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US Department of Transportation
Federal Railroad Administration

Sample Car Inspection Checklist For: S-2044 Appendix D-4
Safety Appliances for Flatcars Constructed for Chain Tie-Down Service

OMB No. 2130-0565
FRA F6180.161 F

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 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.				Appendix D4, 2.1		
Location	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 hand brake shall be applied on the left side of the car at the B end. 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 D4, 2.2.1		
	When the tip of the operating lever 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. inboard of 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. inboard of 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.				Appendix D4, 2.2.2		
	Clearance around 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.				Appendix D4, 2.2.3		
Manner of Application	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.				Appendix D4, 2.3.1		
	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.				Appendix D4, 2.3.2		
	Hand brake rods shall be not less than 3/4 in. diameter.				Appendix D4, 2.3.3		



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
Sill Steps	There shall be four sill steps.		
Dimensions	Sill steps shall conform to the requirements of Standard S-2042. Minimum usable length of tread shall be 14 in.	Appendix D4, 3.2.1	
	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.	Appendix D4, 3.2.2	
	Sill steps shall have sufficient treads such that the top tread is not more than 21 in. below a side handhold having foot guards at both ends. If there is no side handhold having foot guards at both ends above the sill step, the top sill step tread shall be not more than 21 in. below the deck of the car. Sill step treads shall be spaced not more than 21 in. apart.	Appendix D4, 3.2.3	
	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.	Appendix D4, 3.2.4	
Location	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.	Appendix D4, 3.3.1	
	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.	Appendix D4, 3.3.2	
Manner of Application	The lowest tread shall be not more than 20 in. above the top of rail.	Appendix D4, 3.3.3	
	Sill steps shall be securely fastened.	Appendix D4, 3.4	
Side Handholds	There shall be not less than six side handholds, two at each corner of the car at which a hand brake is located, two at the diagonally opposite corner, and one at each of the other corners.	Appendix D4, 4.1	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
Dimension	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 side handholds shall be oriented horizontally, one near each end on each side of the car.	Appendix D4, 4.2	
Location	One handhold shall be located at each corner of the car not more than 48 in. above the top of rail and shall not extend above the deck of the car. This handhold shall be not less than 18 in. above the lowest sill step tread and not more than 21 in. above the highest sill step tread. If the highest sill step tread is more than 21 in. below the deck of the car, the first side handhold shall have foot guards not less than 2 in. high at both ends and shall be not more than 19 in. below the deck of the car. A second side handhold shall be located at each corner of the car at which a hand brake is located and at the diagonally opposite corner located not less than 42 in. nor more than 50 in. above the lowest sill step tread. The second handhold shall be mounted on the car body separately from the first handhold such that temporary removal of the second handhold will not necessitate removal of the first.	Appendix D4, 4.3.1	
	The clearance points of the outboard end of the side handholds shall be not more than 12 in. from the inside surface of the nearest end handhold.	Appendix D4, 4.3.2	
	Transverse handholds may be applied in place of the second side handholds of paragraph 4.3.1. The transverse handholds shall be located with the inside surface of the horizontal portion not more than 30 in. in the longitudinal direction from the tip of the hand brake operating lever when the lever is located as in paragraph 2.2.2 and not more than 2 in. from the inside face of the outboard leg of the sill step. The handhold shall be of solid steel not less than 1 in. diameter with the length between the vertical legs not less than 18 in. The inside surface of the outboard vertical leg shall be not less than 4 in. nor more than 7 in. in the transverse direction from the inside surface of the side handhold, and the top of the horizontal portion shall be not less than 40 in. nor more than 50 in. above the lowest sill step tread.	Appendix D4, 4.3.3	
	When applied, side handholds adjacent to articulated connectors or drawbar connections of multi-unit cars shall conform to the requirements of paragraph 4.2.	Appendix D4, 4.3.4	
Manner of Application	Side handholds and transverse handholds shall be securely fastened.	Appendix D4, 4.4	
End Handholds	There shall be four end handholds.	Appendix D4, 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.	Appendix D4, 5.2	



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Location	The end handholds shall be oriented horizontally, one near each side of each end of the car on the face of the end sill.	Appendix D4, 5.3.1	
	The clearance points of the outboard end of the end handholds shall be not more than 16 in. from the inside surface of the nearest side handhold.	Appendix D4, 5.3.2	
	The end handholds shall be not more than 45 in. above the top of rail.	Appendix D4, 5.3.3	
Manner of Application	End handholds shall be securely fastened	Appendix D4, 5.4	
Deck Slots	Four pair of deck slots shall be applied, one pair at each corner of the car.	Appendix D4, 6.1	
Dimensions	Deck slots shall be not less than 2 1/2 in. nor more than 3 in. wide. Each pair of slots shall consist of two slots in line longitudinally, each slot having straight edges not less than 6 in. long. The longitudinal distance between the ends of the two slots shall be not less than 6 in. and not more than 16 in., measured between the ends of the straight edges. The corners of all edges of the slots shall be rounded, and the slots shall have corner radii not less than 1/2 in.	Appendix D4, 6.2.1	
	The thickness of the deck at the straight edge of the deck slots closest to the side of the car shall be not less than 3/4 in. but not greater than 1 5/8 in. The 3/4 in. minimum thickness shall extend not less than 1 in. beyond the straight portion of the edge of each slot in each direction.	Appendix D4, 6.2.2	
	The space under the deck within 4 in. from the outboard longitudinal edge of the slot shall have not less than 2 1/2 in. vertical clearance for the entire length of the slot. This clearance shall exist for all conditions, including wear, spring deflection from empty car to loaded car, and truck rotation for the tightest horizontal and vertical curves for which the car is constructed to negotiate when coupled to another car.	Appendix D4, 6.2.3	
Location	The long direction of the deck slots shall be parallel to the side of the car.	Appendix D4, 6.3.1	
	In the transverse direction, the edge of the deck slot closest to the side of the car shall be not less than 8 in. nor more than 25 in. from the widest part of the car above the adjacent sill step.	Appendix D4, 6.3.2	
	In the longitudinal direction, the end of the deck slot closest to the end of the car shall be not more than 2 in. inboard of the inside face of the outboard leg of the adjacent sill step.	Appendix D4, 6.3.3	
Uncoupling Devices	There shall be a minimum of two uncoupling devices that conform to the requirements of the base standard.	Appendix D4, 7.0	



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ITEM	Number - Dimensions - Location - Manner of Application	Appendix Reference	Notes
	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.	S-2044 6.3	
	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.	S-2044 6.4	
	Uncoupling device mounting brackets shall be securely fastened to the car with fasteners not less than 5/8 in. diameter.	S-2044 6.5	
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	
	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.		
SCT	A single car air brake test shall be performed on each new car prior to placing or using the car in revenue service.	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 D4 or CFR Parts (e.g. 215, 224 & 232)