

ABSTRACT

Special investigations have been done in the previous works to find the optimum surface profile for a slider bearing, thus the purpose of this thesis is to study the effect of the triangular slots upon the mechanism of lubrication in the inclined slider bearing.

The models which manufactured were four, one of these without slots and the other three with triangular slots (where these slots are with the direction of the oil flow) and different angles of slots (30°, 45°, 60°).

In this thesis, many variables have been studied, such as different sliding velocities ($V = 0.33, 0.4, 0.47, 0.54 \text{ m/s}$) for a flat model and ($V = 0.78, 0.85, 0.92, 0.99 \text{ m/s}$) for slots models as well as various kinds of lubricating oils (SAE30, SAE40, SAE50), different values for pad inclination ($K = h_i / h_o = 2, 2.5, 3, 4$), and different temperatures for oils (50 °C, 60 °C, 70 °C). The purpose of all these variables is to find the optimum surface profile of a slider bearing.

The conclusions of the present work according to the analysis of results showed that the flat model is much better than the slots models, the slot model at (30°) is better than slots models at (45° and 60°) and the slot model at (45°) is better than the slot model at (60°).

The maximum load carrying capacity was in the range ($K = 2 - 2.5$) for the flat model and slots models, where the load carrying capacity found at the flat model has larger values as compared with the load carrying capacity of slots models, and the coefficient of friction of the flat model is smaller than the coefficient of friction of slots models.

The present work and the previous works have been compared experimentally (just in behaviors), where the sample used in this comparison was flat, the results gave different levels but the same behaviors approximately between the flat model for the present work and the flat model for the previous works