

# MEMO

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**From:** F. Baneyx  
**Subject:** Pump Characteristics

We have just received two surplus pumps from our Paper Products Division. Unfortunately, the manuals have been lost and we do not have any information on their operating characteristics. The pumps are quite different in size and appearance. One appears to be a positive displacement pump while the other seems to be a centrifugal pump.

Please run tests on both pumps and prepare standard performance charts. Cover the widest possible flow range in each case and determine the head, capacity and power consumption.

Please develop a model that predicts the efficiency of the positive displacement pump as a function of head at full operating speed. Also, develop a model that relates the capacity, head, and power consumption to pump speed in the case of the centrifugal pump. See, for instance, the description of affinity laws in Perry's 8<sup>th</sup> edition, page 1054. In each case, discuss the expected model accuracy.