

# Lubrication

## Lubrication using a grease gun or a progressive feeder system

▲ Pay attention to the “Note on lubrication” chapter: We recommend **Dynalub 510**. For more information, refer to the “Note on lubrication” chapter.

▲ Never commission ball runner blocks without having carried out basic lubrication on them. In the case of pre-lubrication at the factory initial lubrication is not necessary. Rexroth ball rail systems are delivered preserved.

### Initial lubrication of the ball runner blocks (basic lubrication)

#### Stroke $\geq 2 \cdot$ ball runner block length $B_1$ (normal stroke)

- ▶ Attach one lube port per ball runner block on the left-hand **or** the right-hand side and lubricate it!

Initial lubrication is applied in three partial quantities as specified in table 1:

1. Grease the ball runner block with the first partial quantity as per table 1, pressing it in slowly with the help of a grease gun.
2. Run the ball runner block with three double strokes of 3 ball runner block length  $B_1$ .
3. Repeat steps 1 and 2 two more times.
4. Check whether you can see a film of grease on the ball guide rail.

#### Stroke $< 2 \cdot$ ball runner block length $B_1$ (short stroke)

- ▶ Attach two lube ports per ball runner block; one each on the left-hand **and** the right-hand side and lubricate them!

Initial lubrication is applied to each fitting in three partial quantities as specified in table 2:

1. Grease each fitting on the ball runner block with the first partial quantity as per table 2, pressing it in slowly with the help of a grease gun.
2. Run the ball runner block with three double strokes of 3 ball runner block length  $B_1$ .
3. Repeat steps 1 and 2 two more times.
4. Check whether you can see a film of grease on the ball guide rail.


Size	Initial lubrication (normal stroke)				
	Material number (not initially greased)		Material number (pre-lubricated)		
	R16.. ... 10	R20.. ... 04/0Z	R16.. ... 20/2Z	R20.. ... 30/3Z	R16.. ... 70/7Z
	R16.. ... 11	R20.. ... 05	R16.. ... 21	R20.. ... 31	R16.. ... 71
	R16.. ... 60	R20.. ... 06/0Y	R16.. ... 22/2Y	R20.. ... 32/3Y	R16.. ... 72/7Y
		R20.. ... 07	R16.. ... 23	R20.. ... 33	R16.. ... 73
			R16.. ... 90	R20.. ... 90	
	Partial amount (cm <sup>3</sup> )				
15	0.4 (3x)				
20	0.7 (3x)				
25	1.4 (3x)				
30	2.2 (3x)				
35	2.2 (3x)				
45	–				
55	9.4 (3x)				
65	15.4 (3x)				
20/40	–				
25/70	–				
35/90	2.7 (3x)				

Table 1

Size	Initial lubrication (short stroke)				
	Material number (not pre-lubricated)		Material number (pre-lubricated)		
	R16.. ... 10	R20.. ... 04/0Z	R16.. ... 20/2Z	R20.. ... 30/3Z	R16.. ... 70/7Z
	R16.. ... 11	R20.. ... 05	R16.. ... 21	R20.. ... 31	R16.. ... 71
	R16.. ... 60	R20.. ... 06/0Y	R16.. ... 22/2Y	R20.. ... 32/3Y	R16.. ... 72/7Y
		R20.. ... 07	R16.. ... 23	R20.. ... 33	R16.. ... 73
			R16.. ... 90	R20.. ... 90	
	Partial amount per port (cm <sup>3</sup> )				
	left	right			
15	0.4 (3x)	0.4 (3x)	Pre-lubricated with Dynalub 510 before shipment		
20	0.7 (3x)	0.7 (3x)			
25	1.4 (3x)	1.4 (3x)			
30	2.2 (3x)	2.2 (3x)			
35	2.2 (3x)	2.2 (3x)			
45	–		–		
55	9.4 (3x)	9.4 (3x)			
65	15.4 (3x)	15.4 (3x)			
20/40	–		Pre-lubricated with Dynalub 510 before shipment		
25/70	–				
35/90	2.7 (3x)	2.7 (3x)	–		

Table 2


**Lubrication using a grease gun or a progressive feeder system (continued)**
**Relubrication of runner blocks**
**Stroke  $\geq 2 \cdot$  ball runner block length  $B_1$  (normal stroke)**

- ▶ If the relubrication interval according to diagram 1 or 2  216 has been reached, insert the relubrication amount in accordance with table 3.

