



## perma-Automatic Lubricator



Type	perma CLASSIC	perma FUTURA	perma STAR
Design	metal casing indicating when perma is empty	transparent, recyclable plastic casing indicating the remaining amount of lubricant	reusable drive with transparent, replaceable cartridge
Drive	electrochemical reaction with environmentally friendly citric acid and gas generator	electrochemical reaction with environmentally friendly citric acid and gas generator	electromechanical via geared motor, replaceable battery set
Lubrication period	with activating screw 1 (yellow), 3 (green), 6 (red) or 12 (grey) months at +20 °C/+688 °F with SF01	with activating screw 1 (yellow), 3 (green) or 6 (red) months at +20 °C/+688 °F with SF01	by means of a code-switch 1, 3, 6 oder 12 months
Volume	120 cm <sup>3</sup>	100 cm <sup>3</sup>	120 cm <sup>3</sup>
Ambient temperature	0 °C to +40 °C/+32 °F to +104 °F	0 °C to +40 °C/+32 °F to +104 °F	-10 °C to +50 °C/ +14 °F to +122 °F
Pressure build-up	max. 4 bar	max. 4 bar	max. 5 bar
Fields of application	Single-point lubrication, roller and sliding bearings, chains, open gears, guidances, etc.	Single-point lubrication, roller and sliding bearings, chains, open gears, guidances, etc.	Single-point lubrication, roller and sliding bearings, chains, open gears, guidances, etc.
Other applications		hygienically clean fields of application moist zones causing corrosion	very precise lubricant dispensing at high or low ambient temperatures
Special types	perma FROST  Application temperature from -25 °C to +10 °C from -13 °F to +50 °F with black activating screw	A wide range of accessories is available for the perma.  Please ask for our product overview or call us if you have any technical questions.	perma STAR 'VARIO' with 60 cm <sup>3</sup> /120 cm <sup>3</sup> or 250 cm <sup>3</sup> LC-unit  perma STAR 'CONTROL' machine controlled (also with 60 cm <sup>3</sup> /120 cm <sup>3</sup> or 250 cm <sup>3</sup> LC-unit)

# Lubrication of roller and sliding bearings



# Damage and costs due to incorrect lubrication

More than 60 % of all damage to bearings is due to incorrect lubrication. This results in high maintenance costs, extended machine downtimes and production losses.

Most damage is caused by:

- low quality, contaminated or unsuitable lubricant
- inadequate lubricant in the contact area (dry-running)
- contamination in the bearing (dirt, dust)
- corrosion due to penetration of moisture
- failure to relubricate at correct time



## Roller bearings

### Selecting the lubrication period (roller bearings)

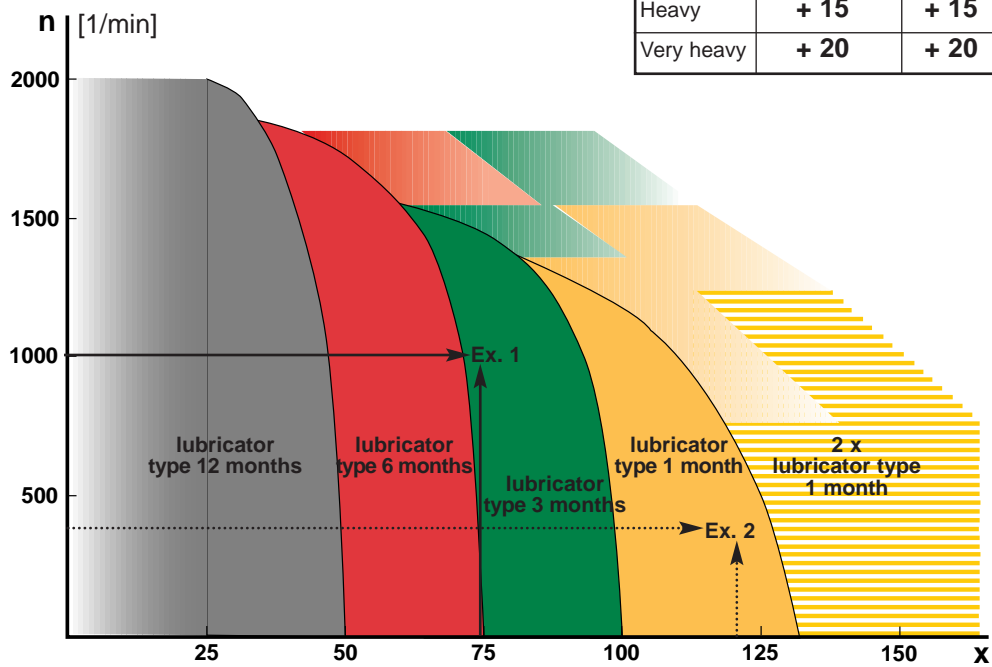
Select the right lubrication period for your sliding bearings in this way:

