



Inspector(s): _____ Inspection Location: _____ Date: _____ Region: _____

Builder: _____ Car Initials & Number: _____ Car Type: _____ Cars to be Built: _____ Builder Job #: _____

Item	Number - Dimensions - Location - Manner of Application <small>All brackets used solely to support safety appliances are mechanically affixed, except tank car tanks per MP&E TB 98-14</small>	CFR Reference*	Notes
Hand Brake	<input type="checkbox"/> One efficient handbrake which shall operate in harmony with the power brake installed on the car. <input type="checkbox"/> Each such handbrake shall provide the same degree of safety as the design shown on plate A. <input type="checkbox"/> Or provide the same degree of safety as that specified in 231.27. <input type="checkbox"/> The brake shaft shall be not less than 1¼ inches in diameter, of wrought iron or steel without weld. <input type="checkbox"/> The brake wheel may be flat or dished, not less than 15 inches in diameter, of malleable iron, wrought iron, or steel. <input type="checkbox"/> Each handbrake shall be so located that it can be safely operated while car is in motion. <input type="checkbox"/> The brake shaft shall be located on end of car to the left of center. <input type="checkbox"/> There shall be not less than four inches clearance around rim of brake wheel. <input type="checkbox"/> Outside edge of brake wheel shall be not less than four inches from a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill. <input type="checkbox"/> Top brake-shaft support shall be fastened with not less than ½ inch bolts or rivets. (See plate A). <input type="checkbox"/> A brake shaft step shall support the lower end of brake shaft. A brake-shaft step which will permit the brake chain to drop under the brake shaft shall not be used. U-shaped form of brake shaft step is preferred. (See plate A). <input type="checkbox"/> Brake shaft shall be arranged with a square fit at its upper end to secure the hand-brake wheel. Square fit shall be not less than 7/8 of an inch square. Square-fit taper, nominally 2 in 12 inches. (See plate A). <input type="checkbox"/> Brake chain shall be of not less than 3/8, preferably 7/16, inch wrought iron or steel, with a link on the brake rod end of not less than 7/16 inch wrought iron or steel ¹ and shall be secured to brake-shaft drum by not less than 1/2-inch hexagon or square-headed bolt. Nut on said bolt shall be secured by riveting end of bolt over nut. <input type="checkbox"/> Lower end of brake shaft shall be provided with a trunnion of not less than 3/4 inch in diameter extending through brake-shaft step and held in operating position by a suitable cotter or ring. (See plate A).	231.1(a)(1) 231.1(a)(1)(i) 231.1(a)(1)(ii) 231.1(a)(2)(i) 231.1(a)(2)(ii) 231.21(a)(3) 231.1(a)(4)(i) 231.1(a)(4)(ii) 231.1(a)(4)(iii) 231.1(a)(4)(iv) 231.1(a)(4)(v) 231.1(a)(4)(vi) 231.1(a)(4)(vii)	

