

Klüberalfa® HX 83-302

Long-term lubricating grease for seals, guides and rolling bearings subject to high thermal stress



Description

Klüberalfa® lubricants based on perfluorinated polyether (PFPE) have been developed for specific applications where optimum performance under lifetime lubrication conditions is required.

The PFPE base oils contained in Klüberalfa HX 83-302 have an exceptionally flat viscosity-temperature curve. With a consistency class of NLGI 2, Klüberalfa HX 83-302 can be used at temperatures as low as -60°C and even ensures load-bearing lubricating films at temperatures as high as 240°C.

Klüberalfa HX 83-302 should be used for all those applications requiring a high κ value over a wide temperature range.

$$\kappa = \frac{v}{v_1} = \frac{\text{actual kinematic viscosity}}{\text{required kinematic viscosity}}$$

For special applications Klüberalfa HX 83-301 is available (NLGI grade 1).

Application

Plastics and seals

Klüberalfa HX 83-302 offers exceptionally low friction values along with a good stick-slip behavior, even in long-term tests. The temperature of friction points subject to dynamic loads can therefore be reduced in many applications, which has a positive effect on the component's service life.

The service temperature range indicated exceeds most standards specified by e.g. the automotive industry.

Depending on the component Klüberalfa HX 83-302 is applied in small to very small quantities.

Application example:

O-ring lubrication in pneumatic switches in the automotive components industry.

General behavior towards plastics and elastomers

Lubricating greases based on fluorinated polyether oils and PTFE are generally regarded as neutral towards elastomers and plastics (possible exception: perfluorinated rubber). Nevertheless compatibility with the materials should be tested, especially prior to series application.

Rolling and plain bearings

Klüberalfa HX 83-302 is suitable for special applications subject to very high service temperatures and frequent thermal fluctuations. Its consistency ensures low starting torques even at low temperatures.

Application example:

Electric motor bearings with a low starting and a high operating temperature.

Clean room technology

Contrary to the general opinion, special lubricants like Klüberalfa HX 83-302 do not constitute an additional particle source, but on the contrary often contribute to clearly reducing wear-related particle emission. Klüberalfa HX 83-302 keeps emissions low and can even be used for ultra-high vacuum applications due to its high resistance to oxidation and evaporation.

Application notes

For optimum lubrication results, we recommend cleaning the friction points with white spirit 180/210 followed by Klüberalfa XZ 3-1. Then apply clean, dry compressed air or hot air to remove any remaining white spirit residues.

For initial lubrication, the friction points must be clean and bright (i.e. free from oil, grease or perspiration) and free from particles.

Klüberalfa HX 83-302 is applied by means of brush, spatula or lubricant dispenser.

Klüberalfa® HX 83-302

- Extremely wide service temperature range
- Low friction torques
- Low evaporation rate
- Excellent long-term stability

Klüberalfa HX 83-302 is also available in 50 g syringes, which can be combined with all commercially available systems for semi-automatic minimum-quantity lubrication.

The various technical sales departments at Klüber Lubrication may be contacted at any time to ensure optimum results with this special lubricating grease.

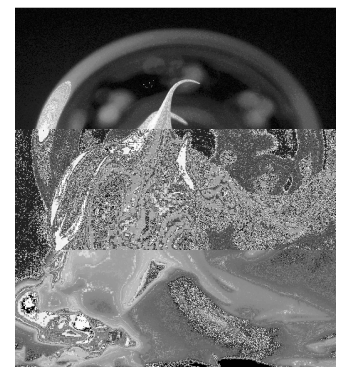
Minimum shelf life

The minimum shelf life is approx. 60 months if the product is stored in its unopened original container in a dry, frost-free place.

Pack sizes

50 g syringes
1 kg can

Current material safety data sheets may be downloaded from our website www.klueber.com or requested from Klüber Lubrication.



* In-house tests on sliding friction test rigs

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and rolling bearings subject to high thermal stress



Product data

Article number	090078
Composition	Perfluorinated polyether, PTFE
Service temperature range,* [°C]	- 60 to 240
Color	white
Density at 20 °C, [g/cm ³], approx.	1.94
Consistency, DIN 51 818; NLGI grade	2
Drop point, DIN ISO 2176**; [°C]	Not measurable
Apparent dynamic viscosity, Klüber viscosity grade ***	M
Base oil viscosity, DIN 51 366, at 40 °C, [mm ² /s] approx. at 100 °C, [mm ² /s] approx.	300 80
Viscosity index, DIN ISO 2919, approx.	345
Flow pressure, DIN 51805 bei -60 °C, [mbar]	<1,400
Low temperature torque acc. to IP 186/85 bei -60 °C starting torque, [Nmm] running torque, [Nmm]	<1.000 <100
Speed factor****, (n x d _m), [mm/min], approx.	300,000

* Service temperatures are guide values which depend on the lubricant's composition, the intended use and the application method. Lubricants change their consistency, apparent dynamic viscosity or viscosity depending on the mechano-dynamical loads, time, pressure and temperature. These changes in product characteristics may affect the function of a component.

** In accordance with DIN 2176 it is not possible to measure the drop point of these high-temperature greases (they do not melt); however, a certain degree of oil separation may occur at temperatures above approx. 170 °C.

*** Klüber viscosity grades: EL = extra light lubricating grease; L = light lubricating grease; M = medium lubricating grease; S = heavy lubricating grease; ES = extra heavy lubricating grease

**** Speed factors are guide values which depend on the type and size of the rolling bearing type and the local operating conditions, which is why they have to be confirmed in tests carried out by the user in each individual case..

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Klüber Lubrication München KG
Geisenhausenerstraße 7, 81379 München, Deutschland
☎ +49 89 7876-0, Telefax +49 89 7876-333, www.klueber.com