



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

GB/T 40521.2-2021

**Passenger cars test track for a severe lane-change manoeuvre -
Part 2: Obstacle avoidance**

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Foreword

This document was drafted in accordance with the rules given 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 40521 "Passenger cars test track for a severe lane-change manoeuvre". The following parts have been released for GB/T 40521:

- Part 1: Double lane-change;
- Part 2: Obstacle avoidance.

This document uses the redrafting method to modify and adopt ISO 3888-2:2011 "Passenger cars - Test track for a severe lane-change manoeuvre - Part 2: Obstacle avoidance".

The technical differences between this document and ISO 3888-2:2011, and the reasons are as follows:

- With regard to the normative references, this document makes technical adjustments to adapt to the technical documents of China. The adjustments are concentrated in Chapter 2 "Normative references". The specific adjustments are as follows:

- * Remove the reference to ISO 3833:1977;
- * Add a reference to GB/T 3730.3 (see Chapter 3).

The following editorial changes have been made for this document:

- Change the standard name;
- Add the reference to GB/T 3730.1.

1 Scope

This document specifies the size of the test track for the closed-loop test of severe lane-change manoeuvre for subjective evaluation of the obstacle avoidance ability of passenger cars.

This document applies to passenger cars that are defined in GB/T 3730.1; it can be implemented by reference for other types of vehicles whose total mass is no more than 3.5 t.

2 Normative references

The contents of the following documents constitute the indispensable clauses of this document through normative references in the text. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 3730.3, Motor vehicles and towed vehicles - Dimensions of vehicles - Terms and definitions

3 Terms and definitions

Terms and definitions determined by GB/T 3730.3 and the following ones are applicable to this document.

3.1

Vehicle width

Vehicle width, excluding the rearview mirror.

4.1 Obstacle avoidance test track size

Appendix A

(Informative)

Test method

A.1 Severe lane-change manoeuvre of obstacle avoidance

A.1.1 Principle

The severe lane-change manoeuvre of obstacle avoidance is a dynamic evaluation method. The process is to drive the vehicle from the initial lane to the adjacent parallel lane quickly, and then back to the original lane, during which the vehicle shall not exceed the lane boundary.

The purpose of this operation is to enable the vehicle to alternately generate higher lateral acceleration, so as to evaluate the lateral dynamics of the vehicle.

A.1.2 Some characteristics for evaluating lane-keeping ability

The severe lane-change manoeuvre of obstacle avoidance is used to assess the vehicle's ability to avoid an obstacle suddenly in front of it. The driver can select the vehicle driving path in the set test track.

For the performance of the "person-vehicle-road" system in actual driving, this kind of preview control is a very important evaluation method. After selecting a suitable driving path, the driver can repeat driving on this path at a certain degree of accuracy.

A.1.3 Limitations

This test is a closed-loop test. The driver's control strategy will have a significant impact on the test results. Objective measurement of vehicle dynamics-related performance should not be performed; only subjective evaluation is recommended.

Due to the difference in the driving path of the vehicle during each measurement, the vehicle speed obtained from multiple tests will appear obvious dispersion.

Even if the longitudinal control process of the vehicle (i.e., releasing the

accelerator at 2 m in section 1) is strictly limited, more consistent vehicle speed data cannot be obtained. Therefore, classification shall not be based on vehicle speed, and the minimum vehicle speed for testing shall not be specified.

A.1.4 Conclusion

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