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Report on Hoffman Group Helix Brand Aftermarket Right Hand Drive Steering Box

Purpose

The Hoffman Group manufacture an aftermarket steering box for use in right-hand drive vehicles of various configurations. The steering box has been tested and inspected to confirm its adequacy for use in modified vehicles. Specifically the maximum acceptable front axle weight of vehicles to which this steering box can be fitted has been assessed.

Background

The design of the steering box is based on the left hand drive unit used in the Chevrolet Vega constructed in the United States between 1970 and 1977. The Vega was a conventional front engine rear wheel drive vehicle that was developed to allow General Motors to compete in the economy car sector.

The Vega platform or H platform was used for a number of General Motors vehicles. The Chevrolet Monza, Pontiac Astre, Pontiac Sunbird and the Buick Skyhawk.

The manual steering box on which the Helix product is based is used only in base model Vega and Astre sedans. These vehicles were constructed on a wheelbase of 2464 mm and had a maximum tare mass of 1280kg including options (Astre SJ). Front axle load in these vehicles was a maximum of 820 kg when laden. The Vega steer ratio is 1:1, the effective pittman arm length and the distance from the axle centre to the tie rod end centre were identical. Wheel Offset was positive 19mm, Rims were up to 13 x 6 and the equivalent of a 185 section tyre was the maximum used.

The steering box is a conventional recirculating ball item.

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Analysis

A standard left hand drive Vega steering box has been compared both internally and externally with the Hoffman group product and found to be effectively identical except with respect to the mirror imaging to achieve right-hand drive.

Spectrograph analysis of both the input and output shaft of the Hoffman group helix steering box and an original General Motors Vega unit have shown that the material used for the manufacture is effectively identical. Material is closest in specification to alloy steel 18chGT.

The Helix steering box is therefore effectively identical to the Vega unit other than being configured for right-hand drive.

Conclusions

The Helix steering box can be safely used in vehicles with a laden front axle mass of up to 800 kg providing the vehicles steering ratio is no "quicker" than the original Vega 1:1, wheels that are not negative offset (ie no more negative than 0 offset) and a tyre width of no more than 215 is used on the vehicle to which it is installed.

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