HYDRODYNAMIC PUMP

ABSTRACT

A hydrodynamic pump is formed coaxially with respect to a hydrodynamic bearing. The integrated bearing and pump assembly can provide pressurized fluid for various uses within the device incorporating the bearing. In the hydrodynamic bearing assembly a secondary hydrodynamic bearing is incorporated into the primary bearing assembly. The secondary bearing is optimized for high flow pumping applications rather than the high pressure, zero flow requirements of the primary bearing. When the bearing assembly is rotated, fluid flow is provided. The assembly includes a first cylinder (124), a second cylinder (102) coaxially within the first cylinder, and a shaft (110) coaxially within the second cylinder. The shaft (110) and first cylinder (124) are attached to rotate together. Grooves (306, 352) on the outer surface of the shaft (110) and second cylinder (102) form the primary and seconday bearing respectively.

Fig. 3