

PROFILE ROLLERS FOR LINEAR GUIDANCE SYSTEM

A specialist in tailored precision ball bearing solutions and units containing engineering polymers, **JESA** has been developing and manufacturing rollers for many years. Over the years, the company has consolidated its expertise and experience, and is now one of the world's leading manufacturers of bearings.

Responding to strong market demand, **JESA** is now launching a standard version of its roller, until now custom produced. Each parameter was analysed, redesigned and optimised, both from a geometric standpoint and at design level in order to be able to offer a standard "LRG" product line, exclusively Swiss Made and with maximum efficiency.



Advantages of “LRG” profile rollers

Increased lifetime: When calculating the lifetime, the deformation of the outer ring is taken into account to make sure it remains as rigid as possible. The heat treatment is selected based on the end application. This treatment improves impact resistance and thus increases the lifetime of the product.

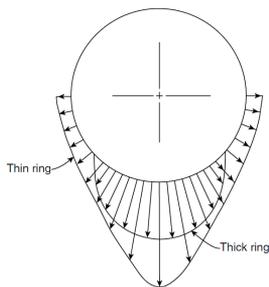


Diagram of ring load distribution with two levels of rigidity [Tedric A. Harris, 2007, *Advanced Concepts of Bearing Technology*, CRC Taylor&Francis Group, 140]

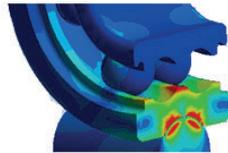


Diagram of “Finite Element Analysis” (FEA) [Programme de simulation FEM : Ansys Workbench v15.0]

Guidance accuracy and low noise: The accuracy achieved as a result of state-of-the-art manufacturing processes leads to a significant reduction in the noise generated by the contact between the rail and the outer ring.

JESA offers a suitable solution, by applying an ABEC3 tolerance class (KEA striking 0.009 mm) on the outer profile. (For comparison, the current industry standard is ABEC1 (KEA striking 0.020 mm)). This makes sure the roughness of the profile in contact is at maximum Ra: 0.3 µm.

The resulting drop in the magnitude of harmonics delivers optimum guidance accuracy, low noise and the most negligible vibrations possible.

Materials and sealing: JESA’S “LRG” rollers are available in steel 100Cr6 or stainless steel 1.4125. These high quality materials are manufactured in Europe. Thorough quality controls are performed on the macro- and microstructures, as well as on the inclusion cleanliness.

Selected by JESA, the cage is suited to the temperature range of the polyamide family.

The sealing by NBR labyrinth seal protects

effectively from dust, with a very low friction torque. The guide rollers can be used in temperatures ranging from -35°C to +120°C.

JESA rollers contain a synthetic grease with additives for high pressure (EP). The grease viscosity is suitable for a broad speed range.

Hybrid bearings with Si3N4 ceramic balls can be used up to 270°C. FPM seals with other types of sealing, or even lubrication solutions for vacuum environments are also available on request.

Running noise: As a result of low friction, optimized lubrication and very high precision, the “LRG” roller presents very low running noise.

Direct contact: JESA offers direct contact between its customer and the producer/designer. Moreover, all the rollers are Swiss Made.

Sources:

1. Tedric A. Harris, 2007, *Advanced Concepts of Bearing Technology*, CRC Taylor&Francis Group, 140
2. Programme de simulation FEM : Ansys Workbench v15.0
3. Credit photo: JESA SA

About JESA

JESA, founded in 1969 by Mr. Joseph Egger in Villars-sur-Glâne in the Swiss Canton of Fribourg, is currently a

limited company of the POLYGENA group and employs a workforce of approximately 200 people. A specialist in bespoke precision ball bearing solutions and units containing engineering polymers, JESA has been a leading player in this market for over 40 years. With a worldwide presence through sales offices in Germany, the USA, France, Great Britain and also in China, its turnover is around 50 million Swiss francs. In 2010, JESA invested about 5 million Swiss francs in cutting-edge technology production equipment in order to continue its journey towards operational excellence.

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