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Plain bearings — Hydrodynamic plain journal bearings under steady-state conditions —

Part 2: Functions for calculation of multi-lobed journal bearings

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Foreword

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This document was prepared by Technical Committee ISO/TC 123, *Plain bearings*, Subcommittee SC 8, *Calculation methods for plain bearings and their applications*.

A list of all parts in the ISO/TS 31657 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Plain bearings — Hydrodynamic plain journal bearings under steady-state conditions —

Part 2: Functions for calculation of multi-lobed journal bearings

1 Scope

This document specifies the characteristic values for selected two-, three- and four-lobe bearings.

The functions plotted and listed in table form below are required for the operationally safe design of hydrodynamic multi-lobed journal bearings according to ISO/TS 31657-1. They are based on the presumptions and boundary conditions indicated there and only apply to stationary operating states. The symbols used are explained in ISO/TS 31657-1; calculation examples are also included there.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at http://www.electropedia.org/

4 Functions for calculation of multi-lobed journal bearings

4.1 General

The characteristic values for two-, three- and four-lobe bearings with relative lubrication pocket widths of $b_P^* = 0{,}8$ are shown in table form below. The characteristic values were calculated for the geometrical parameters summarised in Figure 1 (angular spans of segment sliding surface, Ω, angular coordinates of lubricant pocket centrelines, $\varphi_{P,1}$, gap ratios, $h_{0,\max}^*$, bearing width ratios B^*) in the operating range $0{,}02 \leq h_{\min}^* \leq 1$. The profile factors, K_P, associated with the indicated gap ratios, $h_{0,\max}^*$, can be calculated for these bearing types as follows:

$$K_P = h_{0,\max}^* \qquad \text{for } Z = 2$$

$$K_P = 2 \cdot h_{0,\max}^* - 1 \qquad \text{for } Z = 3$$