

金杯牌轻型厢式货车驱动桥设计

摘 要

汽车的驱动桥的位置在传动系的末端，它的作用是将传动轴或变速器传来的转矩分配给左、右车轮，让车轮拥有差速功能；同时，驱动桥还要受到来自地面的铅垂力，横向力与纵向力，在汽车结构中，驱动桥包括主减速器，差速器，半轴，桥壳等部件^[1]。

在本次驱动桥设计中，结合已知的数据，并且分析驱动桥上各部件的结构优缺点，最后确定驱动桥的设计方案。结合所学知识，计算出准双曲面齿轮，半轴，差速器等部件的结构参数，并且对准双曲面齿轮、轴承、半轴等部件进行强度校核。最后利用 Auto CAD 绘图软件绘制出驱动桥的二维总装配图与部分零件图；用 CATIA 绘图软件创建驱动桥的三维模型。

关键词：驱动桥；主减速器；齿轮；差速器

Abstract

The car's drive bridge is positioned at the end of the drive train, and its role is to assign the torque from the drive shaft or transmission to the left and right wheels, giving the wheels differential function, while the drive bridge is subject to lead drooping forces from the ground, lateral and vertical forces. In automotive structures, the drive bridge includes components such as the main reducer, differential, half shaft, and bridge shell.

In this drive bridge design, combined with the known data, and analysis of the structural advantages and disadvantages of the components of the drive bridge, finally determine the design of the drive bridge. Combined with the knowledge learned, the structural parameters of quasi-double-curved gears, half-shafts, differentials and other components are calculated, and the strength of the two-surface gear, bearing, half-axis and other components are aligned. Finally, the two-dimensional assembly and part parts of the drive bridge are drawn by Auto CAD drawing software, and the three-dimensional model of the drive bridge is created by CATIA drawing software.

Key words: driving axle; main red; gear; differential mechanism

1 绪论

1.1 课题背景及目的

驱动桥是汽车结构的重要组成部分之一，它有着传递转矩以及改变车轮转速使得汽车能顺利转弯的功能。汽车在行驶过程中，发动机的转速一般都很高，只依靠变速箱的话无法承受那么高的传动比；如果发动机转速低的话，没有驱动桥的话会加大一级传动机构的负荷，所以驱动桥在汽车结构中是必不可少的，驱动桥的主减速器与差速器能很好的分担发动机传来的转矩与转速，保证汽车无论在低速还是高速行驶中车辆稳定性。本次设计为轻型厢式货车的驱动桥设计，在货车上，驱动桥的故障率很高，在其他车辆上虽然故障概率不高，但是很多异常响声却与驱动桥有关。，驱动桥在汽车的结构中非常重要，是汽车是否能正常行驶的保障，因此对驱动桥的研究以及提高驱动桥的性能对汽车行业尤为重要。

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