摘要

差速器、减速器、半轴和驱动桥壳组成了汽车的驱动桥传动，差速器作为驱动桥的重要部分，对汽车的传动起到很重要作用，其被装置于驱动桥两个半轴之上。发动机的产生的扭矩通过差速器来传送给左右来驱动车轮，实现了增加扭力降低速度的功能，不仅如此，差速器好整理汽车在行驶过程中的通过性和平稳性。所以，差速器的研发设计也越来越被高度重视。

本次论文根据路虎揽胜使用的托森差速器进行研究和结构设计。本次研究首先通过对差速器分别在国内外的研究状况的了解，并分析研究不同类型差速器的结构原理。最终根据本次设计要求，确定对托森差速器结构的设计方案，并绘制托森差速器的装配和零件图，对重要零部件包括齿轮机构、轴、轴承等进行计算和校核。最后在进行仿真运动验证，确认设计的合理性、没有干涉等。

通过本次对托森差速器设计能够更深刻的了解汽车后桥的差速器，通过相关图纸的绘制让大学的所学得以巩固和提高。

关键词：驱动桥；托森差速器；二维装配；齿轮结构；计算校核

Abstract

The utomobile transmission drive axle unit is mainly reducer composed half axle, differential, drive axle housing and other parts. The differential is installed on the two axle shafts of the drive axle, which plays an important role in vehicle transmission,. It can transmit the torque of the engine to the left and right driving wheels when the universal wheel device is transmitted, so as to realize the function of increasing the torque and reducing the speed. The differential has a very special role in the operation of the whole car, which can improve the trafficability and stability of the car. Therefore, the research and development design of differential is also paid more and more attention.

This paper is based on the research and structural design of the range rover's Thomson differential. In this study, first through the development and current situation of differential at home and abroad research, and understand the types of differential, analyze and study its structure design, working principle, etc. Secondly, determine the structure design of the Thomson differential, complete the two-dimensional assembly of the Thomson differential and related parts drawings, and calculate and check the important parts such as gear mechanism, shaft, bearing, etc. Finally, the simulation movement is verified to confirm the rationality of the design and no interference.

Through the the Thomson differential design, can have a deeper understanding of the differential of the automobile rear axle. Through the drawing of relevant drawings, we can consolidate and improve what we have learned in the University.

Key words: drive axle; Thomson differential; two dimensional assembly; gear structure; calculation and verification

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