

# Klüberalfa HX 83-301, HX 83-302

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



## Benefits for your application

- **Extremely wide service temperature range**
- **Low friction torques**
- **Low evaporation rate**
- **Excellent long-term stability**
- **Long component life**
  - in a wide service temperature range
  - in contact with aggressive media
  - under vacuum and ultra-high vacuum
  - where sensitive plastic materials are used
- **High component performance**
  - due to low friction values in sliding contact
  - due to low stick-slip tendency
  - due to low gasification, no VOC (Volatile Organic Compounds) emission

## 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  $-60^{\circ}\text{C}$  and even ensures load-bearing lubricating films at temperatures as high as  $240^{\circ}\text{C}$ .

Klüberalfa HX 83-301 and Klüberalfa HX 83-302 should be used for all those applications requiring a high kappa value and a very good load-carrying capacity of the lubricant over a wide temperature range.

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

## Application

### Plastics and seals

Klüberalfa HX 83-301 and Klüberalfa HX 83-302 offer exceptionally low friction values along with a good stick-slip behaviour, 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 behaviour 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 83-301 and Klüberalfa HX 83-302 do not constitute an additional particle source, but on the contrary often contribute to clearly reducing wear-related particle emission.

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## 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.

We will be pleased to give advice on the optimisation of lubricant life.

## Material safety data sheets

Material safety data sheets can be requested via our website [www.klueber.com](http://www.klueber.com). You may also obtain them through your contact person at Klüber Lubrication.

Pack sizes	Klüberalfa HX 83-301	Klüberalfa HX 83-302
Can 1 kg	+	+

Product data	Klüberalfa HX 83-301	Klüberalfa HX 83-302
Article number	090077	090078
Chemical composition, type of oil	PFPE	PFPE
Chemical composition, solid lubricant	PTFE	PTFE
Lower service temperature	-60 °C / -76 °F	-60 °C / -76 °F
Upper service temperature	240 °C / 464 °F	240 °C / 464 °F
Colour space	white	white
Density at 20 °C	approx. 1.94 g/cm <sup>3</sup>	approx. 1.94 g/cm <sup>3</sup>
NLGI grade, DIN 51818	1	2
Shear viscosity at 25 °C, shear rate 300 s <sup>-1</sup> , equipment: rotational viscometer, lower limit value	3 000 mPas	4 000 mPas
Shear viscosity at 25 °C, shear rate 300 s <sup>-1</sup> , equipment: rotational viscometer, upper limit value	5 500 mPas	8 000 mPas
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 40 °C	approx. 300 mm <sup>2</sup> /s	approx. 300 mm <sup>2</sup> /s
Kinematic viscosity of the base oil, DIN 51562 pt. 01/ASTM D-445/ASTM D 7042, 100 °C	approx. 85 mm <sup>2</sup> /s	approx. 85 mm <sup>2</sup> /s
Flow pressure of lubricating greases, DIN 51805, test temperature: -60 °C	<= 800 mbar	<= 1 400 mbar
Low-temperature torque, IP 186, -60 °C, running		<= 100 mNm
Low-temperature torque, IP 186, -60 °C, start		<= 1 000 mNm
Speed factor (n x dm)		approx. 300 000 mm/min
Minimum shelf life from the date of manufacture - in a dry, frost-free place and in the unopened original container, approx.	60 months	60 months





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## Klüber Lubrication – your global specialist

Innovative tribological solutions are our passion. Through personal contact and consultation, we help our customers to be successful worldwide, in all industries and markets. With our ambitious technical concepts and experienced, competent staff we have been fulfilling increasingly demanding requirements by manufacturing efficient high-performance lubricants for more than 80 years.

**Klüber Lubrication München SE & Co. KG /  
Geisenhausenerstraße 7 / 81379 München / Germany /  
phone +49 89 7876-0 / fax +49 89 7876-333.**

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