EXERCISES

Fit selection

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1. What do you want to optimise with the right choice of fit?
a) Relative movements between inner ring and shaft
b) Play between the rolling elements
c) Friction in the bearing
d) Relative movements between outer ring and housing

2. Why can a clearance between the mating surfaces of the bearing and the shaft or housing be desirable?
a) It is a floating bearing
b) To enable relubrication
c) To prevent contamination from entering the bearing
d) To prevent excessive preload during temperature changes

3. What can geometric errors in the choice of fit lead to?
a) Premature flaking
b) Vibrations
c) Running noises
d) Bearing damage

4. What are the criteria that should be considered when choosing a fit?
a) Operating conditions of the bearing
b) Amount of lubrication
c) Shaft and housing material
d) Cage material of the rolling bearing

5. Interference fits are required on all bearing rings where the rotating loads are applied relative to their radial direction.
a) Correct
b) Incorrect

6. In which applications are fits with low interference recommended?
a) For high vibration or shock loads
b) For applications that require high running accuracy
c) When using thin-walled bearings
d) For thin-walled enclosures

7. What are the possible disadvantages of an high interference fit?
a) Relatively complex assembly
b) Reduction of the bearing clearance
c) Increase of the bearing clearance
d) Only possible with ball bearings

8. The interference of a bearing fit can be determined on the basis of the diameter tolerances of the shaft and housing bores and the tolerances of the bearing rings.
a) Correct
b) Incorrect

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9. Which of the following factors reduce the permissible interference between inner ring and shaft or housing and outer ring?

a) Temperature reduction
b) Radial loads
c) The width of the inner ring
d) Change of shape/surface of the mating surfaces

10. What can occur due to too much interference?

a) Damage to the bearing rings
b) Shorter service life
c) Cracks in the inner ring
d) Breaking the guide ribs

11. What is the specified upper limit of the interference?

a) Approx. 12 MPa
b) Approx. 50 MPa
c) Approx. 127 MPa
d) Approx. 253 MPa

12. With aluminium, due to its high coefficient of expansion, there is no need to pay attention to thermal expansion.

a) Correct
b) Incorrect

Solution: 1. a, d; 2. a, d; 3. a, b, c, d; 4. a, c; 5. a; 6. b, c; 7. a, b; 8. a; 9. b, d; 10. a, b, c, d; 12. c; 12. b;