- Determine the environmental conditions and check these against the 'application factors' table
- Read off the corresponding figures (for example -25) which you should now add to the internal diameter of your roller bearing
- Now find the range in the diagram which corresponds to the internal diameter (plus application factors) and the speed

#### Application factors

type grade	Dust Moisture	Load Vibration	Ambient temperature (of importance with CLASSIC/FUTURA only)			
			high	low		
Medium	+ 10	+ 10				
Heavy	+ 15	+ 15	+30 °C +86 °F	- 25	+10 °C +50 °F	+ 25
Very heavy	+ 20	+ 20	+40 °C +104 °F	- 50	0 °C +32 °F	+ 50

x = internal diameter ± application factors



#### Examples

- Spherical roller bearing**  
Internal diameter 80 mm, ambient temperature +30 °C/+86 °F, very heavy moisture level, speed n = 1000 1/min  
Application factors:  
very heavy moisture level + 20  
+ 30°C/+86 °F ambient temp. - 25  
Result:  
x = 80 - 25 + 20 = 75 ; n = 1000 1/min  
→ perma CLASSIC/FUTURA lubrication period 3 months
- Tapered roller bearing:**  
Internal diameter 110 mm, ambient temperature +45 °C/+113 °F, medium load, speed n = 450 1/min  
Application factors:  
medium load + 10  
Result:  
x = 110 + 10 = 120; n = 450 1/min  
→ perma STAR lubrication period 1 month

### Selecting lubricants for roller bearings (Satzinger standard range)

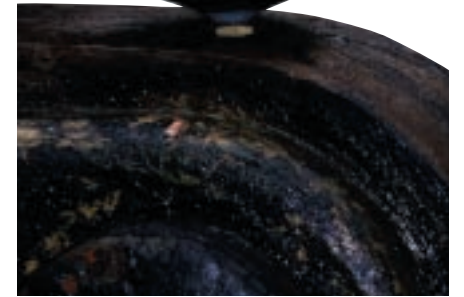
Roller bearing application conditions	Low temperature -50...+150 °C/-58...+302 °F		Normal temperature -20...+120 °C/-4...+248 °F		High temperature -20...+160 °C/-4...+320 °F		High temperature -20...+220 °C/-4...+428 °F		Food-grade grease	Bio grease	Fluid grease
	SF 08	SF 01	SF 04	SF 03	SF 10	SF 09	SF 06				
Normal	SF 08	SF 01	SF 04	SF 03	SF 10	SF 09	SF 06				
Heavy load	SF 08	SF 02	SF 05	Special	SF 10	SF 09	Special				
High speed	SF 08	SF 01	SF 08	Special	Special	Special	Special				
Vibrations	Special	SF 01	SF 05	Special	Special	Special	Special				

Special lubricants available on application

# perma for roller and sliding bearings

The perma Automatic Lubricator ensures that roller and sliding bearings are supplied simply and safely with the proper lubricant in the quantities you have specified. The advantages of the single-point lubrication system are not only a clear reduction in wear but also protection against corrosion and external contamination. The economical functioning of the perma protects the environment, extends service life and thus reduces maintenance costs.

Special Satzinger lubricants in roller and sliding bearings prevent metal-on-metal contact and build up a load-bearing film of lubricant. Friction and wear are reduced and the bearing has increased protection against environmental influences.



