than 3/4 in. diameter.</p>	Appendix F2, 2.3.3
	<p>There shall be four sill steps.</p>	Appendix F2, 3.1	
Dimensions	<p>Sill steps shall conform to the requirements of Standard S-2042. Minimum usable length of tread shall be 14 in.</p>	Appendix F2, 3.2.1	
	<p>Sill steps shall be of steel not less than 1/2 in. thick, shall be not less than 4 in. wide, and shall be provided with a slip-resistant surface.</p>	Appendix F2, 3.2.2	
	<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>	Appendix F2, 3.2.3	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
Location	<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> <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 16 in. from the outboard clearance point of any horizontal 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>Appendix F2, 3.2.4</p> <p>Appendix F2, 3.3.1</p> <p>Appendix F2, 3.3.2</p>	
Manner of Application	<p>The lowest tread shall be not more than 24 in., preferably not more than 22 in., above the top of rail.</p> <p>Sill steps shall be securely fastened.</p>	<p>Appendix F2, 3.3.3</p> <p>Appendix F2, 3.4</p>	
Side Handholds	<p>There shall be not less than eight side handholds, two near each end on each side of the car. Additional side handholds may be required by paragraph 4.3.2.</p>	<p>Appendix F2, 4.1</p>	
Dimensions	<p>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 of the side handholds shall be 16 in. Minimum clearance shall be 2 in., preferably 2 1/2 in. Side handholds other than handholds within 4 in. of the underside of the side top chords shall incorporate foot guards not less than 2 in. high at both ends.</p>	<p>Appendix F2, 4.2</p>	
Location	<p>The side handholds shall be oriented horizontally and spaced vertically not more than 19 in. apart. The first side handhold at each corner of the car shall be located not more than 48 in. above the top of rail. The second side handhold shall be located not more than 50 in. above the lowest sill step tread.</p> <p>The highest handhold at the B end of the car on the left side (BL corner) and at the A end of the car on the right side (AR corner) shall be not less than 2 1/2 in. nor more than 4 in. below the underside of the side top chord and not more than 12 in. below the top of the side top chord. If the second handhold from the bottom is more than 12 in. below the top of the side top chord, additional side handholds shall be applied as required.</p>	<p>Appendix F2, 4.3.1</p> <p>Appendix F2, 4.3.2</p>	



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Manner of Application	<p>Vertical spacing between side handholds shall be uniform within a maximum variation of 2 in.</p> <p>The clearance points of the outboard end of the side handholds shall be not more than 10 in. from the inside surface of the nearest end handhold. At corners of the car where a hand brake is located on the end of the car, the 10 in. limit shall be measured to the end handhold at the opposite side of the car from the hand brake.</p>	<p>Appendix F2, 4.3.3</p> <p>Appendix F2, 4.3.4</p>	
End Handholds	Side handholds shall be securely fastened.	Appendix F2, 4.4	
Dimensions	There shall be four end handholds.	Appendix F2, 5.1	
Location	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.	Appendix F2, 5.2	
Manner of Application	<p>The end handholds shall be oriented horizontally, one near each side of each end of the car.</p> <p>The clearance points of the outer end of the end handholds shall be not more than 16 in. from the inside surface of the nearest side handhold.</p> <p>Unless protected by a suitable guard around the chain, end handholds shall have not less than 5 in. clearance from the hand brake chain throughout the entire range of chain travel.</p> <p>End handholds shall not extend more than 8 in. beyond the striker or end of the center sill.</p> <p>The end handholds shall be not more than 45 in. above the top of rail.</p>	<p>Appendix F2, 5.3.1</p> <p>Appendix F2, 5.3.2</p> <p>Appendix F2, 5.3.3</p> <p>Appendix F2, 5.3.4</p> <p>Appendix F2, 5.3.5</p>	
Clearance at the End of Car	End handholds shall be securely fastened.	Appendix F2, 5.4	
	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, bell crank, sheave wheel, 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 center sill adjacent to the end sill, other than the exceptions herein noted, shall extend beyond the outer face of the striker or end of the center sill.	Appendix F2, 6.0	



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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> <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>Appendix F2, 7.0</p> <p>S-2044 6.1 (Base Standard)</p> <p>S-2044 6.2</p> <p>S-2044 6.3</p> <p>S-2044 6.4</p> <p>S-2044 6.5</p>	
Stenciling	Car initial, numbers and built date stenciled on the car.	49 CFR Part 215.301	
Reflectorization.	Reflectorization must meet all requirements. Attached Drawing	49 CFR Part 224	
Coupler Height	Verify coupler height 31½ inch minimum, 34½ inch maximum.	49 CFR Part 231.31(a)(1)	
Power Brakes	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.	49 CFR Part 232. 103	



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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 ~ As many photos as necessary to fully depict, document and illustrate deviations of S-2044 Appendix F2 or CFR Parts(e.g. 215, 224 & 232)