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	US Department of Transportation Federal Railroad Administration	Sample Car Inspection Checklist for S-2044 Appendix F4 Safety Appliances for Side-Dump Cars	OMB No. 2130-0565 FRA F6180.161 P	
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	<p>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.</p>		Appendix F4, 2.1.1	
	<p>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.</p>		Appendix F4, 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. x 1 1/2 in. cotter, or their equivalent.</p>		Appendix F4, 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. The hand brake 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 F4, 2.2.1	
	<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 inboard 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>		Appendix F4, 2.2.2	
	<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 outboard of the sill step and 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>		Appendix F4, 2.2.3	



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Manner of Application	<p>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 range of travel and any part of the car 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 car 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, Standard S-475.</p>	<p>Appendix F4, 2.2.4</p> <p>Appendix F4, 2.2.5</p> <p>Appendix F4, 2.3.1</p>	
Sill Steps	<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>Hand brake rods shall be not less than 3/4 in. diameter.</p> <p>There shall be four sill steps.</p>	<p>Appendix F4, 2.3.2</p> <p>Appendix F4 2.3.3</p> <p>Appendix F4, 3.1</p>	
Dimensions	<p>Sill steps shall conform to the requirements of Standard S-2042. Minimum usable length of tread shall be 14 in.</p> <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> <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 car is so equipped, or, if there are no horizontal side handholds, below the walking surface of the 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 car.</p>	<p>Appendix F4, 3.2.1</p> <p>Appendix F4, 3.2.2</p> <p>Appendix F4, 3.2.3</p> <p>Appendix F4, 3.2.4</p>	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
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 does not extend more than 2 in., and the inside face of the inboard vertical leg of the sill step does not extend more than 5 in., into the space between the vertical side handholds or the space between the vertical handhold supports, whichever space is smaller.</p>	Appendix F4, 3.3.1	
	<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 not more than 4 in. inboard of any car structure below the adjacent side handholds in the area between the side handholds. With the exception of the side handholds, no part of the car below 66 in. above the top of the rail shall extend farther than 6 in. outboard of the outboard edge of the lowest sill step tread.</p>	Appendix F4, 3.3.2	
	<p>The lowest tread shall be not more than 20 in. above the top of rail.</p>	Appendix F4, 3.3.3	
Manner of Application	<p>Sill steps shall be securely fastened.</p>	Appendix F4, 3.4	
Side Handholds	<p>There shall be not less than eight vertical side handholds, two at each corner.</p>	Appendix F4, 4.1	
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>	Appendix F4, 4.2.1	
	<p>Side handholds shall have an uninterrupted span between the upper and lower clearance points.</p>	Appendix F4, 4.2.2	
	<p>When applied, elective vertical handholds adjacent to the outboard vertical side handholds shall conform to the requirements of Standard S-224, shall be of steel not less than 3/4 in. diameter, shall have clearance not less than 2 in., preferably 2 1/2 in., and shall have clear length not less than 8 in.</p>	Appendix F4, 4.2.3	
Location	<p>Two vertical handholds, one at either end of each sill step, shall be applied.</p>	Appendix F4, 4.3.1	
	<p>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 car where a hand brake is located, the 14 in. limit shall be measured to the end handhold at the opposite side of the car from the hand brake. The clear opening between the 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>	Appendix F4, 4.3.2	



