RENK thrust bearings type DG/DR will absorb high axial and radial loads, even shock-loads, irrespective of the sense of rotation. The main feature of the bearings series D are the RS/RD thrust pads with circular working surfaces, as fully tested and proven in service in numerous applications for well over 25 years. The bearings type DR are available with natural cooling, water cooling or oil circulation lubrication, the bearings type DG are available with external oil supply only. Housings are normally of a saddletype (with support near the split line). A pedestal type of housing is also available on request (see also separate catalogue „Thrust Bearings Type DN“ - RH-1073).
Technical Information

This publication contains all the relevant information that is needed when considering the use of thrust bearings (shaft range 180 to 600 mm diameter) for propeller shafts, turbines and pumps.

Bearing Housing
The strong housing of the thrust bearing sizes 16 to 56 is made from a high quality cast iron (EN-GJL-300). Alternative materials, such as nodular cast iron (EN-GJS-400-18-LT), can be supplied in special cases.

Radial Part
The radial part is normally designed as two bearing shells, in halves and has a plain cylindrical seating in the housing. The use of two shells offers the advantage of ease of assembly and alignment. Where specified, RENK thrust bearings can be supplied with only one or without shells. The shells are manufactured from steel (C 10) and have a spherical seating. They are lined with RENKmetal therm 89 or therm V6. The bearing shell bore tolerance is H7.

Thrust Part
For application with propeller shafts, which necessitates ahead and astern movement, the bearings are supplied with 12 rigidly supported tilting RS thrust pads, mounted in a chain, divided in two halves for ease of removal. For stationary applications, such as hydrogenerators, the high thrust loads are taken by 12 elastically supported tilting RD thrust pads.

Seals
For normal applications the thrust bearings sizes 16 to 56 are equipped with rigid seals (type 20). These seals are made of corrosion resistant aluminium alloys and correspond to protection grade IP 44. Special types of seals (e.g. air seals, or seals of higher protection grades) are also available on request.

Oil Supply
Bearing type DR can be operated with self-lubrication. The rotating thrust collar and the floating oil scraper combine to ensure a good supply of oil is always made available from the bearing oil sump to the working surfaces of the thrust and journal bearings. In the case of bearings type DR with external oil supply, the oil scraper provides a safe run-down should the external oil supply be interrupted.

Bearing type DG are only operated with an external oil supply and cooling system. In the DG arrangement, the oil outlet from the bearing, being positioned at the top, provides emergency lubrication for a short period of time during run-down.

Heat Dissipation
At slow speeds or moderate loads frictional heat is dissipated by radiation and convection (natural cooling) only. Where natural cooling is insufficient, two water-cooled oil coolers can be fitted to the sump. The finned cooling tubes are made from a seawater-resistant material.

Temperature Monitoring
For standard temperature monitoring, two commercially available thermosensors (working independently) can be used. We recommend the use of RENK resistance thermometers or RENK angle thermometers with direct reading.

Oil Selection
Generally, any recognised brand of good quality plain mineral oil can be used as a lubricant. Please refer to our publication RH 2005, entitled “Lubricants for Slide Bearings – Recommendation”.

The necessary viscosity for each operating condition will be determined by the EDP calculations. These calculations are always carried out at the design stage. A printout of the results can be provided upon request.

Flanged Thrust Shaft
The flanged thrust shaft which is made from forged steel and fully machined can be supplied on request. Customers who provide their own shafts should confer with RENK to agree interface dimensions, surface finish and tolerances (size and geometrical).

Certification
Acceptance of thrust shafts and (where applicable) the bearings can be carried out by any specified classification society.

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DG</td>
<td>centre line foot-mounted, without oil sump</td>
</tr>
<tr>
<td>DR</td>
<td>centre line foot-mounted, with oil sump</td>
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<table>
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<tr>
<th>Heat dissipation</th>
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<tbody>
<tr>
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<tr>
<td>W</td>
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<tr>
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<table>
<thead>
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<th>Radial part</th>
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<td>A</td>
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<tr>
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<td>C</td>
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</table>

Example
for quoting a centre line foot-mounted bearing, with oil sump, lubrication by oil circulation from an external oil supply, radial part with one radial bearing shell, size 56, shaft diameter 530 mm:

Thrust Bearing DR Z B 56 - 530
Dimensions of Bearings

DG/R.

DG/R. (RD)

DG/R. (RS)
<table>
<thead>
<tr>
<th>Size</th>
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<th>B₁</th>
<th>B₂</th>
<th>b</th>
<th>b₁</th>
<th>b₂</th>
<th>b₃</th>
<th>b₄</th>
<th>b₅</th>
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<th>h₁</th>
<th>h₂</th>
<th>h₃</th>
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1) Sizes 63, 71 and 80 upon request.

²⁾ 6x
³⁾ for thrust part RD

Dimensions in mm

---

Shaft Size

1) Sizes 63, 71 and 80 upon request.

²⁾ 6x

³⁾ for thrust part RD
## Load Table

Load in kN

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</table>

The table serves only to select the size of DG/DR-Type bearing. Before booking an order, however, it will be necessary to carry out an EDP calculation, taking into account the reciprocal influence of operating parameters.

1. Radial loads $F_R$ in [kN] as permanent load (maximum value) for plain cylindrical bore without hydrostatic jacking.
2. Radial loads $F_R$ in [kN] as permanent load (maximum value) for plain cylindrical bore with hydrostatic jacking.
3. Axial load $F_A$ [kN] as maximum admissible load at start-up. During operation, this load can be increased by approx. 60%.

The values for axial load $F_A$ [kN] are valid for all four variants of radial loads.
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We reserve the right to changes made in the interests of technical improvement.