

# ISO 12130-1:2021 (E)

## Plain bearings — Hydrodynamic plain tilting pad thrust bearings under steady-state conditions — Part 1: Calculation of tilting pad thrust bearings

---

### Contents

|         |  |
|---------|--|
|         | Foreword   |
|         | Introduction   |
| 1       | Scope  |
| 2       | Normative references   |
| 3       | Terms and definitions  |
| 4       | Symbols, terms and units                                     |
| 5       | Fundamentals, assumptions and premises                       |
| 6       | Calculation procedure  |
| 6.1     | Loading operations   |
| 6.1.1   | General  |
| 6.1.2   | Wear   |
| 6.1.3   | Mechanical loading   |
| 6.1.4   | Thermal loading  |
| 6.1.5   | Outside influences   |
| 6.2     | Coordinate of centre of pressure                             |
| 6.3     | Load-carrying capacity                                       |
| 6.4     | Frictional power   |
| 6.5     | Lubricant flow rate  |
| 6.6     | Heat balance   |
| 6.6.1   | General  |
| 6.6.2   | Heat dissipation by convection                               |
| 6.6.3   | Heat dissipation by recirculating lubrication                |
| 6.6.4   | Mixing processes in the lubrication recess                   |
| 6.7     | Minimum lubricant film thickness and specific bearing load   |
| 6.8     | Operating conditions   |
| 6.9     | Further influence factors                                    |
| Annex A | (informative) Examples of calculation                        |
| A.1     | Example: Tilting pad thrust bearing for constant load        |
| A.1.1   | General  |
| A.1.2   | Preliminary assumptions                                      |
| A.1.3   | Calculation by means of the flow chart according to Figure 2 |
| A.1.4   | Heat dissipation by convection                               |
| A.1.4.1 | First step   |
| A.1.4.2 | Second step  |
| A.2     | Example: Tilting-pad thrust bearing for speed-dependent load |
| A.2.1   | General  |
| A.2.2   | Preliminary assumptions                                      |
| A.2.3   | Calculation by means of the flow chart according to Figure 2 |
| A.2.4   | Heat dissipation by convection                               |
| A.2.4.1 | First step   |
| A.2.4.2 | Second step  |
| A.2.5   | Heat dissipation by recirculating lubrication                |