## Sliding bearings

### Selecting the lubrication period (sliding bearings)

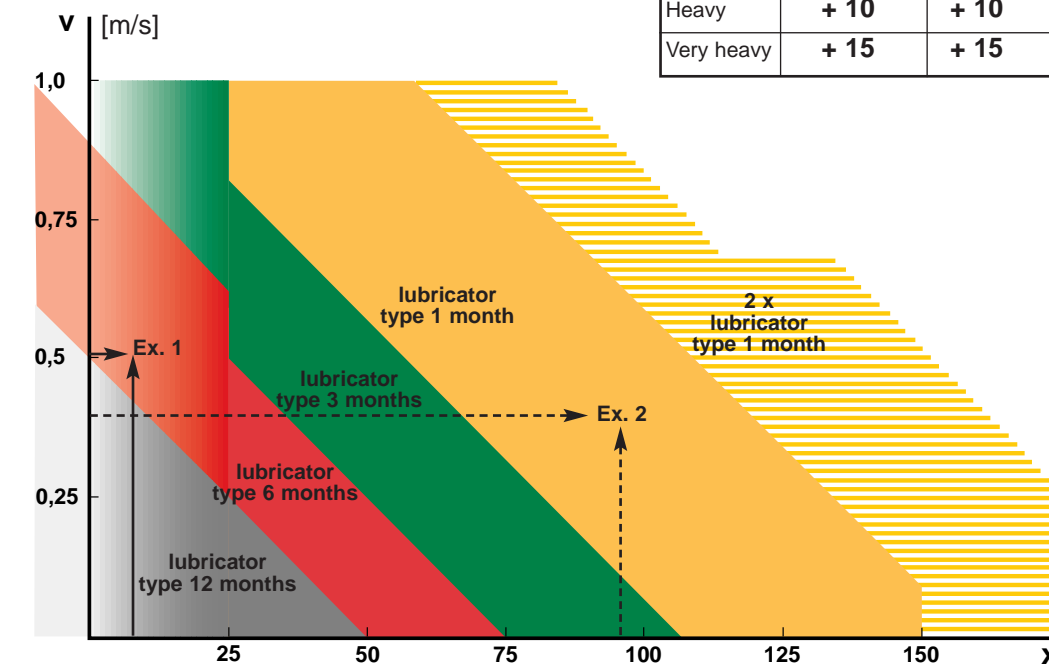
Select the right lubrication period for your sliding bearings in this way:

- Determine the environmental conditions and check these against the 'application factors' table
- Read off the corresponding figures (for example - 25) which you should now add to the diameter of your sliding bearing
- Now find the range in the diagram which corresponds to the diameter (plus application factors) and the speed

#### Application factors

type grade	Dust Moisture	Load Vibration	Ambient temperature (of importance with CLASSIC/FUTURA only)			
			high	low		
Medium	+ 5	+ 5				
Heavy	+ 10	+ 10	+30 °C +86 °F	- 25	+10 °C +50 °F	+ 25
Very heavy	+ 15	+ 15	+40 °C +104 °F	- 50	0 °C +32 °F	+ 50

x = diameter ± application factors



#### Example sliding bearings

- Diameter 50 mm, ambient temperature +40 °C/+104 °F, heavy moisture level, speed v = 0,5 m/s  
Application factors:  
+40°C/+104 °F temp. - 50  
heavy moisture level + 10  
Result:  
x = 50 - 50 + 10 = 10  
v = 0,5 m/s  
→ perma CLASSIC/FUTURA lubrication period 6 months
- Diameter 80 mm, ambient temp. 0 °C/+32 °F, very heavy moisture level, speed v = 0,4 m/s  
Application factors:  
very heavy moisture level + 15  
Result:  
x = 80 + 15 = 95  
v = 0,4 m/s  
→ perma STAR lubrication period 1 month

### Selecting lubricants for sliding bearings (Satzinger standard range)

Sliding bearing application conditions	Low temperature -50...+150 °C/-58...+302 °F		Normal temperature -20...+120 °C/-4...+248 °F		High temperature -20...+160 °C/-4...+320 °F		High temperature -20...+220 °C/-4...+428 °F		Food-grade grease	Bio grease	Fluid grease
	SF 08	SF 04	SF 04	SF 03	SF 10	SF 09	SF 06				
Normal	SF 08	SF 04	SF 04	SF 03	SF 10	SF 09	SF 06				
Heavy load	Special	SF 04	SF 05	Special	Special	SF 09	Special				
Very low speed	Special	SF 04	SF 05	Special	SF 10	SF 09	Special				

Special lubricants available on application