

# Technical Hints

## Grease life for sealed bearings

The grease life for sealed bearings is presented as L<sub>10</sub>, i.e. the time period at the end of which 90% of the bearings are still reliably lubricated, and depends on the load, operating temperature and speed value. It can be obtained for bearings with standard SKF LGEP 2 grease (designation suffix VT143) from:

- diagram 1, for light load ( $P \leq 0,067 C$ )
- diagram 2, for normal load ( $P \leq 0,125 C$ )

The grease life is valid under the following operating conditions:

- horizontal shaft
- inner ring rotation
- operating temperature within the green temperature zone of the grease (table 1)
- stationary machine
- low vibration levels
- load ratio  $F_a/F_r \leq e$
- rotational speed below the limiting speed (product table) and below the limits listed in table 2

For other operating conditions, the grease life can be estimated by multiplying the relubrication interval for open bearings by a factor of 2,7.

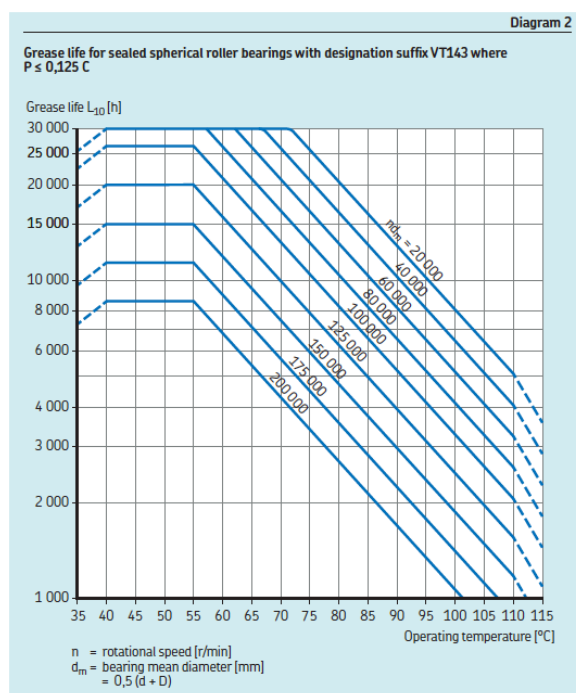
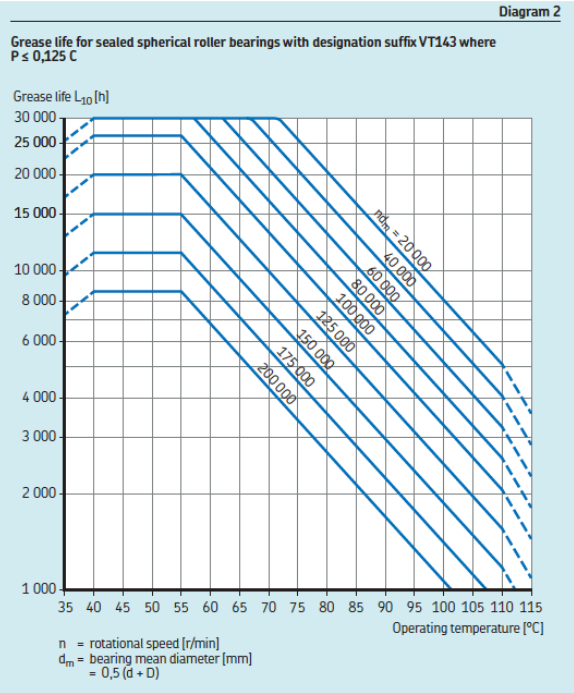


Table 1

Technical specifications of SKF greases for sealed spherical roller bearings

| Designation<br>suffix | Grease | Temperature range <sup>1)</sup> |    |     |     |     |     |     |    |  |  | Thickener                     | Base oil<br>type      | NLGI<br>grade | Base oil viscosity<br>[mm <sup>2</sup> /s] |                       |
|-----------------------|--------|---------------------------------|----|-----|-----|-----|-----|-----|----|--|--|-------------------------------|-----------------------|---------------|--|-----------------------|
|                       |        | -50                             | 0  | 50  | 100 | 150 | 200 | 250 | °C |  |  |                               |                       |               | at 40 °C<br>(105 °F)                       | at 100 °C<br>(210 °F) |
| VT143                 | LGEP 2 |                                 |    |     |     |     |     |     |    |  |  | Lithium soap                  | Mineral               | 2             | 200  | 16                    |
| GEM9                  | LGHB 2 |                                 |    |     |     |     |     |     |    |  |  | Calcium complex<br>sulphonate | Mineral               | 2             | 400  | 26,5                  |
| GLE                   | LGWM 2 |                                 |    |     |     |     |     |     |    |  |  | Calcium complex<br>sulphonate | Mineral/<br>Synthetic | 2             | 80   | 8,6                   |
|                       |        | -60                             | 30 | 120 | 210 | 300 | 390 | 480 | °F |  |  |                               |                       |               |  |                       |

<sup>1)</sup> Refer to the SKF traffic light concept (page 117).



**Table 2**

Speed limits for grease life calculation for sealed spherical roller bearings

| Bearing series          | Maximum $nd_m$ value                       |   |
|-------------------------|--|---|
|                         | Light load<br>( $P \leq 0,067 \text{ C}$ ) | Normal load<br>( $P \leq 0,125 \text{ C}$ ) |
| –                       | mm/min                                     |   |
| 222, 239                | 250 000                                    | 200 000                                     |
| 223, 230, 231, 232, 240 | 250 000                                    | 150 000                                     |
| 241                     | 150 000                                    | 80 000                                      |

## Application advice

### Bearing dimension considerations

Part of the range of SKF sealed spherical roller bearings have an extended width compared to corresponding standard open bearings. For this reason, all SKF SNL housings can be supplied with locating rings to match all sealed bearings in the 222 series.

Due to the tapered seal land, the face diameter  $d_2$  is smaller in sealed bearings than in corresponding open bearings. When determining an abutment diameter  $d_a$ , the lower  $d_2$  value for these bearings must be taken into consideration (➔ Fig. 8).

### Bearing space considerations

SKF sealed spherical roller bearings are designed in such a way that the seals are positioned inside the side face plane. However, care must be taken that nothing in the housing or on the shaft can interfere with the bearing seals during operation.

Excessive grease must not be hindered to escape when re-lubricating the bearing (➔ Fig. 8).

Therefore, there should be a sufficient amount of free axial space outside the seals. The axial free space should be least 10 times the maximum radial internal clearance value for the unmounted bearing. This recommendation is valid for Normal, C3 and C4 clearances.

