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Vibration test method for reciprocating aircraft engines

航空活塞式发动机振动试验方法

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part 1: Structure and drafting rules for standardization documents" Drafting.

Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the responsibility for identifying patents.

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Zhijian, Liu Xiaojie, Yu Jinli, Hong Nan, Hu Chongbo, He Xin, Zeng Rui, Hou Xiaoyu.

Vibration test method for aviation piston engines

1 Scope

This document describes the purpose and principle of the vibration test of aviation piston engines, and specifies the preparation, implementation, and Contents of test criteria and test report.

This document applies to vibration testing of aviation piston engines.

2 Normative references

GB/T 29716.1

GB/T 29716.2

GB/T 29716.3

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 frequency sweep test

A test procedure for measuring the vibration characteristics of components during continuous changes in engine speed.

3.2 resident dweltest

The engine components are subjected to fatigue cycle accumulation test at a fixed engine speed under the condition of maximum vibration response. process.

4 Purpose of the experiment

The purposes of vibration testing include.

a) not generate vibrations that could cause component failure or transmit excessive vibrations to the aircraft structure;

b) Vibration stress of main components (shaft components, components for conveying flammable liquids, and other components that are sensitive to vibration) The fatigue limit of the material shall not be exceeded under normal ignition conditions of all cylinders;

c) Determine the vibration response of the whole machine under the condition of single cylinder misfiring (cylinder missing) and determine the safe operating conditions under this condition.

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5 Test Principle

The vibration sweep frequency test was carried out on the main parts of the aircraft piston engine to determine the vibration of these parts within the engine operating speed range.

The maximum vibration response of the main components and the engine operating conditions are determined by analysis, and the stationary

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