

ICS 43.080.10

CCS T 70



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

GB/T 31883-2015

**Road vehicles -- Drawbar couplings, drawbar eyes, fifth wheel
kingpins, hook couplings and toroidal eyes -- Wear limits for
in-use mechanical couplings**

道路车辆 牵引连接件、牵引杆孔、牵引座牵引销、连接钩及环形孔 机械连接件
使用磨损极限

(English Translation)

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1 Scope

This Standard specifies the wear limit size and maximum allowable wear extent of the in-use mechanical coupling; so that ensure the safe running of the heavy-duty vehicle installed with such coupling.

This Standard is applicable to the following criteria mechanical couplings:

- 40mm and 50mm drawbar couplings (ISO 3584:2001);
- 40mm and 50mm drawbar eyes (ISO 8755:2001 and GB/T 4781-2006);
- 50# and 90# fifth wheel kingpins (GB/T 4606-2006 and GB/T 4607-2006);
- Hook couplings and toroidal eyes (ECE R55, Rev.1:2001).

2 Normative References

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this document.

GB/T 4606 Road Vehicles - 50 Semi-Trailer Fifth Wheel Coupling Pin - Basic and Mounting/Interchangeability Dimensions (ISO 337:1981, IDT)

GB/T 4607 Road Vehicles - 90 Semi-Trailer Fifth Wheel Coupling Pin - Basic and Mounting/Interchangeability Dimensions (ISO 4086:2001, IDT)

GB/T 4781-2006 Commercial Road Vehicles - 50mm Drawbar Eye - Interchangeability (ISO 1102:2001, IDT)

ISO 3584:2001 Road Vehicles - Drawbar Couplings - Interchangeability

ISO 8775:2001 Commercial Road Vehicles - 40mm Drawbar Eye -

Interchangeability

ECE R55, Rev.1:2001 Revision 1: 2001 - Uniform Provisions Concerning the
Approval of Mechanical Coupling Components of Combinations of Vehicles

3 Inspection of Parts Wear

3.1 40mm and 50mm drawbar couplings

3.1.1 Under the normal operating conditions, the mechanical contact between the

traction connecting pin and the drawbar eye bushing shall cause wear on the surface of the connecting pin; and form an elliptical section on the horizontal symmetry plane of the connecting pin; its minimum dimension is in the longitudinal axis direction of the vehicle (detection size is shown in Figure 1).

3.1.2 Directly measure or use a special gauge to check the size of the connecting pin after wearing.

3.2 40mm and 50mm drawbar eyes

3.2.1 Under the normal operating conditions, the mechanical contact between the

drawbar eye bushing and the traction connecting pin shall cause wear on the surface of the connecting pin; and form an elliptical section on the horizontal symmetry plane of the bushing; its maximum dimension is in the longitudinal axis direction of the vehicle (detection sizes are shown in Figures 2 and 3).

3.2.2 Under the normal operating conditions, the mechanical contact between the

drawbar eyes and the drawbar couplings shall cause the wear on the upper and lower planes of the drawbar eyes, resulting in thinning of the thickness between the upper and lower planes of the drawbar eye center; the bushing deviates from the normal working position (detection sizes are shown in Figures 2 and 3).

3.2.3 Directly measure or use a special gauge to check the size of the traction ring hole after wearing.

3.2.4 Check the thickness of each side of the longitudinal center plane of the drawbar eyes.
couplings and drawbar eyes can see Tables 2 and A.2.

Table 2 -- Wear Limit Size of 50mm Drawbar Couplings and Drawbar Eyes

Mechanical couplings Use limit size

50mm drawbar couplings a ≥ 46.5

50mm drawbar eye bushing $b \leq 51.5$

50mm drawbar eye thickness $c \geq 41.5$ a Size of connecting pin: see standard design size shown in the side view of the Figure 7 in ISO

3584:2001.

b Internal size of bushing: see standard design size shown in Figures 2 and 3 of GB/T 4781-2006.

c Thickness of drawbar eye: see standard design size shown in side view of Figure 1 of GB/T 4781-2006.

4.3 50# fifth wheel kingpins

Check as per the provisions of 3.3; the wear limit use of 50# fifth wheel kingpin shall refer to Tables 3 and A.3.

Table 3 -- Wear Limit Size of 50mm Fifth Wheel Kingpins

Mechanical couplings Use limit size

Upper cylinder of 50# fifth wheel kingpin $a \geq 71$

Middle cylinder of 50# fifth wheel kingpin $b \geq 49$ a External size of upper cylinder of kingpin: see standard design size shown in Figure 1 of GB/T 4606-2006.

b External size of middle cylinder of kingpin: see standard design size shown in Figure 1 of GB/T 4606-2006.

4.4 90# fifth wheel kingpins

Check as per the provisions of 3.3; the wear limit size of 90# fifth wheel kingpin shall refer to Tables 4 and A.4.

Table 4 -- Wear Limit Size of 90# Fifth Wheel Kingpins

Mechanical couplings Use limit size

Upper cylinder of 90# fifth wheel kingpin $a \geq 112$

Middle cylinder of 90# fifth wheel kingpin $b \geq 86$ a External size of upper cylinder of kingpin: see standard design size shown in Figure 1 of GB/T 4607-2006.

b External size of middle cylinder of kingpin: see standard design size shown in Figure 1 in

GB/T 4607-

2006.

4.5 Hook couplings and toroidal eyes

Check as per the provisions of 3.4 and 3.5; the wear limit size of 68mm and 76mm toroidal eyes and corresponding hook couplings shall refer to Tables 5 and A.5.

Unit: mm

Unit: mm

Unit: mm

Appendix A (Normative)

Specified Size, Use Limit Size and Allowable Wear Extent of Mechanical Couplings

A.1 40mm drawbar couplings and drawbar eyes

The specified size, use limit size and allowable wear extent of 40mm drawbar couplings and drawbar eyes can refer to Table A.1.

Table A.1 -- Specified Size, Use Limit Size and Allowable Wear Extent of 40mm Drawbar Couplings and Drawbar Eyes

Mechanical couplings Basic size

Use limit size

Allowable wear extent Detection position

40mm drawbar couplings 38 (ISO 3584) $\geq 36.5 \leq 1.5$

Check the connecting pin wear from the longitudinal axial direction of the vehicle, see
Figure 1

40mm drawbar eye bushing 40 (ISO 8755) $\leq 41.5 \leq 1.5$

Check the bushing wear from the longitudinal axial direction of the vehicle, see Figure 2

40mm drawbar eye thickness 30.5 (ISO 8755) $\geq 28 \leq 2.5$

Check the thickness of each side of the longitudinal center surface of the drawbar eyes, see
Figure 2

A.2 50mm drawbar couplings and drawbar eyes

The specified size, use limit size and allowable wear extent of 50mm drawbar couplings and