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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 43.040.10

CCS T 36

GB/T 20716.2-2025 / ISO 7638-2:2018

Replacing GB/T 20716.2-2006

**Road Vehicles – Connectors for the Electrical Connection of
Towing and Towed Vehicles (7-Pole) – Part 2: Connectors for
Braking Systems and Running Gears of Vehicles with 12V
Nominal Supply Voltage**

道路车辆 牵引车和挂车之间的电连接器（7 芯） 第 2 部分：12V

标称电压车辆的制动系统和行走系的连接

(ISO 7638-2:2018, Road Vehicles – Connectors for the Electrical Connection of
Towing and Towed Vehicles – Part 2: Connectors for Braking Systems and Running
Gears of Vehicles with 12V Nominal Supply Voltage, IDT)

Issued on: August 1, 2025

Implemented on: February 1, 2026

Issued by: State Administration for Market Regulation;

Standardization Administration of the People's Republic of China.

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Foreword

This Document was drafted as per the rules specified in GB/T 1.1-2020 *Directives for Standardization – Part 1: Rules for the Structure and Drafting of Standardizing Documents*.

This Document is Part 2 of GB/T 20716 *Road Vehicles - Connectors for the Electrical Connection of Towing and Towed Vehicles (7-Pole)*. GB/T 20716 consists of the following parts:

- Part 1: Connectors for braking systems and running gears of vehicles with 24 V nominal supply voltage;
- Part 2: Connectors for braking systems and running gears of vehicles with 12 V nominal supply voltage.

This Document replaced GB/T 20716.2-2006 *Road Vehicles – Connectors for the Electrical Connection of Towing and Towed Vehicles - Part 2: Connectors for Braking Systems and Running Gears of Vehicles with 12V Nominal Supply Voltage*. Compared with GB/T 20716.2-2006, the major technical changes are as follows besides the structural adjustments and editorial modifications:

- a) Change the content of footnote b in Figure 1 (see 4.2 of this Edition; 4.2 of the 2006 Edition);
- b) Change Figure 2 and its footnote, adding g (see 4.3 of this Edition; 4.3 of the 2006 Edition);
- c) Delete the content of "Connector location and free space" (see 5.2 of the 2006 Edition);
- d) Change the durability cycle from 1,000 to 10,000 (see 6.4 of this Edition; 6.4 of the 2006 Edition).

This Document equivalently adopted ISO 7638-2:2018 *Road Vehicles – Connectors for the Electrical Connection of Towing and Towed Vehicles – Part 2: Connectors for Braking Systems and Running Gears of Vehicles with 12V Nominal Supply Voltage*.

This Document made the following minimum editorial modifications:

- To keep constant with the current standard, change the standard name into *Road Vehicles - Connectors for the Electrical Connection of Towing and Towed Vehicles (7-Pole) – Part 2: Connectors for Braking Systems and Running Gears of Vehicles with 12 V Nominal Supply Voltage*.
- Correct the typo in the title of the normative referenced document ISO 7638-1 in the international standard by changing “Part 2” to “Part 1” and “12 V” to “24 V” .

Road Vehicles – Connectors for the Electrical Connection of Towing and Towed Vehicles (7-Pole) – Part 2: Connectors for Braking Systems and Running Gears of Vehicles with 12V Nominal Supply Voltage

1 Scope

This Document specifies the dimensional characteristics, contact distribution, testing and requirements for a 7-pole electrical connector for the braking systems and running gears between a towing and towed vehicles with a nominal voltage of 12 V. It also specifies a storage socket for storing the plug when the plug and socket are separated.

This Document applies to Category N towing vehicles with a nominal voltage of 12 V and is for reference only for other vehicles.

2 Normative References

The provisions in following documents become the essential provisions of this Document through reference in 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) is applicable to this Document.

ISO 4091 Road vehicles – Connectors for the electrical connection of towing and towed vehicles – Definitions, tests and requirements

NOTE: GB/T 5053.3-2006 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - Definitions tests and requirements (ISO 4091:2003, IDT)

ISO 4141 (all parts) Road vehicles – Multi-core connecting cables

NOTE: GB/T 5054 (all parts) Road vehicles - Multi-core connecting cables [ISO 4141 (all parts)]

ISO 7638-1 Road vehicles – connectors for the electrical connection of towing and towed vehicles – Part 1: Connectors for braking systems and running gear of vehicles with 24V nominal supply voltage

NOTE: GB/T 20716.1-2006 Road vehicles - Connectors for the electrical connection of towing and towed vehicles - Part 1: Connectors for braking systems and running gears of vehicles with 24V

nominal supply voltage (ISO 7638-1:2003, IDT)

ISO 11992-1 Road vehicles – Interchange of digital information on electrical connections between towing and towed vehicles – Part 1: Physical and data-link layers

NOTE: GB/T 43192.1-2023 Road vehicles - Interchange of digital information on electrical connections between towing and towed vehicles - Part 1: Physical and data-link layers (ISO 11992-1:2019, IDT)

ISO 11992-2 Road vehicles – Interchange of digital information on electrical connections between towing and towed vehicles – Part 2: Application layer for brakes and running gear

ISO 12098 Road vehicles – Connectors for the electrical connection of towing and towed vehicles – 15-pole connector for vehicles with 24V nominal supply voltage

NOTE: GB/T 20717-2024 Road vehicles - Connectors for the electrical connection of towing and towed vehicles (15-pole) - 15-pole connector for vehicles with 24 V nominal supply voltage (ISO 12098:2020, IDT)

3 Terms and Definitions

For the purposes of this Document, the terms and definitions given in ISO 4091 apply.

The websites for terminology databases used for standardization maintained by ISO and IEC are as follows:

--- IEC Electropedia: <https://www.electropedia.org/>;

--- ISO Online Browsing Platform: <https://www.iso.org/obp>.

4 Dimensional Characteristics

4.1 General

Details not specified in this Document are left to the discretion of the manufacturer.

The contacts shall be movable so as to adjust to the reference position when the plug and socket are mated.

4.2 Plug

The dimensions of the plug shall be as shown in Figure 1.

The design of the latch shall ensure the space required for the screw to secure the socket (see Figure 2).

4.3 Socket

The dimensions of the socket shall be as shown in Figure 2.

The socket cover shown in the figure is in the open position; it shall automatically close when the plug is removed.

4.4 Storage socket

The dimensions of the storage socket shall be as shown in Figure 3.

The socket cover shown in the figure is in the open position; it shall automatically close when the plug is removed.

5 Connector Application

5.1 General requirements

Spiral cable assemblies are used on semi-trailer towing vehicles (saddle tractors). Regardless of whether the tractor is connected to a semi-trailer, the cable assembly can be connected to the tractor's circuit through the socket or directly (see Figure 4).

Non-spiral cable assemblies are used on drawbar trailers; the socket shall be installed on the rear of the full trailer truck (see Figure 4).

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