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Standardized Technical Specification

Bi-Level Passenger Rail Cars
for
Intercity Corridor Service

Chapter 6

Couplers and Draft Gear

Revision F

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Revision Status

Spec Section #	Description	Date of Revision	New Revision Level	Author
All	Original Release	5/4/06	A	
All	Formatted	3/19/07	B	CLC
All	Complete review of Chapter.	4/23/07	C	CLC
All	Re-organized and incorporated comments per Stan	11/2/07	D	CLC
All	Edits from Stan	11/27/07	D.1	CLC
All	Updated Footers	12/10/07	D.2	CLC
All	Incorporated edits and comments agreed upon in Nov. 30 meeting w/ Leo, Bob, and I	12/26/07	D.3	CLC
All	Write overview; edit sections on yoke and radial connector, carrier, performance requirement.	2/6/08	D.4	sch
All	Re-organized and incorporated comments per Stan, added the Vendor paragraph, and changed the format of Heading 3, Heading 4, and Titles of Standards.	2/8/08	E	CLC
6.2	Replaced Language for supplemental reference paragraph	4/25/09	E.1	CLC
All	Minor edits, move performance requirements to sec 6.5	4/27/09	E.2	sch
6.2	Updated References	7/9/09	E.3	CLC
All	Conformed to Style Guide	9/2/09	E.4	CLC
Spec. Comp.	Edited Specified Components per Stan	12/23/09	E.5	CLC
All	Incorporated Stan's edits/comments w/ tracked changes	1/30/10	E.5	CLC
All	Incorporated Stan's response to Amtrak's, Interfleet's, PB's & Virginkar's comments.	2/21/10	E.5	CLC
All	Accepted all tracked changes and formatted	3/19/10	F	CLC

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6.0 Couplers and Draft Gear

6.1 Overview

Each car shall be equipped on both ends with a Type H Tightlock coupler with associated draft gear, radial connection, yoke, coupler carrier and uncoupling mechanism. The coupler and draft gear assembly shall be compliant with the requirements of APTA Recommended Practice RP-M-003-98.

Pushback or shearback couplers shall not be used.

6.2 General Requirements

Couplers, draft gear and associated components shall conform to the strength requirements specified in all applicable APTA and AAR standards and recommended practices. Coupler carriers shall be capable of withstanding the vertical forces identified in 49CFR Section 238.207. All components shall be designed to operate properly under the operational and environmental conditions defined in Caltrans Specification 1-106. It shall be possible to remove or install a coupler and draft gear assembly without requiring lifting of the carbody or removal of the truck.

6.3 Performance Requirements

Couplers and associated apparatus shall be designed to meet buff and draft strength requirements as specified by AAR. The coupler body shall be designed to withstand a load of 725,000 lbs without failure and 0.03 in. maximum permanent set at 450,000 lbs. The knuckle shall be designed to withstand a load of 600,000 lbs without failure and 0.03 in. maximum permanent set at 300,000 lbs. In addition, couplers and associated apparatus, including coupler carrier, shall be capable of withstanding for any horizontal position of the coupler, a vertical load of 100,000 lbs applied in either direction to the coupler as near to the pulling face as practical without deformation to coupler carrier, supporting car body structure, and intervening connections.

Each car shall be capable of operating satisfactorily while coupled to any other car or locomotive used in passenger service under the operational and environmental conditions defined in Caltrans Specification 1-106. Coupler swing shall be such that a car shall be able to negotiate a 250-foot radius (23 degree) curve while coupled to other cars and/or locomotives as specified without damage to trucks, draft gear, carbody, diaphragms, air hoses or car-to-car connections.

Car-to-car and coupler-to-carbody air connections shall be designed in conformance with APTA Recommended Practice RP-M-001-97. See Chapter 7 for details regarding car-to-car air connections.

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6.4 Coupler, Yoke and Radial Connector

Type H - AAR standard tightlock couplers with a 6-7/16 in. by 8 in. shank, coupler parts, coupler operating mechanisms, yokes, radial connections and attachments shall be used. Material for couplers and yokes must be AAR Standard M-201 grade C or E high tensile steel. Couplers shall comply with the requirements of APTA Recommended Practice RP-M-003-98.

Yoke shall be National Castings C-Y65-HT.

Radial connector shall be National Castings Y-25A-HT.

6.5 Draft Gear

Draft gear elements shall consist of twin-cushion WM-6-DP draft gear packs with standard 24.625 in. pockets.

6.6 Coupler Carrier

The coupler carrier shall be designed to adequately and consistently support the coupler through its full range of vertical and horizontal movement, and shall maintain the coupler at a nominal 34.5 in. Above Top of Rail (ATOR) height (as measured at the center of the coupler) when uncoupled. The carrier shall be held captive in the carrier pocket regardless of coupler movements.

A means shall be provided to allow removal and replacement of wear plates, carrier springs and carrier stops. The top surface of the coupler carrier shall be equipped with a replaceable nylon wear plate - the coupler shall not rest on a metal surface.

The coupler carrier shall provide for adjustment of coupler height of 1 in. in either vertical direction from the nominal 34.5 in. ATOR coupler height standard. The coupler carrier shall comply with the vertical force requirements specified in 49CFR Sections 238.205 and 238.207.

6.7 Uncoupling Mechanism

An uncoupling mechanism shall be installed at each end of each car, in conformance with section 5.10 of APTA Standard SS-M-016-06. Minimum clearance of 2 in. shall be maintained between uncoupling mechanism and all other components on the end of the car (including jumper cables, receptacles and carbody structural elements such as collision posts) when car is either coupled or uncoupled. The uncoupling levers shall seat firmly when locked in place and will not rattle or vibrate. All uncoupling levers and hardware shall meet the safety requirements of 49CFR Part 238.

* End of Chapter 6 *

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