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飞机起落架载荷谱实测与编制方法

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Load Measurement and Compilation of Landing Gear of Airplane

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摘要

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摘要 飞机起落架载荷谱实测时,应变计粘贴位置的选择是载荷谱实测的基础,然而起落架结构复杂,可供选择粘贴应变计的位置十分有限,因此研究并给出了起落架载荷谱实测时选择的典型测试切面,以为其他起落架载荷谱实测提供重要参考。根据实测载荷-时间历程,依据起落架受力特点对其进行了典型任务段的划分,分别对各个任务段进行载荷谱的编制。针对某些起落架着陆接地撞击后存在弹跳离地并再一次接地着陆,且其航向载荷的最大峰值有可能在第2次着陆接地撞击过程中产生的情况,本文给出了起落架着陆撞击段载荷谱编制的一种新方法:编谱时对其着陆撞击次序进行了变换。这种新方法既便于着陆撞击段分析及3向载荷之间关系的统计,又能保证载荷对结构的损伤基本不变,大大提高了编制载荷谱效率。

关键词: 起落架 载荷-时间历程 载荷谱编制 着陆撞击 应变片

Abstract: The arrangement of the measuring strain gages is the basis of obtaining load spectrum. However, the structure of landing gear is complicated and the available space for gluing strain gages is limited. To solve this problem, the typical locations are given, which can offer important references for other landing gears. According to the load-time history of landing gear, the typical segments are divided by mechanical characteristics of landing gear and the load spectra of different segments are compiled. For some landing gears, they often jump off the ground after the first landing impact and the maximal load of flight direction occurs during the second landing impact occasionally. Therefore, a new and efficient compilation method of landing impact segment is put forward. By changing the sequence of landing impact of load-time history, the analysis during landing impact and relations between different direction loads are easily studied, and the damage caused by the load remains the same, which shows that the efficiency of compilation of load spectrum is greatly improved.

Keywords: landing gear load-time history compilation of load spectrum landing impact strain gages

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