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Hand Brake	<ul style="list-style-type: none"> <input type="checkbox"/> Brake shaft drum shall be not less than 1½ inches in diameter. (See plate A). <input type="checkbox"/> Brake ratchet wheel shall be secured to brake shaft by a key or square fit. Square fit shall be not less than 1 5/16 inches square. When ratchet wheel with square fit is used, provision shall be made to prevent ratchet wheel from rising on shaft to disengage brake pawl. (See plate A). <input type="checkbox"/> Brake ratchet wheel shall be not less than 5¼ inches in diameter and shall have not less than 14 teeth. (See plate A). <input type="checkbox"/> If brake ratchet wheel is more than 36 inches from brake wheel, a brake-shaft support shall be provided to support this extended upper portion of brake shaft. Brake shaft support shall be fastened with not less than ½ inch bolts or rivets. <input type="checkbox"/> The brake pawl shall be pivoted upon a bolt or rivet not less than 5/8 of an inch in diameter, or upon a trunnion secured by not less than ½ inch bolt or rivet, and there shall be a rigid metal connection between brake shaft and pivot of pawl. <input type="checkbox"/> Brake wheel shall be held in position on brake shaft by a nut on a threaded extended end of brake shaft; said threaded portion shall be not less than three-fourths of an inch in diameter; said nut shall be secured by riveting over or by the use of a lock nut or suitable cotter. <input type="checkbox"/> Brake wheel shall be arranged with a square fit for brake shaft in hub of said wheel; taper of said fit, nominally 2 in 12 inches. (See plate A). 	231.1(a)(4)(viii) 231.1(a)(4)(ix) 231.1(a)(4)(x) 231.1(a)(4)(xi) 231.1(a)(4)(xii) 231.1(a)(4)(xiii) 231.1(a)(4)(xiv)	
End Platforms	<ul style="list-style-type: none"> <input type="checkbox"/> Two. <input type="checkbox"/> Minimum width, 10 inches. Minimum thickness, 1¾ inches. <input type="checkbox"/> One on each end extending across car a distance equal to or greater than any other portion of car. Outside edge of end platform shall extend not less than seven inches beyond bulge of tank head and safety railing. <input type="checkbox"/> End platforms shall be securely fastened to the draft sills and be sufficiently rigid to prevent sagging. 	231.21(b)(1) 231.21(b)(2) 231.21(b)(3) 231.21(b)(4)	
Sill Steps	<ul style="list-style-type: none"> <input type="checkbox"/> Four sill steps. <input type="checkbox"/> Minimum cross-sectional area ½ x 1½ inches ², or equivalent ³ of wrought iron or steel. <input type="checkbox"/> Minimum length of tread, ten inches. <input type="checkbox"/> Minimum clear depth, eight inches. ⁴ <input type="checkbox"/> One near each end of each side of car, so that there shall be not more than 18 inches from end of car to center of tread of sill step. <input type="checkbox"/> Outside edge of tread of step shall be not more than four inches inside of face of side of car. <input type="checkbox"/> Tread shall be not more than 24, inches above the top of rail. <input type="checkbox"/> Sill steps exceeding 21 inches in depth shall have an additional tread. <input type="checkbox"/> Sill steps shall be securely fastened with not less than ½ inch bolts with nuts outside (when possible) and riveted over, or with not less than ½ inch rivets. 	231.1(d)(1) 231.1(d)(2) 231.1(d)(3)(i) 231.1(d)(3)(ii) 231.1(d)(3)(iii) 231.1(d)(4)(i) 231.1(d)(4)(ii)	

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End Platform Safety Railing	<input type="checkbox"/> Two. <input type="checkbox"/> Minimum of 7/8 inch diameter, wrought iron or steel, or 1¼ inch pipe. Minimum clearance, 2½ inches. <input type="checkbox"/> One safety railing at each end of car shall extend horizontally across car not less than 36 inches nor more than 54 inches above end platform and extend downward within three inches of the end of the platform. The safety railing shall be located not more than six inches from the inside edge of the platform. <input type="checkbox"/> Safety railings shall be supported at center of car and at each end by extending downward at the ends and attaching to the platform.	231.21(d)(1) 231.21(d)(2) 231.21(d)(3) 231.21(d)(4)	
Side Railing	<input type="checkbox"/> Two. <input type="checkbox"/> 1¼ inch pipe. Minimum clearance, 2½ inches. <input type="checkbox"/> One on each side of car, extending from end platform to end platform at a distance of not less than 51 inches from centerline of car, except that where break in side railing is necessary for side ladder or operating cabinet, the side railing shall be securely attached to such ladder and/or cabinet. <input type="checkbox"/> Safety railings shall be securely attached to end platforms and supported from the car at intervals not exceeding ten feet.	231.21(e)(1) 231.21(e)(2) 231.21(e)(3) 231.21(e)(4)	
Side Handholds	<input type="checkbox"/> Four. <input type="checkbox"/> Minimum diameter, 5/8 of an inch, wrought iron or steel. ² <input type="checkbox"/> Minimum clear length, 16 inches <input type="checkbox"/> Minimum clearance, two inches. <input type="checkbox"/> Four horizontal; one on face of end platform end, over sill step, projecting downward or outward. Clearance of outer end of handhold shall be not more than twelve inches from end of car. Vertical portion of end platform safety railing shall be considered as a side vertical handhold. <input type="checkbox"/> Side handholds shall be securely fastened with not less than ½ inch bolts with nuts outside (when possible) and riveted over, or with not less than ½ inch rivets.	231.21(f)(1) 231.1(h)(2) 231.21(f)(3) 231.1(h)(4)	
End Handholds	<input type="checkbox"/> Four. <input type="checkbox"/> Minimum diameter, 5/8 of an inch, wrought iron or steel. ² <input type="checkbox"/> Minimum clear length, 16 inches, preferably 24 inches. <input type="checkbox"/> A handhold 14 inches in length may be used where it is impossible to use one 16 inches in length. <input type="checkbox"/> Minimum clearance, two inches. <input type="checkbox"/> Horizontal, one near each side of each end of car on face of end sill. Clearance of outer end of handhold shall not be more than sixteen inches from side of car. <input type="checkbox"/> Horizontal end handholds shall be securely fastened with not less than ½ inch bolts with nuts outside (when possible) and riveted over, or with not less than ½ inch rivets.	231.21(g)(1) 231.1(i)(2)(i) 231.1(i)(2)(ii) 231.1(i)(2)(iii) 231.21(g)(3) 231.1(i)(4)	