Size	Relubrication (normal stroke)					
	Material number		Material number			
	R16.. ... 10	R20.. ... 04/OZ	R16.. ... 20/2Z	R20.. ... 30/3Z	R16.. ... 70/7Z	
	R16.. ... 11	R20.. ... 05	R16.. ... 21	R20.. ... 31	R16.. ... 71	
	R16.. ... 60	R20.. ... 06/OY	R16.. ... 22/2Y	R20.. ... 32/3Y	R16.. ... 72/7Y	
		R20.. ... 07	R16.. ... 23	R20.. ... 33	R16.. ... 73	
				R20.. ... 90		
	Partial amount (cm <sup>3</sup> )			Partial amount (cm <sup>3</sup> )		
15	0.4 (1x)			0.4 (2x)		
20	0.7 (1x)			0.7 (2x)		
25	1.4 (1x)			1.4 (2x)		
30	2.2 (1x)			2.2 (2x)		
35	2.2 (1x)			2.2 (2x)		
45	-			4.7 (2x)		
55	9.4 (1x)					
65	15.4 (1x)			-		
20/40				1.0 (2x)		
25/70	-			1.4 (2x)		
35/90	2.7 (1x)			-		

Table 3

**Stroke  $< 2$  ball runner block length  $B_1$  (short stroke)**

- ▶ If the relubrication interval according to diagram 1 or 2  216 has been reached, insert the relubrication amount in accordance with table 4 per lube port.
- ▶ Per lubrication cycle, the ball runner block should be run with a double stroke of  $3 \cdot$  ball runner block length  $B_1$ ; however, the minimum stroke must be ball runner block length  $B_1$ .

Size	Relubrication (short stroke)					
	Material number		Material number			
	R16.. ... 10	R20.. ... 04/OZ	R16.. ... 20/2Z	R20.. ... 30/3Z	R16.. ... 70/7Z	
	R16.. ... 11	R20.. ... 05	R16.. ... 21	R20.. ... 31	R16.. ... 71	
	R16.. ... 60	R20.. ... 06/OY	R16.. ... 22/2Y	R20.. ... 32/3Y	R16.. ... 72/7Y	
		R20.. ... 07	R16.. ... 23	R20.. ... 33	R16.. ... 73	
				R20.. ... 90		
	Partial amount per port (cm <sup>3</sup> )		Partial amount per port (cm <sup>3</sup> )			
	left	right	left	right	left	right
15	0.4 (1x)	0.4 (1x)	0.4 (2x)		0.4 (2x)	
20	0.7 (1x)	0.7 (1x)	0.7 (2x)		0.7 (2x)	
25	1.4 (1x)	1.4 (1x)	1.4 (2x)		1.4 (2x)	
30	2.2 (1x)	2.2 (1x)	2.2 (2x)		2.2 (2x)	
35	2.2 (1x)	2.2 (1x)	2.2 (2x)		2.2 (2x)	
45	-		4.7 (2x)		4.7 (2x)	
55	9.4 (1x)	9.4 (1x)	-			
65	15.4 (1x)	15.4 (1x)	-			
20/40			1.0 (2x)		1.0 (2x)	
25/70	-		1.4 (2x)		1.4 (2x)	
35/90	2.7 (1x)	2.7 (1x)	-			

Table 4

# Lubrication

## Load-dependent relubrication intervals for grease lubrication using grease guns or progressive feeder systems (“dry axes”)

### The following conditions apply:

- ▶ Grease lubricant Dynalub 510 or alternatively Castrol Longtime PD 2
- ▶ No exposure to metalworking fluids
- ▶ Standard seals (SS)
- ▶ Ambient temperature:  
T = 20 – 30 °C

### Key

- C = Dynamic load capacity (N)
- $F_{comb}$  = Dynamically combined equivalent load (N)
- $F_{comb}/C$  = Load ratio (-)
- s = Relubrication interval as running distance (km)

