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QC/T 1141-2020

Automobile Clutch Release Bearing Assembly

汽车离合器分离轴承总成

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Annex:

Number, name, and date of implementation of 8 automobile industry standards

No.	Standard number	Standard name	Replaced standard number	Date of implementation
479	QC/T 1136-2020	Environmental test requirements and test methods of insulated-gate bipolar transistors (IGBT) module for electric vehicles		2021-04-01
480	QC/T 1137-2020	Edging glass for automobiles		2021-04-01
481	QC/T 1138-2020	Sliding window glass assembly for automobiles		2021-04-01
482	QC/T 1139-2020	Technical specification for auto parts remanufacturing products - Connecting rod		2021-04-01
483	QC/T 1140-2020	Technical specification for auto parts remanufacturing products - Crankshaft		2021-04-01
484	QC/T 1141-2020	Clutch release bearing assembly for automobile		2021-04-01
485	QC/T 533-2020	Drive axle assembly for commercial vehicle	QC/T 533-1999 QC/T 534-1999	2021-04-01
486	QC/T 755-2020	Technical requirements for LNG vehicle gas system	QC/T 755-2006	2021-04-01

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Automobile Clutch Release Bearing Assembly

1 Scope

This document specifies the technical requirements and bench test methods for automotive clutch release bearing assembly.

This document is applicable to automotive mechanically and hydraulically controlled clutch release bearing assembly.

2 Normative Reference

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) is applicable to this document.

QC/T 1125-2019 Automobile Clutch System Terms and Definitions

3 Terms and Definitions

For the purposes of this document, the terms and definitions given in QC/T 1125-2019 and the following apply.

3.1 Mechanically controlled clutch release bearing

A clutch release bearing that realizes clutch separation and engagement under the action of a mechanical mechanism.

3.2 Hydraulically controlled clutch release bearing

The clutch release bearing that realizes the clutch separation and engagement under the action of hydraulic pressure.

3.3 Self-aligning clutch release bearing assembly

Bearing assembly with automatic adjustment to realize the coaxial rotation performance of the clutch release bearing assembly and the clutch cover assembly.

3.4 Non-aligning clutch release bearing assembly

4.2 Aligning force

According to the test method specified in 5.1.2, the aligning force of self-aligning clutch release bearing assembly of a passenger car shall be 25~150N; and the aligning force of self-aligning clutch release bearing assembly of a commercial vehicle shall be 100~400N; for those with special requirements, they can be implemented according to customer's technical requirements.

4.3 Aligning displacement

According to the test method specified in 5.1.3, the aligning displacement of the self-aligning clutch release bearing assembly shall be no less than 1.0mm; for those with special requirements, they can be implemented according to the customer’s technical requirements.

4.4 Noise

According to the test method specified in 5.1.4, the noise of the clutch release bearing assembly of passenger cars shall not exceed 64dB (A); and the noise of the clutch release bearing assembly of commercial vehicles shall not exceed 74dB (A); for those with special requirements, they can be implemented according to customer's technical requirements.

4.5 Durability

After the durability test is completed in accordance with the test conditions specified in 5.1.5.1, any part of the clutch release bearing assembly shall not be damaged; the amount of wearing on the rotating end face of the bearing shall be no greater than 0.5mm; and the noise value after the test shall be no greater than 120% before the test; and it shall meet the performance requirements of 4.1, 4.2 and 4.3; and the hydraulically controlled clutch release bearing shall also meet the performance requirements of 4.6 and 4.7.

4.6 Pressure resistance

According to the test method specified in 5.2.6, the pressure drop of the hydraulically controlled clutch release bearing assembly of the commercial vehicle shall be less than 0.5MPa; and the pressure drop of the hydraulically controlled clutch release bearing assembly of the passenger car shall be less than 0.2MPa.

4.7 Low pressure sealing performance

According to the test method specified in 5.2.7, the pressure drop of the hydraulically controlled clutch release bearing assembly shall be less than 1kPa.

4.8 Low temperature performance

1 – motor; 2 – substitute flywheel; 3 – clutch driven plate assembly; 4 – heater; 5 – clutch cover assembly; 6 – insulation protective cover; 7 – release bearing assembly; 8 – force sensor; 9 – connecting rod; 10 – camshaft; 11 – loading motor

Figure 5 – Schematic Diagram of Durability Test of Clutch Release Bearing Assembly

5.2 Hydraulically controlled clutch release bearing assembly

5.2.1 Start-up torque test

The same as 5.1.1.

5.2.2 Aligning force test

The same as 5.1.2.

5.2.3 Aligning displacement test

The same as 5.1.3.

5.2.4 Noise test

The same as 5.1.4.

5.2.5 Durability test

5.2.5.1 Test conditions

The same as 5.1.5.1.

5.2.5.2 Test procedures

The hydraulically controlled clutch release bearing assembly and the matching clutch cover assembly and housing shall be installed on the test device shown in Figure 6 for durability test. After the test is completed, it shall be retested in sequence according to the test methods specified in 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.6 and 5.2.7.

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