

## **VEHICLE RIDE COMFORT ASSESSMENT METHODS**

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**ABSTRACT** - Vibration of motor vehicles can produce wide variety of different sensations in different parts of the driver's human body. A large range of expressions as well comfort, discomfort, intensity, etc. can be used to obtain information on subject preferences. It is of primary importance to distinguish between the sensation of discomfort and the interference with driving activities. Context of judgments should be made clear so that subjects whether they should judge the motion as they are experienced or as they might be experienced in different place or alter a different length of time.

It seems preferable to ask subjects to judge the sensations they actually experience, to phrase the question so as to emphasize the subjective sensations and to avoid words that may relate solely to activity disturbance or physical magnitude of the stimulus. There are many different methods of relating judgments along a psychological dimension to the physical characteristics of stimulus. Scaling methods may be used to determine the extent to which discomfort changes when physical magnitude of stimulus is altered.

These other methods are also used to determine the subjective response to changes in vibration frequency and axis.

### **INTRODUCTION**

The importance of improving vehicles dynamic properties is constantly growing in vehicle development. Various areas like ride comfort, active safety and driver environment are dependent on enhanced dynamic behavior. An essential tool in this process is the ability to quantify and upgrade these properties.

The complex connection between ratings expressed by test drivers and explicit design parameters makes improvement work difficult. Since test drivers change their acceptance level over time, lack of repeatability in subjective testing is a problem. A long time goal is therefore to develop objective measures for driving impressions.

### **COMMON RIDE EVALUATION METHODS**

Many different strategies on how objective methods can be evaluated together with subjective ratings are established. Subjective ratings can be collected in several different ways and various rating scales may lead to a very wide spread of ratings. Many problems are connected to evaluations where humans are used as measuring instruments. Humans' sensitivity and calibration values are relatively unknown and vary between individuals and over time. One additional difficulty is the ability to judge one thing at a time without being influenced by other properties.

The most important factor of objective evaluation methods is that they correlate well with how most test drivers perceive the vehicle. Objective measures therefore consist of two important building blocks: subjective information from test drivers and measured vehicle





















