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 US Department of Transportation Federal Railroad Administration		Sample Car Inspection Checklist For: S-2044 Appendix J-1 Safety Appliances for Rail-Compatible Vehicles		OMB No. 2130-0565 FRA F6180.161 R	
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 and/or Automatic Parking Brake	<p>Every vehicle in the system shall incorporate a manually operated hand brake and/or an automatic parking brake. Manually operated hand brakes, when applied, shall be AAR-approved vertical-wheel or lever hand brakes that comply with MSRP Section E, Standard S-475 and that operate in harmony with the power brake equipment on the vehicle.</p> <p>Total braking force applied to the brake shoes by the hand brake or automatic parking 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.</p> <p>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> <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> <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. x 1 1/2 in. cotter, or their equivalent.</p>	<p>Appendix J1, 2.1.1</p> <p>Appendix J1, 2.1.2</p> <p>Appendix J1, 2.1.3</p>			
Location	<p>Manually operated hand brakes shall be located so that they can be safely operated from the ground while the vehicle is stationary. On vehicles without automatic parking brakes, the manually operated hand brakes shall be located so that they can also be safely operated while the vehicle is motion. On vehicles with standard railroad couplers, the hand brake shall be located at the end of the vehicle having a coupler and at the left side as viewed by a person standing on the ground and facing the coupler end.</p> <p>The center of the hand brake shaft shall be located in the transverse direction not less than 12 in., nor more than 22 in., from the inside surface of the nearest 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>	<p>Appendix J1, 2.2.1</p> <p>Appendix J1, 2.2.2</p>			



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Manner of Application	<p>The outside face of the hand brake wheel shall be no more than 36 in. in the longitudinal direction from the outside surface of the inboard vertical side handhold. The outside face of the hand brake wheel shall be no 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> <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 vehicle shall be not less than 2 1/2 in.</p> <p>If the hand brake application is such that the requirements of paragraph 2.2.4 can be met only with hand brakes having short hand brake release levers or only with long release levers, but not both, the vehicle shall be marked adjacent to the hand brake in 1 1/2 in. high letters "SHORT (LONG) RELEASE LEVER BRAKE ONLY."</p> <p>The hand brake housing shall be securely fastened. The hand brake application, including bolt hole pattern, shall conform to MSRP Section E, Standards S-475 and S-401.</p> <p>The hand brake chain shall conform to the requirements of Standard 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>Appendix J1, 2.2.3</p> <p>Appendix J1, 2.2.4</p> <p>Appendix J1, 2.2.5</p> <p>Appendix J1, 2.3.1</p> <p>Appendix J1, 2.3.2</p>	
Sill Steps	<p>Hand brake rods shall be not less than 3/4 in. diameter.</p> <p>Where transverse running boards are applied, one sill step shall be applied beneath each end of the running board. Sill steps shall also be applied at both sides of the vehicle at an end having a hand brake that must be capable of safe operation while the vehicle is in motion. When sill steps are applied, they shall comply with the following requirements.</p>	<p>Appendix J1, 2.3.3</p> <p>Appendix J1, 3.1</p>	
Dimensions	<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. When the hand brake must be capable of safe operation while the vehicle is in motion, the 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>	<p>Appendix J1, 3.2.1</p> <p>Appendix J1, 3.2.2</p>	



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Location	<p>Sill steps shall have sufficient treads such that the top tread is not more than 21 in. below the lowest adjacent horizontal side handhold, if the vehicle is so equipped. If there are no horizontal side handholds and if the vehicle is equipped with an adjacent running board, sill steps shall have sufficient treads such that the top tread is not more than 21 in. below the walking surface of the adjacent running board. 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 vehicle.</p> <p>Sill steps shall be located in the longitudinal direction such that the inside face of neither vertical leg of the sill step extends more than 2 in. into the space between the clearance points at the end of horizontal handholds or the space between vertical side handholds.</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 adjacent side handholds. In addition, the outside edge of any sill step tread shall be no more than 4 in. inboard of any vehicle structure below the adjacent side handholds in the area between the side handholds.</p> <p>The lowest tread shall be not more than 20 in. above the top of rail.</p>	<p>Appendix J1, 3.2.3</p> <p>Appendix J1, 3.2.4</p> <p>Appendix J1, 3.3.1</p> <p>Appendix J1, 3.3.3</p> <p>Appendix J1, 3.3.3</p>	
Manner of Application	<p>Sill steps shall be securely fastened.</p>	<p>Appendix J1, 3.4</p>	
Side Handholds	<p>There shall be not less than two side handholds above each sill step and, where applied, they shall comply with the following requirements.</p>	<p>Appendix J1, 4.1</p>	
Dimensions	<p>Handholds shall be of steel not less than 3/4 in. diameter or pipe of 1 1/4 in. nominal pipe size with Schedule 40 minimum wall thickness. Handhold material 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.</p> <p>Vertical side handholds shall have an uninterrupted span between the upper and lower clearance points.</p>	<p>Appendix J1, 4.2.1</p> <p>Appendix J1, 4.2.2</p>	



