SCHAEFFLER

17.5.2024

Report for 22220-E1-XL-K

All results refer to continuous 24/7 operation.

Input

Bearing data	
Designation	22220-E1-XL-K
Design	Radial spherical roller bearing, type E1, E1A
Series	222-E1

Bearing dimensions	
Width (B)	46 mm
Outside diameter (D)	180 mm
Inside diameter (d)	100 mm

Basic load ratings	
Basic static load rating (C0)	475.000 N
Basic dynamic load rating (C)	430.000 N

Operating conditions	
Type of movement	rotating
Relative speed (n_rel)	1.500 1/min

Load	
Load levels	low (C0/P approx. 15)

Temperatures	
Operating temperature (Theta)	70 °C
Ambient temperature (t)	40 °C
Environmental influence	0.5 (heavy)

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Results sorted by relubrication interval (2/2 greases)

Non-Schaeffler High-Temperature Grease	
Initial grease quantity *	53,1 g/59 cm^3
Quantity of relubrication per 365 days *	509,175 g/365 days
	565,75 cm^3/365 days
Quantity of relubrication per 1000 operating hours *	58,125 g/1000 hours
	64,583 cm^3/1000 hours
Grease service life *	~ 46 days
Quantity of relubrication per 30 days *	41,85 g/30 days
	46,5 cm^3/30 days
Quantity of relubrication per 7 days *	9,765 g/7 days
	10,85 cm^3/7 days
Lower temperature limit	-30 °C
Upper temperature limit	160 °C
Additive required	n.a.
Effective EP-additivation	n.a.
Low Friction	n.a.
Suitable for vibrations	n.a.
Support for sealing	n.a.
H1 registration (NSF-H1 kosher and halal certification)	n.a.

Arcanol TEMP90 Mineral + PAO oil, NLGI3, Polyurea	
Initial grease quantity *	53,1 g/59 cm^3
Quantity of relubrication per 365 days *	509,175 g/365 days
	565,75 cm^3/365 days
Quantity of relubrication per 1000 operating hours *	58,125 g/1000 hours
	64,583 cm^3/1000 hours
Grease service life *	~ 46 days
Quantity of relubrication per 30 days *	41,85 g/30 days
	46,5 cm^3/30 days
Quantity of relubrication per 7 days *	9,765 g/7 days
	10,85 cm^3/7 days
Viscosity ratio [κ]	4,04
Base oil viscosity at 40°C	148 mm^2/s
Lower temperature limit	-40 °C
Upper temperature limit	160 °C
Additive required	no
Effective EP-additivation	no
Density	0,9 kg/dm^3
Low Friction	0 (suitable)
Suitable for vibrations	0 (suitable)
Support for sealing	+ (highly suitable)
H1 registration (NSF-H1 kosher and halal certification)	no

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Errors, Warnings & Notes

Warnings

The speed parameter n*dm exceeds the limiting value for the grease.
- Arcanol Clean M: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Non-Schaeffler Multi-Purpose Grease: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Non-Schaeffler High-Temperature Grease: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Arcanol LOAD1000: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Arcanol LOAD150: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Arcanol LOAD400: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Arcanol LOAD460: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Arcanol TEMP120: n*dm = 214674.00 mm/min > 150000.00 mm/min
- Arcanol TEMP200: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Arcanol SPEED 2,6: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Arcanol VIB3: n*dm = 214674.00 mm/min > 200000.00 mm/min
- Arcanol FOOD2: n*dm = 214674.00 mm/min > 200000.00 mm/min

Very high kappa values and corresponding friction losses occur at the present operating speed for the following lubricating greases:
- Arcanol LOAD1000
- Arcanol TEMP200

The operating temperature is below the recommended minimum operating temperature for the following greases:
- Arcanol TEMP120 (70.0 °C < 80.0 °C)
- Arcanol TEMP200 (70.0 °C < 150.0 °C)

Notes

As the simplified load input via load levels has been used, the thermally safe operating speed as well as the static load safety are not checked.

Calculation of the grease service life and the relubrication interval corresponds to the catalog method. The internal geometry and the internal load distribution are not taken into consideration in the calculation. If you have any questions relating to selection of a suitable grease, please contact the Schaeffler engineering service. If the axis of rotation is vertical, the supply of lubricant to the contact must be checked.

In the Grease App, fatigue life is not considered or calculated. Please check this separately.

When calculating the amount of lubricant, only the volume of the bearing is taken into account, while the free space of the surrounding construction and the volume of the supply lines are not considered.

The specified grease quantities are only guide values, which may be deviated from based on practical experience. In case of questions, please contact the Schaeffler engineering service.

For the Non-Schaeffler Greases the individual properties are unknown. Therefore, criteria on the suitability of the grease are not checked for these greases (e.g., viscosity ratio, additivation, n*dm-limits of the grease, thermally safe operating speed, suitability for the CONCEPT1 lubricator).
- Non-Schaeffler Multi-Purpose Grease
- Non-Schaeffler High-Temperature Grease

Since the selected grease grade is suitable for foodstuff applications, the values for the grease operating life and relubrication interval have been reduced by half.
- Arcanol FOOD2