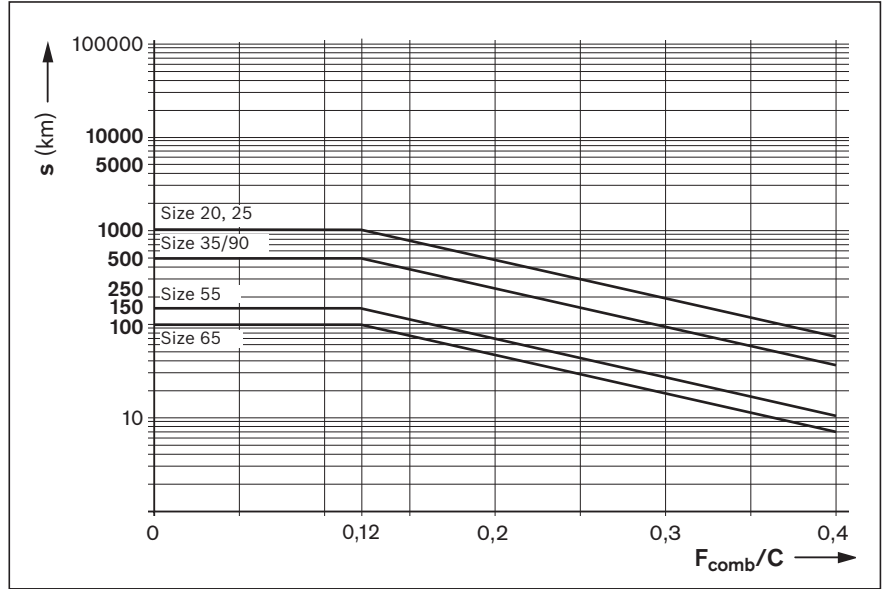
### Definition of $F_{comb}/C$

The load ratio  $F_{comb}/C$  describes the ratio of the dynamic equivalent load with combined load on the bearing  $F_{comb}$  (taking into account the internal pre-tensioning force  $F_{pr}$ ) and the dynamic load capacity C.

### Please consult us regarding the relubrication intervals in the following cases:

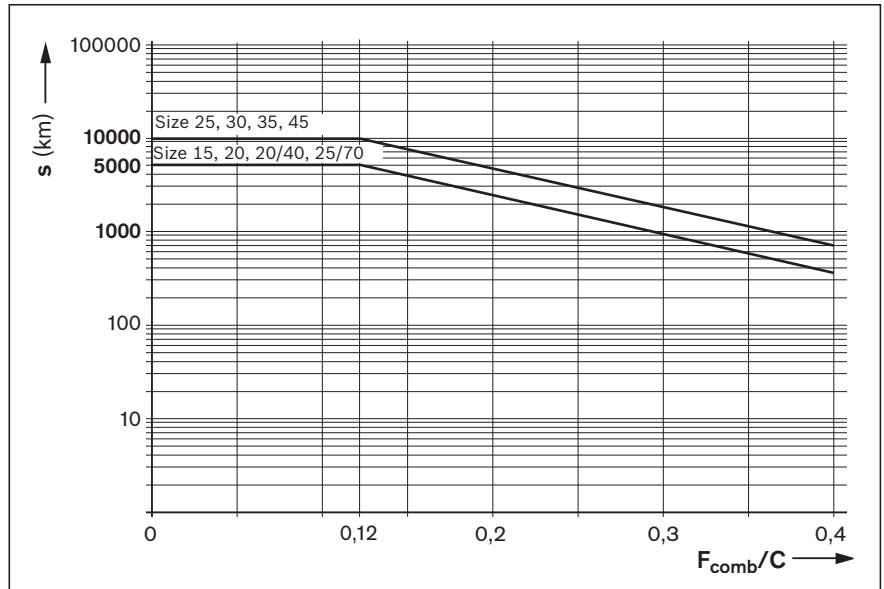
- ▶ exposure to metalworking fluids
- ▶ with dust coverage (wood, paper, etc.)
- ▶ use of double-lipped seals (DS)
- ▶ use of standard seals (SS) in combination with end seals or FKM seals or seal kits

**⚠** Pay attention to the notes on lubrication!



Graph 1

Material number		
R16.. ... 10	R16.. ... 11	R16.. ... 60



Graph 2

Material number				
R20.. ... 04	R16.. ... 20	R20.. ... 30	R16.. ... 70	R20.. ... 90
R20.. ... 05	R16.. ... 21	R20.. ... 31	R16.. ... 71	
R20.. ... 06	R16.. ... 22	R20.. ... 32	R16.. ... 72	
R20.. ... 07	R16.. ... 23	R20.. ... 33	R16.. ... 73	

## Liquid grease lubrication via single-line piston distributor systems

**Fluid grease:** We recommend **Dynalub 520**

**⚠** Never commission ball runner blocks without having carried out basic lubrication on them. In the case of pre-lubrication at the factory initial lubrication is not necessary. Rexroth ball rail systems are delivered preserved.