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Location	<p>Where transverse running boards are applied, two vertical side handholds shall be applied above each step. The inside surface of the outboard vertical handhold shall be not more than 14 in. from the inside surface of the nearest end handhold. At corners of the vehicle where a hand brake is located over an end handhold, the 14 in. limit shall be measured to the end handhold at the opposite side of the vehicle from the hand brake. The clear opening between the inside surfaces of the vertical handholds and their supports shall be not less than 18 in. The width over the outside surfaces of the vertical handholds shall be not more than 30 in.</p> <p>The clearance points of the bottom end of the vertical handholds shall be not more than 42 in. above the top of rail. The clearance points of the top end shall be not less than 33 in. above the adjacent walking surface of the running board.</p> <p>Where transverse running boards are not applied above sill steps, two horizontal side handholds shall be applied above each sill step. One side handhold shall be applied not more than 48 in. above the top of rail. A second side handhold shall be applied not less than 42 in. nor more than 50 in. above the lowest sill step tread.</p> <p>The clearance points of the outboard end of horizontal side handholds shall be not more than 12 in. from the inside surface of the nearest end handhold. At corners of the vehicle where a hand brake is located over an end handhold, the 12 in. limit shall be measured to the end handhold at the opposite side of the vehicle from the hand brake.</p>	<p>Appendix J1, 4.3.1</p> <p>Appendix J1, 4.3.2</p> <p>Appendix J1, 4.3.3</p> <p>Appendix J1, 4.3.4</p>	
Manner of Application	<p>Side handholds shall be securely fastened.</p> <p>There shall be two end handholds at each end of the vehicle at which a standard railroad coupler is located.</p>	<p>Appendix J1, 4.4</p> <p>Appendix J1, 5.0</p>	
Dimensions	<p>End 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.</p>	<p>Appendix J1, 5.2</p>	
Location	<p>The end handholds shall be oriented horizontally, one near each side of the vehicle on the face of the vehicle end structure.</p> <p>On vehicles equipped with side handholds, 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. On vehicles not equipped with side handholds, the clearance points of the outer end of the end handholds shall be not more than 16 in. from the side of the vehicle.</p> <p>The end handholds shall be not more than 45 in. above the top of rail.</p>	<p>Appendix J1, 5.3.1</p> <p>Appendix J1, 5.3.2</p> <p>Appendix J1, 5.3.3</p> <p>Appendix J1, 5.4</p>	
Manner of Application	<p>End handholds shall be securely fastened.</p>		



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Running Boards	Running boards, when applied, shall comply with requirements of Standard S-226 and shall comply with the following requirements.	Appendix J1, 6.1.1	
Dimensions	All running boards shall be not less than 18 in. wide.	Appendix J1, 6.1.2	
Location	The gap between the transverse edges of transverse running boards at vertical side handholds and the nearest surfaces of the vertical handholds or their supports, whichever limits the clear opening between the vertical handholds or their supports, shall not exceed 4 in.	Appendix J1, 6.2.1	
	The ends of transverse running boards shall not be outboard of, and shall be not more than 2 in. inboard from, the outside surface of the sides of the vehicle directly below the running board ends.	Appendix J1, 6.2.2	
Manner of Application	Running boards shall be securely fastened with not less than 3/8 in. diameter fasteners.	Appendix J1, 6.3	
End Safety Railings	Where transverse running boards are applied, end safety railings shall be applied and shall comply with the following requirements. They shall be of solid steel not less than 1 in. diameter or pipe of 1 1/4 in. nominal pipe size with Schedule 40 minimum wall thickness. Safety railing material shall conform to the requirements of Standard S-224. End safety railings shall be supported at each end and at a minimum of two intermediate locations along their horizontal span. The spacing between centerlines of any two supports shall be not less than 24 in.	Appendix J1, 7.1	
Dimensions			
Location	End safety railings shall be oriented horizontally and located such that a vertical plane extending down from the nearest surface of the railing shall be not more than 4 in. from the adjacent edge of the transverse running board.	Appendix J1, 7.2.1	
	The height from the top of the end safety railings shall be not less than 42 in. nor more than 46 in. above the walking surface of the adjacent running board.	Appendix J1, 7.2.2	
	If the end safety railings have vertical legs at their ends, the inboard surface of the vertical legs shall be not more than 6 in. in the transverse direction from the inside surface of the outboard side handhold. If the end safety railings do not have vertical legs at their ends, the clearance points at the ends of the safety railings shall be not more than 6 in. in the transverse direction from the inside surface of the outboard side handhold.	Appendix J1, 7.2.3	
Manner of Application	End safety railings and their supports shall be securely fastened.	Appendix J1, 7.3	



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Clearance At End of Vehicle	No part of the vehicle above the end sill more than 30 in. from the centerline of the vehicle, except the hand brake wheel, hand brake shaft, bell crank, sheave wheel, 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 vehicle 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 the striker or end of the center sill.	Appendix J1, 8.0	
Uncoupling Devices	For each standard railroad coupler, there shall be a minimum of one uncoupling device that conforms to the requirements of the base standard.	Appendix J1, 9.0	
Marking	Each vehicle equipped with a standard railroad coupler and not equipped with sill steps shall be stenciled on each side, in clearly legible letters not less than 6 in. high, "NO SAFETY APPLIANCES" and "KEEP OFF" at a location that is visible to a person walking at track level beside the vehicle.	Appendix J1, 10.0	



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Uncoupling Devices	<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>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 J1 or CFR Parts (e.g. 215, 224 & 232)