

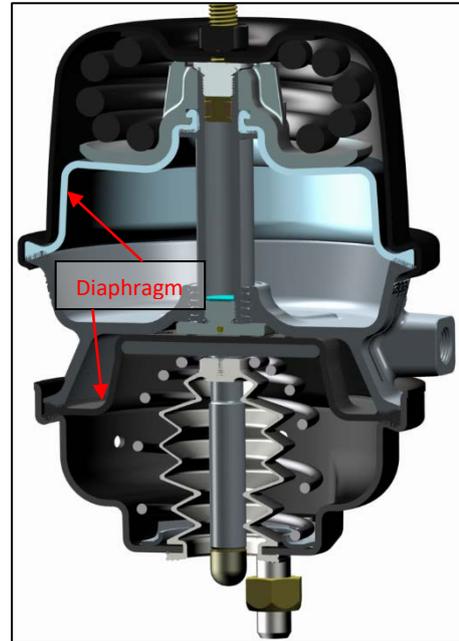
FE-model of force output in Haldex actuators

Background

Haldex produces brake actuators in different sizes for the European and U.S market. The actuators are used on trailers and trucks. Customers require that this product group is cost effective, durable and accurate.

Heavy duty brake actuators are pneumatic high-pressure products with one or two diaphragms depending on model. The diaphragms are made of a cloth integrated in rubber. The material characteristics and geometry of the diaphragms, together with the pressure plate and stud housing, play an important role in the force versus stroke curve at different pressure levels.

In the development of new actuators or in facelifts of existing products it is important to have a correct material model of the diaphragm. A correct model enables Haldex a way to simulate the force output with high accuracy at both short and long strokes which is of great importance.



The master thesis will require investigation of available and possible material models in Ansys. It will also require some testing of the diaphragm material in order to quantify material parameters for the chosen model. In order to get a correct FE-model the coefficient of friction between the diaphragm and touching parts also have to be considered.

If you are interested in material testing and finite elements this provides a good opportunity for a master's thesis.

Objectives

Haldex is looking for one or two students to investigate, propose and verify a suitable material model for the diaphragms in the Haldex actuators. The final result should be an FE-model in Ansys that accurately predicts the force output as a function of stroke at different pressure levels. Lab and software/computer resources will be provided by Haldex at site in Landskrona.

Deliverables

- Master's Thesis report and Executive Summary in English, verbal presentation at Haldex

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