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Uncoupling Levers	<ul style="list-style-type: none"> <input type="checkbox"/> Two uncoupling levers. <input type="checkbox"/> May be either single or double, and of any efficient design. <input type="checkbox"/> Handles of uncoupling levers, except those shown on Plate B or of similar designs, shall be not more than six inches from side of car. <i>(Plate B is the primary application you will see)</i> <input type="checkbox"/> Uncoupling levers of design shown on plate B and of similar designs shall conform to the following prescribed limits: <input type="checkbox"/> Handles shall be not more than 12 inches from sides of car. Center lift arms shall be not less than 7 inches long. <input type="checkbox"/> Center of eye at end of center lift arm shall be not more than 3 ½ inches beyond center of eye of uncoupling pin of coupler when horn of coupler is against the buffer block or end sill. (See plate B.) <input type="checkbox"/> End of handles shall extend not less than four inches below bottom of end sill or shall be so constructed as to give a minimum clearance of two inches around handle. Minimum drop of handles shall be 12 inches; maximum, 15 inches overall (see Plate B). <input type="checkbox"/> One on each end of car. When single lever is used, it shall be placed on left side of end of car. 	231.1(k)(1) 231.1(k)(2)(i) 231.1(k)(2)(ii) 231.1(k)(2)(iii) 231.1(k)(2)(iv) 231.1(k)(2)(v) 231.1(k)(3)	
End Ladder Clearance	<ul style="list-style-type: none"> <input type="checkbox"/> No part of car above end sills within thirty inches from side of car, except buffer block, brake shaft, brake-shaft brackets, brake wheel, running boards or uncoupling lever shall extend to within twelve inches of a vertical plane parallel with end of car and passing through the inside face of knuckle when closed with coupler horn against the buffer block or end sill, and no other part of end of car or fixtures on same, above end sills, other than exceptions herein noted, shall extend beyond the outer face of the buffer block. 	231.21(i)	

Item	<p style="text-align: center;">Number - Dimensions - Location - Manner of Application</p> <p style="font-size: small;">All brackets used solely to support safety appliances are mechanically affixed, except tank car tanks per MP&E TB 98-14</p>	<p style="text-align: center;">CFR Reference*</p>	<p style="text-align: center;">Notes</p>
<p>Operating Platform, Ladder Safety Railing</p>	<ul style="list-style-type: none"> <input type="checkbox"/> One operating platform, two ladders and safety railing. Not required if all fittings used in the loading or unloading of the tank car are accessible from ground or end platform. <input type="checkbox"/> Ladder stiles, $\frac{3}{8}$ by two inches or equivalent, wrought iron or steel. $1\frac{1}{4}$ inch extra strong pipe will be considered equivalent. <input type="checkbox"/> Ladder treads minimum diameter, $\frac{5}{8}$ of an inch, ² wrought iron or steel. <input type="checkbox"/> Minimum clear length of treads, 14 inches. <input type="checkbox"/> Maximum spacing of treads, 19 inches. <input type="checkbox"/> Minimum clearance of treads and ladder stiles, two inches. <input type="checkbox"/> Operating platform, minimum width, seven inches; minimum thickness, $1\frac{3}{4}$ inches. <input type="checkbox"/> Safety railing, $1\frac{1}{4}$ inch wrought iron or steel pipe. <input type="checkbox"/> Operating platform to be of sufficient length to provide access to all operating fittings. Ladder to be located on sides of car at center. <input type="checkbox"/> The safety railing shall enclose the operating platform, man-way and fittings used in the loading and unloading of the tank. <input type="checkbox"/> Railing shall be open only at the ladders where it shall extend in a vertical direction down to, and be securely attached to the platform. ⁵ <input type="checkbox"/> Maximum width of opening, 24 inches. <input type="checkbox"/> The ladders shall be securely fastened to the operating platform. The lower portion of ladder shall be braced in such a manner as to prevent any movement. <input type="checkbox"/> The operating platforms shall be supported to prevent sagging and be securely attached to the tank. <input type="checkbox"/> The safety railing shall be securely attached to four stanchions or corner posts, which shall be securely attached to the tank or operating platform. 	<p>231.21(j)(1)</p> <p>231.21(j)(2)(i)</p> <p>231.21(j)(2)(ii)</p> <p>231.21(j)(2)(iii)</p> <p>231.21(j)(2)(iv)</p> <p>231.21(j)(2)(v)</p> <p>231.21(j)(2)(vi)</p> <p>231.21(j)(2)(vii)</p> <p>231.21(j)(3)(i)</p> <p>231.21(j)(3)(ii)</p> <p>231.21(j)(4)(i)</p> <p>231.21(j)(4)(ii)</p> <p>231.21(j)(4)(iii)</p>	
<p>Safety Appliances Tanks w/ Jackets</p>	<ul style="list-style-type: none"> <input type="checkbox"/> On tanks covered with jackets, metal pads shall be securely attached to the shell proper, to which brackets shall be fastened for securing the safety appliances attached to the tanks; or, the safety appliances (with the exception of the operating platform brackets) may be secured to the jackets reinforced with metal pads at the point of attachment, which pads shall extend at least two inches from the center line of rivet holes. <input type="checkbox"/> The operating platform brackets shall be secured to the jacket reinforced with suitable bands. <input type="checkbox"/> When the safety appliances are attached to the jacket covering of the tank, the jacket shall be tightened so that there will be no danger of its slipping around. 	<p>231.21(k)</p>	

