

# General notes

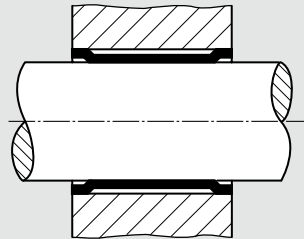
## Design notes

### Free installation

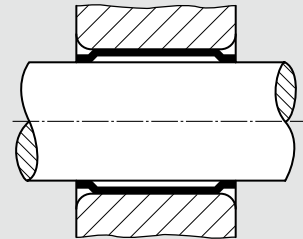
You can use free installation for shapes R0810 and R0820.

This tolerance ring connection can be established very economically, since only simple, smooth shafts are connected to through bores that are just as simple and smooth. You must, however, expect a center offset and a reduction in the stated torque values  $M$  of approximately 20%.

Free installation, shape R0810



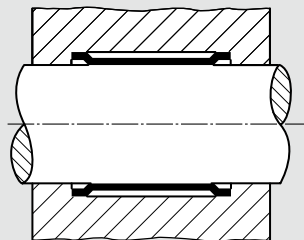
Free installation, shape R0820



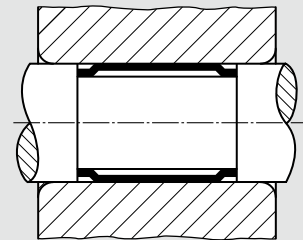
### Centered installation

Centered installation is used if precise centering is necessary or you can expect circumferential loading or relatively severe radial shocks. By choosing the appropriate fit between the shaft and the bore, you can achieve any radial runout precision you want or cushion deflection of the tolerance rings to prevent them from being damaged.

Centered installation, shape R0810

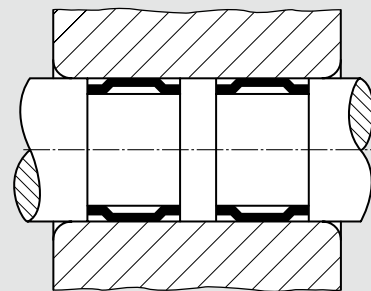
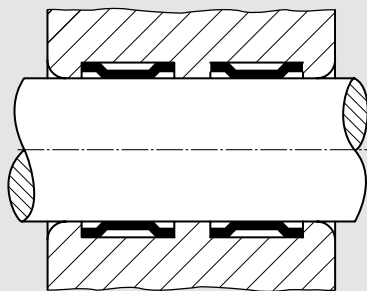


Centered installation, shape R0820



### Multiple arrangement of tolerance rings

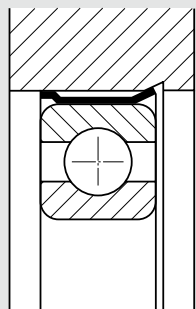
If the permissible loading of an individual tolerance ring is not adequate, you can install two or more tolerance rings next to one another at any time, since the transmittable loads add together. When doing this, you must use separators to make sure that the tolerance rings are separated and are not slid over one another when you install them.



Note: When doing this, the shaft couplings should not be aligned.

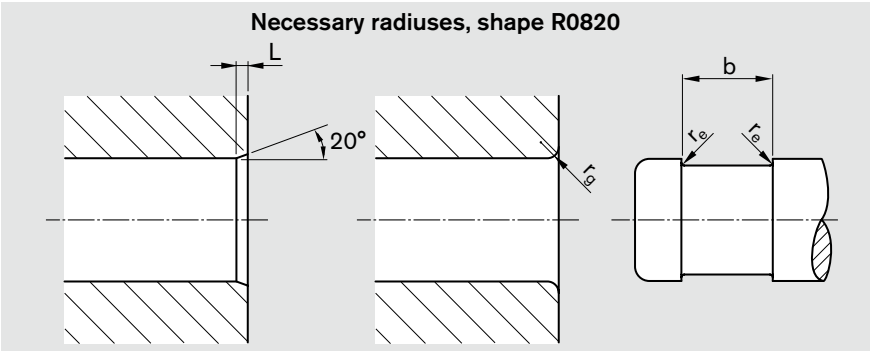
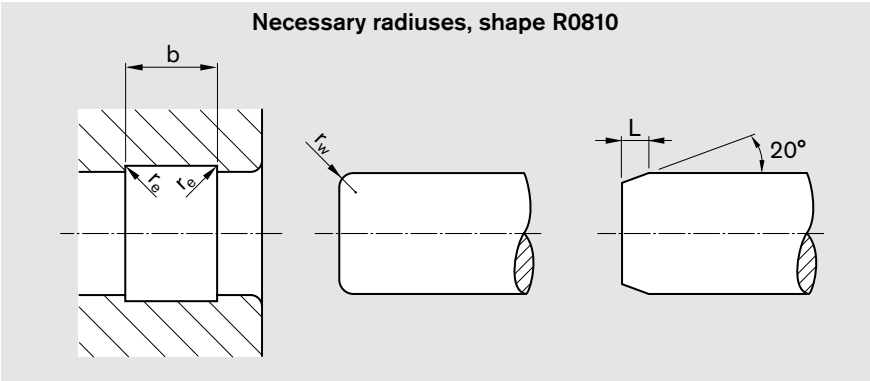
### Tolerance rings with an angled edge

This version with its angled edge secures the tolerance ring from migrating. It is used above all when installing large rolling bearings in light metal housings.



Design of adjoining parts

To ensure the function and to avoid damage to the tolerance rings, you must pay attention to the information below when preparing the adjoining parts: In the case of tolerance rings of shape R0810, you must provide the shaft ends with radiuses  $r_w$ ; with shape R0820 the bore must be provided with  $r_g$ . You must provide radiuses  $r_e$  that are as small as possible for the grooves in the bore and the shaft so that the tolerance rings fit well on the side areas of the grooves. To make groove width  $b$ , please use tolerance zone C13. Refer to the tables for the necessary size of the radiuses and the dimensions for the grooves. If it is not possible to provide the radiuses, we suggest using 20° chamfers.



Size of radiuses  $r_e$ ,  $r_g$  and  $r_w$

Dimensions (mm)		
Dimensions of bore or shaft	$r_g$ , $r_w$	20° chamfer $L$
$\leq 16$	1.0	1.5
$> 16 \leq 48$	1.25	2.0
$> 48 \leq 120$	$1.5 \leq 2.0$	2.5
$> 120 \leq 240$	$3.0 \leq 4.0$	3.5
$> 240$	$4.0 \leq 5.0$	4.5
$r_e \leq \text{up to } 0.2 r_g$		

Dimensions C13 for groove widths  $b$

Nominal dimension mm	Dimensions C13 $\mu\text{m}$
$\leq 10$	+300
	+80
$> 10 \leq 18$	+365
	+95
$> 18 \leq 30$	+440
	+110
$> 30 \leq 40$	+510
	+120
$> 40 \leq 50$	+520
	+130
$> 50 \leq 65$	+600
	+140
$> 65 \leq 80$	+610
	+150