

ICS 45.060

CCS S 33



**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 37454-2019

Design method for non-powered axles of rolling stock

Issued on: May 10, 2019

Implemented on: December 1, 2019

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

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2 symbol

1 m1 kg mass on the journal per wheel (including bearing and axle box mass)

3 m1 m2 kg wheel pair on the rail

4 gm/s² gravity acceleration

5 P_N One-half of the vertical force applied to the rail per wheel, P=

6 P₀ N Vertical static load on each journal when the load is symmetrical, P₀=

7 P₁ N Vertical force on the side journal

8 P₂ N Vertical force on the side of the load shedding

10 Y₁ N The load-bearing side is perpendicular to the rail wheel horizontal force

11 Y₂ N Wheel-load horizontal force perpendicular to the rail on the load-relief side

12 H_N balances the forces of Y₁ and Y₂

13 Q₁ N Increased load side vertical reaction force

14 Q₂ N Load-reducing side wheel vertical reaction

15 F_i N

16 F_f N Maximum pressure of a brake on a brake shoe or brake disc on the same brake shoe

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard is proposed and managed by the State Railway Administration.

This standard was drafted. CRRC Qingdao Sifang Vehicle Research Institute Co., Ltd., China Railway Science Research Group Co., Ltd. Locomotives

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Limited company.

1 Scope

This standard specifies the forces and moments based on mass and braking conditions and the various parts of the axles that should be considered in the design of non-powered axles

for railway vehicles.

What characteristics are determined and the allowable stress.

This standard applies to all gauges 1) solid and hollow non-powered axle design for railway passenger cars and trucks. Light rail vehicles and trams

Non-powered axle design can be used as reference.

This standard does not apply to the design of non-powered axles for locomotives and power bogies.

2 symbol

The symbols listed in Table 1 apply to this document.

Table 1 symbol

Serial number symbol unit description

1 m_1 kg mass on the journal per wheel (including bearing and axle box mass)

2 m_2 kg wheel pair mass and the mass on the wheel pair between the two rolling circles of the wheel (brake disc, etc.)

5 P_N One-half of the vertical force applied to the rail per wheel, $P =$

$M_1 m_2$ ()g

6 P_0 N Vertical static load on each journal when the load is symmetrical, $P_0 =$

$M_1 g$

8 P_2 N Vertical force on the side of the load shedding

Part of the braking force of the 9 P' N mechanical brake system

15 F_i N

Mass applied to the unsprung components (brake discs, gears, etc.) installed between the two wheels

Force, i means a certain unsprung component

16 Ff N Maximum pressure of a brake on a brake shoe or brake disc on the same brake shoe

- 1) For non-standard gauges, some formulas need to be modified.

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