### Initial lubrication of the ball runner blocks (basic lubrication)

**Stroke  $\geq 2 \cdot$  ball runner block length  $B_1$  (normal stroke)**

- ▶ Attach one lube port per ball runner block on the left-hand **or** the right-hand side and lubricate it!

Initial lubrication is applied in three partial quantities as specified in table 5:

1. Grease the ball runner block with the first partial quantity as per table 5, pressing it in slowly with the help of a grease gun.
2. Run the ball runner block with three double strokes of  $3 \cdot$  ball runner block length  $B_1$ .
3. Repeat steps 1 and 2 two more times.
4. Check whether you can see a film of grease on the ball guide rail.

### Stroke $< 2 \cdot$ ball runner block length $B_1$ (short stroke)

- ▶ Attach two lube ports per ball runner block; one each on the left-hand **and** the right-hand side and lubricate them!

Initial lubrication is carried out three times per port using the partial amount stated in table 6:

1. Grease each fitting on the ball runner block with the first partial quantity as per table 6, pressing it in slowly with the help of a grease gun.
2. Run the ball runner block with three double strokes of  $3 \cdot$  ball runner block length  $B_1$ .
3. Repeat steps 1 and 2 two more times.
4. Check whether you can see a film of grease on the ball guide rail.

Size	Initial lubrication (normal stroke)			
	Material number (not initially greased)		Material number (pre-lubricated)	
	R16.. ... 10	R20.. ... 04/0Z	R16.. ... 20/2Z	R20.. ... 30/3Z
	R16.. ... 11	R20.. ... 05	R16.. ... 21	R20.. ... 31
	R16.. ... 60	R20.. ... 06/0Y	R16.. ... 22/2Y	R20.. ... 32/3Y
		R20.. ... 07	R16.. ... 23	R20.. ... 33
			R16.. ... 70/7Z	R20.. ... 90
			R16.. ... 71	R16.. ... 73
			R16.. ... 72/7Y	R16.. ... 73
	Partial amount (cm <sup>3</sup> )			
15	0.4 (3x)			
20	0.7 (3x)			
25	1.4 (3x)			
30	2.2 (3x)			
35	2.2 (3x)			
45	-			
55	9.4 (3x)			
65	15.4 (3x)			
20/40	-			
25/70	-			
35/90	2.7 (3x)			

Table 5

Size	Initial lubrication (short stroke)			
	Material number (not initially greased)		Material number (pre-lubricated)	
	R16.. ... 10	R20.. ... 04/0Z	R16.. ... 20/2Z	R20.. ... 30/3Z
	R16.. ... 11	R20.. ... 05	R16.. ... 21	R20.. ... 31
	R16.. ... 60	R20.. ... 06/0Y	R16.. ... 22/2Y	R20.. ... 32/3Y
		R20.. ... 07	R16.. ... 23	R20.. ... 33
			R16.. ... 70/7Z	R20.. ... 90
			R16.. ... 71	R16.. ... 73
			R16.. ... 72/7Y	R16.. ... 73
	Partial amount per port (cm <sup>3</sup> )			
	left	right		
15	0.4 (3x)	0.4 (3x)		
20	0.7 (3x)	0.7 (3x)		
25	1.4 (3x)	1.4 (3x)		
30	2.2 (3x)	2.2 (3x)		
35	2.2 (3x)	2.2 (3x)		
45	-			
55	9.4 (3x)	9.4 (3x)		
65	15.4 (3x)	15.4 (3x)		
20/40	-			
25/70	-			
35/90	2.7 (3x)	2.7 (3x)		

Table 6

# Lubrication

## Relubrication of runner blocks

### Stroke $\geq 2 \cdot$ ball runner block length $B_1$ (normal stroke)

- ▶ If the relubrication interval according to diagram 3 or 4 has been reached, insert the relubrication amount in accordance with table 7.

#### Note

The necessary number of pulses is the integer quotient from the minimum relubrication amount according to table 7 and the smallest permissible piston distributor size ( $\hat{=}$  minimum number of pulses) according to table 9.

The smallest permissible piston distributor size also depends on the mounting orientation.

The lubrication cycle results from dividing the relubrication interval by the determined number of pulses (c.f. the rating example).

