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**Technical Specifications for Remanufactured
Automotive Components – Connecting Rod**

汽车零部件再制造产品技术规范 连杆

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Technical Specifications for Remanufactured Automotive Components – Connecting Rod

1 Scope

This Document specifies the terms and definitions, process requirements, performance requirements, test methods, inspection rules, markings, packaging, transportation and storage of remanufactured products of automobile engine connecting rods.

This Document is applicable to remanufactured products of automobile engine connecting rods.

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) is applicable to this document.

GB/T 1958 Geometrical Product Specifications (GPS) - Geometrical Tolerance - Verification Prescription

GB/T 6809.3 Reciprocating Internal Combustion Engines - Vocabulary of Components and Systems - Part 3: Main Running Gear

GB 22128 Reciprocating Internal Combustion Engines - Vocabulary of Components and Systems - Part 3: Main Running Gear

GB/T 26989 Automobile Recovery - Terminology

GB/T 28675 Remanufacturing of Automotive Components - Disassembly

GB/T 28676-2012 Remanufacturing of Automotive Components - Classification

GB/T 28677 Remanufacturing of Automotive Components - Cleaning

GB/T 28678 Remanufacturing of Automotive Components - Pre-Delivery Inspection

4.1.2 The production process of the remanufactured products can refer to Figure A.1.

4.2 Disassembly requirements

4.2.1 The disassembly of the connecting rod shall comply with the requirements of GB/T 28675.

4.2.2 The connecting rod shall be disassembled into connecting rod body, connecting rod cover, connecting rod bolt and small end bushing. Except for connecting rod body and connecting rod cover, the remaining parts shall be discarded.

4.2.3 When removing the connecting rod bushing, no scratches or other damages shall be made to the installation hole.

4.2.4 Group and mark according to quality matching. Marking positions and numbering rules should meet the requirements of original product design or remanufactured product technical documents.

4.3 Cleaning requirements

After disassembly, the cleaning of the connecting rod shall comply with the provisions of GB/T 28677; and the oil dirt and sediment in the oil passage shall be thoroughly removed.

4.4 Testing and classification requirements

4.4.1 Testing requirements

4.4.1.1 The connecting rod shall be free of cracks.

4.4.1.2 The large-end threaded hole of the connecting rod shall be visually inspected without damage. If necessary, a special inspection tool may be used for inspection.

4.4.1.3 The connecting rod shall be tested for geometric tolerances to meet the requirements specified in the technical documents of the remanufacturing enterprise.

4.4.1.4 After re-tightening the torque according to the original product technical documents, the flatness of both sides of the connecting rod large-end hole shall be no greater than 0.1mm.

4.4.2 Classification requirements

4.4.2.1 The classification of old connecting rods after dismantling shall comply with the provisions of GB/T 28676.

4.4.2.2 Old connecting rods that meet the following conditions can be remanufactured, otherwise they shall be discarded:

- a) There is no crack in the connecting rod body and the connecting rod cover;
- b) There is no damage to the large-end threaded hole of the connecting rod;
- c) The connecting rod shall have no warpage and deformation, and the flatness of the side surface shall be less than 0.1mm.

4.5 Repair requirements

4.5.1 Repair of end face

After re-tightening the torque according to the original product technical document, the end face of the connecting rod shaft hole is used as the positioning reference; and the two ends of the connecting rod are processed and levelled. The maximum allowable processing on one side is 0.05mm.

4.5.2 Repair of large end holes

If the size and geometric dimensions of the connecting rod large end hole exceed the allowable tolerance range, the following methods or other methods can be used to repair:

- a) When the mating surfaces of the connecting rod body and the connecting rod cover are flat, a small amount of the mating surface materials of the connecting rod body and the connecting rod cover are removed, and the connecting rod bolts are tightened to a certain torque value according to the provisions of the remanufactured product technical documents. The large end hole of the connecting rod is machined to meet the requirements for technical document of the remanufactured product;
- b) When the mating surface of the connecting rod body and the connecting rod cover is a special-shaped surface, increase the large end hole of the connecting rod and use a special thick bearing bush, or use electric brush plating, metal spraying, etc. to add materials; the connecting rod bolts are tightened to a certain torque value according to the provisions of the remanufactured product technical documents. The large end hole of the connecting rod is machined to meet the requirements for technical document of the remanufactured product.

4.5.3 Repair of small end hole

4.5.3.1 The matching tolerances of the connecting rod small end hole and the connecting rod small end bushing shall meet the requirements of the technical document of the remanufactured product.

4.5.3.2 The small end bushing of the connecting rod shall be installed in the same way as the new connecting rod, and the installed small end bushing of connecting rod shall

6 Test Methods

6.1 Surface roughness

The surface roughness can be measured by a surface roughness meter, and the surface roughness can also be measured by other methods.

6.2 Size tolerance

6.2.1 Use an inner diameter dial gauge or other measuring instrument to measure the size tolerance of the large end hole of the connecting rod.

6.2.2 Use a four-equivalent gauge block, a dial indicator and a height gauge or other special inspection tools on the flat plate to measure the centre distance of the large and small head holes.

6.3 Shape and position tolerance

The shape and position tolerances of each processing part on the remanufactured connecting rod shall be tested according to the provisions of GB/T 1958.

6.4 Magnetic particle inspection

Test the remanufactured connecting rod according to the method in JB/T 6721.2.

7 Inspection Rules

7.1 Exit-factory inspection

The exit-factory inspection of remanufactured connecting rods shall comply with provisions of GB/T 28678.

7.2 Type inspection

Type inspection shall be carried out when there is one of the following conditions:

- a) When a new product is trial-formed or an old product is transferred to other factory for trial-formulation;
- b) When major changes in structure, materials or processes may affect product performance;
- c) When production resumes after 1 year of suspension;
- d) Every 3 years of normal production;

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