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

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**Diagnostic connector of motorcycles and mopeds
(English Translation)**

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1 Scope

This document specifies the location of vehicle connector, the design of vehicle and external diagnostic equipment connectors, the contact arrangement and related circuit specifications for diagnostic connector of motorcycles and mopeds.

This document applies to connectors for external diagnostic equipment of motorcycles and mopeds.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 1690, Rubber, vulcanized or thermoplastic - Determination of the effect of liquids

GB/T 4756, Method for manual sampling of petroleum liquids

GB 12981, Motor vehicle brake fluids

GB/T 28046.2, Road vehicles - Environmental conditions and testing for electrical and electronic equipment - Part 2. Electrical loads (GB/T 28046.2-2019, ISO

16750-2:2012, MOD)

GB/T 39851.3, Road vehicles - Diagnostic communication over Controller Area

Network (DoCAN) - Part 3. Requirements for emissions-related systems (GB/T

39851.3-2021, ISO 15765-4:2016, MOD)

GB/T 41590.4, Road vehicles - Diagnostic communication over K-Line (DoK-Line)

- Part 4.Requirements for emission-related systems (GB/T 41590.4-2022, ISO 14230-4.2000, IDT)

GB/T 42193.4, Road vehicles - Communication between vehicle and external equipment for emissions-related diagnostics - Part 4.External test equipment (GB/T 42193.4-2022, ISO 15031-4.2014, IDT)

ISO 7309, Road vehicles - Hydraulic braking systems - ISO reference petroleum base fluid

ISO 8092-2.20231) Road vehicles - Connections for on-board electrical wiring harnesses - Part 2.Terminology, test methods and general performance requirements

ISO 9141-2, Road vehicles - Diagnostic systems - Part 2.CARB requirements for interchange of digital information

ISO 20653, Road vehicles - Degrees of protection (IP code) - Protection of electrical equipment against foreign objects, water and access

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

connection

Engagement of two mating connectors or contacts.

3.2

connector

A component consisting of contacts and a housing that guides their connection and disconnection.

3.3

contact

Conductive element within a connector (including a wire termination) that mates with a corresponding component to establish an electrical circuit connection.

3.4

female contact

Electrical contact (including a wire connector, such as a socket or sleeve) that receives a mating contact to establish an electrical circuit connection on its inner surface.

3.5

male contact

1) ISO 8092-2:2005 has been abolished.

Electrical contact (including a wire connector, such as a plug, pin or blade) that is inserted into a female contact to establish an electrical circuit connection on its outer surface.

4 Location of vehicle connector

It shall be an easily accessible location, with the preferred location being under the seat.

When connecting to external diagnostic equipment, it shall not interfere with the normal physical and electrical operation of the vehicle.

5 Design of vehicle and external diagnostic equipment

connectors

5.1 Dimensions of diagnostic connector

The dimensions of the external diagnostic equipment connector are shown in Appendix A.

The vehicle connector shall be compatible with the external diagnostic equipment connector, and the electrical, mechanical, and climatic performance of the connection shall meet the requirements.

5.2 Number of contacts

Both the vehicle diagnostic connector and the external diagnostic equipment connector shall be able to accommodate 6 contacts.

5.3 Connection requirements

The vehicle diagnostic connector shall be equipped with a female contact that can be paired with external diagnostic equipment equipped with a male contact.

5.4 Connector color/features

The vehicle diagnostic connector shall be red.

The vehicle diagnostic connector and the external diagnostic equipment connector shall have a locking function to ensure that the external diagnostic equipment connector remains mated when correctly connected. The locking function shall be designed so that the operator can clearly feel it when the external diagnostic equipment connector is fully in place.

The locking function of the vehicle diagnostic connector shall be able to unlock when the connector is disconnected.

5.5 Temperature classes

The lowest temperature class of the selected material shall be the T1(G) grade ambient temperature range specified in Table 1 of ISO 8092-2.2023, i.e., -40 °C ~ 85 °C.

5.6 Mating durability of diagnostic connector

External test equipment manufacturers shall specify the minimum number of mating and unmating cycles that the external test equipment connectors can perform while meeting the requirements.

5.7.1 Preprocessing

Each time the tests given in 5.7.5 and the requirements given in 5.7.3 and 5.7.4 are performed, a brand-new sample shall be used, and 200 mating and unmating cycles shall be performed before starting the tests in 5.7.5.

5.7.2 Functional requirements of contacts

The functional requirements of contacts are as follows.

- a) The pin dimensions of the external diagnostic equipment connector shall conform to the requirements of Appendix A;
- b) When performing full-circuit and single-circuit tests at 20 °C, the maximum permissible current at the contacts shall not exceed 3.5 A (DC, full circuit) and 7.5A (DC, single circuit);
- c) The temperature range shall be -40 °C ~ 85 °C;
- d) The voltage range shall comply with the requirements of GB/T 28046.2;
- e) The connector contact system shall use wires with a cross-sectional area not exceeding 0.50 mm².

5.7.3 Performance requirements of contacts

After each completion of the accelerated environmental aging test in 5.7.5, the contact system (paired contacts) shall meet the requirements of a). The connection resistance test shall comply with the requirements of 6.1.2.1 in ISO 8092-2.2023.

- a) Cable-to-cable contact resistance for each pair of contacts. According to 6.1.2.3 of ISO 8092-2.2023, the initial connection resistance is 30 mohm when tested with a 1A constant current source.
- b) Recommended contact resistance at low current. According to 6.1.2.2 of ISO