Size	Relubrication (normal stroke)					
	Material number		Material number			
	R16.. ... 10	R20.. ... 04/0Z	R16.. ... 20/2Z	R20.. ... 30/3Z	R16.. ... 70/7Z	
	R16.. ... 11	R20.. ... 05	R16.. ... 21	R20.. ... 31	R16.. ... 71	
	R16.. ... 60	R20.. ... 06/0Y	R16.. ... 22/2Y	R20.. ... 32/3Y	R16.. ... 72/7Y	
		R20.. ... 07	R16.. ... 23	R20.. ... 33	R16.. ... 73	
				R20.. ... 90		
	Partial amount (cm <sup>3</sup> )			Partial amount (cm <sup>3</sup> )		
15	0.4 (1x)			0.4 (2x)		
20	0.7 (1x)			0.7 (2x)		
25	1.4 (1x)			1.4 (2x)		
30	2.2 (1x)			2.2 (2x)		
35	2.2 (1x)			2.2 (2x)		
45	-			4.7 (2x)		
55	9.4 (1x)			-		
65	15.4 (1x)					
20/40	-			1.0 (2x)		
25/70	-			1.4 (2x)		
35/90	2.7 (1x)			-		

Table 7

### Stroke $< 2 \cdot$ ball runner block length $B_1$ (short stroke)

- ▶ If the relubrication interval according to diagram 3 or 4 has been reached, insert the relubrication amount in accordance with table 8 per lube port.
- ▶ Calculate the required pulse count and lubricant cycle time in the same way as for relubrication (normal stroke).
- ▶ Per lubrication cycle, the ball runner block should be run with a double stroke of  $3 \cdot$  ball runner block length  $B_1$ ; however, the minimum stroke must be ball runner block length  $B_1$ .

Size	Relubrication (short stroke)					
	Material number		Material number			
	R16.. ... 10	R20.. ... 04/0Z	R16.. ... 20/2Z	R20.. ... 30/3Z	R16.. ... 70/7Z	
	R16.. ... 11	R20.. ... 05	R16.. ... 21	R20.. ... 31	R16.. ... 71	
	R16.. ... 60	R20.. ... 06/0Y	R16.. ... 22/2Y	R20.. ... 32/3Y	R16.. ... 72/7Y	
		R20.. ... 07	R16.. ... 23	R20.. ... 33	R16.. ... 73	
				R20.. ... 90		
	Partial amount per port (cm <sup>3</sup> )			Partial amount per port (cm <sup>3</sup> )		
	left	right	left	right	left	right
15	0.4 (1x)	0.4 (1x)	0.4 (2x)	0.4 (2x)	0.4 (2x)	0.4 (2x)
20	0.7 (1x)	0.7 (1x)	0.7 (2x)	0.7 (2x)	0.7 (2x)	0.7 (2x)
25	1.4 (1x)	1.4 (1x)	1.4 (2x)	1.4 (2x)	1.4 (2x)	1.4 (2x)
30	2.2 (1x)	2.2 (1x)	2.2 (2x)	2.2 (2x)	2.2 (2x)	2.2 (2x)
35	2.2 (1x)	2.2 (1x)	2.2 (2x)	2.2 (2x)	2.2 (2x)	2.2 (2x)
45	-			4.7 (2x)	4.7 (2x)	4.7 (2x)
55	9.4 (1x)	9.4 (1x)	-			
65	15.4 (1x)	15.4 (1x)				
20/40	-			1.0 (2x)	1.0 (2x)	1.0 (2x)
25/70	-			1.4 (2x)	1.4 (2x)	1.4 (2x)
35/90	2.7 (1x)	2.7 (1x)	-			

Table 8

⚠ Pay attention to the notes on lubrication!

**Liquid grease lubrication via single-line piston distributor systems (continued)**

**Load-dependent relubrication intervals for liquid grease lubrication via single-line piston distributor systems (“dry axes”)**

**The following conditions apply:**

- ▶ Liquid grease Dynalub 520 or alternatively Castrol Longtime PD 00
- ▶ No exposure to metalworking fluids
- ▶ Standard seals (SS)
- ▶ Ambient temperature:  
T = 20 – 30 °C

**Key**

- C = Dynamic load capacity (N)
- F<sub>comb</sub> = Dynamically combined equivalent load (N)
- F<sub>comb</sub>/C = Load ratio (-)
- s = Relubrication interval as running distance (km)