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	<p>The clearance points of the bottom end of the vertical handholds shall be not more than 42 in. above the top of rail where car construction permits. Where car construction does not permit 42 in. height, the bottom clearance points shall be not more than 50 in. above the top of rail. The heights of the bottom clearance points of the inboard and outboard vertical handholds at any location shall be uniform within 2 in. The clearance points of the top end shall be not less than 33 in. above the walking surface of the running board.</p>	Appendix F4, 4.3.3	
Manner of Application	<p>The inboard transverse edge of the running boards shall not extend farther than 2 in. in either direction from the inside surface of the inboard vertical leg of the sill step.</p>	Appendix F4, 4.3.4	
End Handholds	<p>Side handholds shall be securely fastened.</p>	Appendix F4, 4.4	
Dimensions	<p>There shall be four end handholds.</p>	Appendix F4, 5.1	
Location	<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 shall be 16 in. Minimum clearance shall be 2 in., preferably 2 1/2 in.</p>	Appendix F4, 5.2	
	<p>The end handholds shall be oriented horizontally, one near each side of each end of the car on the face of the end sill.</p>	Appendix F4, 5.3.1	
	<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>	Appendix F4, 5.3.2	
	<p>Unless protected by a guard around the chain, handholds shall have not less than 5 in. clearance from the hand brake chain throughout the entire range of chain travel. Guards shall be provided around hand brake shock retarders, if used, that are closer to the handhold than 5 in.</p>	Appendix F4, 5.3.3	
	<p>End handholds shall not extend more than 8 in. beyond the striker or end of the center sill.</p>	Appendix F4, 5.3.4	
	<p>The end handholds shall be not more than 45 in. above the top of rail.</p>	Appendix F4, 5.3.5	
Manner of Application	<p>End handholds shall be securely fastened.</p>	Appendix F4, 5.4	
Running Boards	<p>There shall be two transverse running boards, one at each end of the car.</p>	Appendix F4, 6.1	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
Dimensions	<p>Transverse running boards shall comply with the requirements of Standard S-226. The running board material shall have uniform slip-resistant surfaces and shall be of construction to provide sufficient clear opening to permit elimination of accumulated snow and ice. Running boards shall be not less than 18 in. wide.</p>	Appendix F4, 6.2	
Location	<p>The gap between the transverse edges of running boards at vertical side handholds and the nearest surface of the outboard vertical handhold or its support, whichever limits the clear opening between the vertical handholds or their supports, shall be not more than 4 in. The gap between the transverse edges of running boards at vertical side handholds and the nearest surface of the inboard vertical handhold or its support, whichever limits the clear opening between the vertical handholds or their supports, shall be not more than 7 in., preferably 4 in.</p>	Appendix F4, 6.3.1	
	<p>The inboard transverse edge of the running boards shall not extend farther than 2 in. in either direction from the inside surface of the inboard vertical leg of the sill step.</p>	Appendix F4, 6.3.2	
	<p>The ends of 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 car directly below the running board ends.</p>	Appendix F4, 6.3.3	
Manner of Application	<p>Running boards shall be securely fastened to the car with not less than 3/8 in. diameter fasteners.</p>	Appendix F4, 6.4	
Horizontal Running Board Handholds	<p>There shall be two horizontal running board handholds.</p>	Appendix F4, 7.1	
Dimensions	<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. Minimum clearance shall be 2 in., preferably 2 1/2 in.</p>	Appendix F4, 7.2	
Location	<p>One horizontal running board handhold shall be applied on each end of the car above the running board.</p>	Appendix F4, 7.3.1	
	<p>The clearance points of the outer ends of the running board handhold shall be not more than 16 in. in the transverse direction from the inside surface of the nearest side handhold.</p>	Appendix F4, 7.3.2	
	<p>Height from the top of the running board handhold to the walking surface of the running boards shall be not less than 36 in. nor more than 54 in.</p>	Appendix F4, 7.3.3	
	<p>The outside surface of the running board handhold shall not extend farther than 4 in. inboard or 2 in. outboard of the inboard transverse edge of the adjacent running board.</p>	Appendix F4, 7.3.4	



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Manner of Application	Horizontal running board handholds shall be securely fastened to the car.	Appendix F4, 7.4	
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, bell crank, sheave wheel, running board, or horizontal running board 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 walking surface of the running board, other than the exceptions herein noted, shall extend beyond the outer face of the striker or end of the center sill.	Appendix F4, 8.0	



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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 F4 or CFR Parts (e.g. 215, 224 & 232)