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Other CFR Sections	<input type="checkbox"/> Inspect all components to ensure compliance with the regulations. <input type="checkbox"/> Ensure all brake components are located so that an inspection can be safely conducted without an inspector placing himself in a precarious or unsafe position, (TB MP&E 98-32).		
Misc.	<input type="checkbox"/> Check for any sharp or protruding objects or areas on the equipment that may create a safety concern or personal injury. <input type="checkbox"/> Check for potential pinch points at all safety appliance arrangements. <input type="checkbox"/> Check to ensure that all brackets used solely to support a safety appliance are mechanically fastened. The use of weld on brackets is prohibited. <input type="checkbox"/> Check to ensure compliance with all applicable federal regulations . <input type="checkbox"/> Verify coupler height 31½ inch minimum, 34½ inch maximum.	231.31(a)(1)	
Digital Photos	<input type="checkbox"/> General Arrangement Photo Sheet ~ No Deviations Noted (six photos minimum, A & B ends, each corner at 45 degree angle) <input type="checkbox"/> Deviation Photo Sheet ~ Deviations Noted: As many photos as necessary to fully depict, document and illustrate CFR deviations (e.g. 215, 229, 231 & 232)		

* The CFR reference sections noted throughout the check list refers to the *actual* regulatory requirement.

Footnotes:

- 1 TB MP&E 98-53 ...3/8 inch alloy chain and 1/2 inch steel alloy chain currently being used by new car manufacturers exceed the specifications.
- 2 TB MP&E 98-18 Ladder treads, handholds of circular cross-section, 13/16 inch diameter and sill steps, 5/8 inch thick and 2 inches wide, when constructed of 6061-T6 aluminum alloy exceeds the current Federal Railroad Administration's requirements.
- 3 Equivalent must meet or exceed the cross sectional area the result of which may not be less than 3/4 inch.
- 4 TB MP&E 98-13 Clear depth means a vertical space the width of, and above the sill step material or strap and should be clear and unobstructed for 8 inches.
- 5 TB MP&E 98-31 ...openings in the operating platform allowing access to the ladders do not require safety railing (safety chain) enclosure. All other openings of the operating platform require enclosure.

IMPORTANT NOTE: Equipment that is not adequately addressed in Part 231. For examples: There are no ladder requirements in §§231.29 or 231.30. However, if additional safety appliances are used on *any type of equipment*, (i.e., §231.18 Cars of special construction), they must meet the dimension, location, and a manner of application requirements. This logic holds true regardless of the equipment inspected. When applying §231.6 during a sample-car inspection on an auto rack, you will encounter components not mentioned in that section such as ladders, stenciling, end ladder clearance, etc. These additional components must meet the appropriate requirements. If there is any doubt, consult your regional specialist.

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