Hydrodynamic sliding bearing contains shaft and sleeve that surrounds shaft collar and has working surface. Working surface of sleeve is spiral-shaped with a variable radius across the entire angle of shaft collar. Rings made of low-friction composite material are mounted on shaft. Compensating hydrodynamic oil chambers with relief valve are made on sleeve. The varying radius of working surface is determined by the following equation:

$\rho = R_B + h_m m^{\varepsilon^2 - 2\varepsilon}$, (1)

where ρ is the radius of the curve at a point with angular coordinate φ;

R_B is the nominal radius of shaft in the cross-section concerned;

h_m is the maximum radial clearance in the shaft-sleeve connection;

$m = \frac{h_m}{h_o}$ is the radial clearance taper coefficient;

h_o is the minimum radial clearance;

$\varepsilon = \frac{\varphi}{2\pi}$ is the relative angular coordinate of a point on working surface curve;

φ is the angular coordinate of a point on working surface.