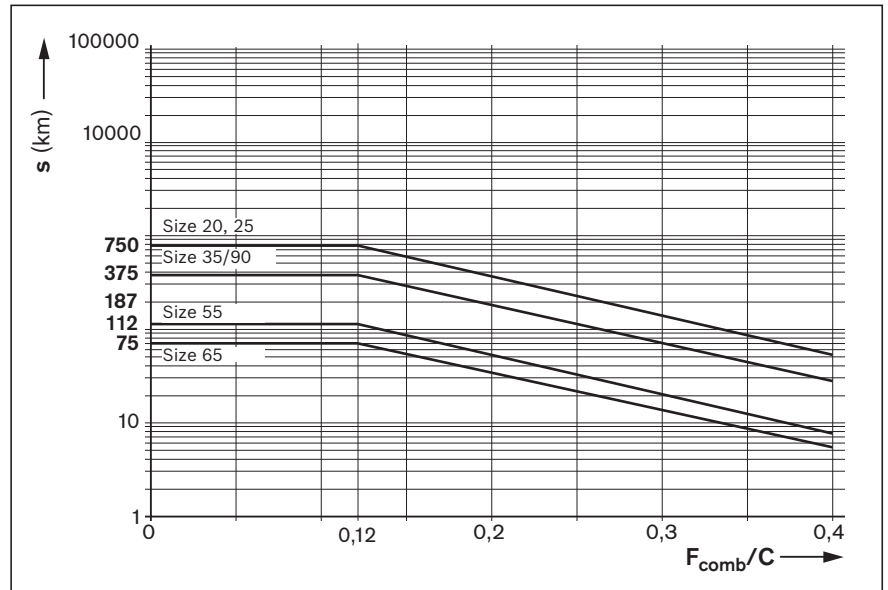
**Definition of F<sub>comb</sub>/C**

The load ratio F<sub>comb</sub>/C describes the ratio of the dynamic equivalent load with combined load on the bearing F<sub>comb</sub> (taking into account the internal pre-tensioning force F<sub>pr</sub>) and the dynamic load capacity C.

**Please consult us regarding the relubrication intervals in the following cases:**

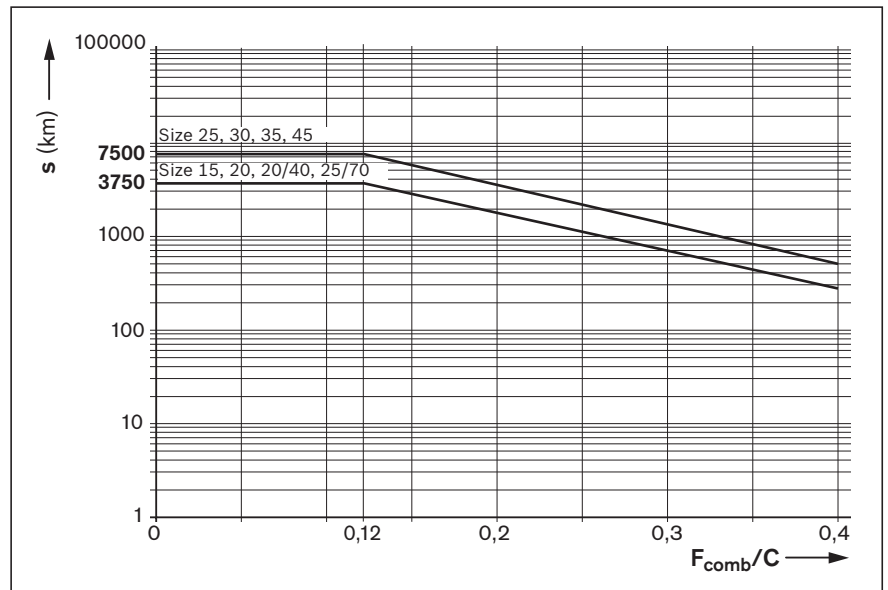
- ▶ exposure to metalworking fluids
- ▶ with dust coverage (wood, paper, etc.)
- ▶ use of double-lipped seals (DS)
- ▶ use of standard seals (SS) in combination with end seals or FKM seals or seal kits

⚠ Pay attention to the notes on lubrication!



Graph 3

Material number		
R16.. ... 10	R16.. ... 11	R16.. ... 60



Graph 4

Material number				
R20.. ... 04	R16.. ... 20	R20.. ... 30	R16.. ... 70	R20.. ... 90
R20.. ... 05	R16.. ... 21	R20.. ... 31	R16.. ... 71	
R20.. ... 06	R16.. ... 22	R20.. ... 32	R16.. ... 72	
R20.. ... 07	R16.. ... 23	R20.. ... 33	R16.. ... 73	