



# IMPERIAL-SIZE GUIVEX® (ISG) GUIDE BANDS

Freudenberg-NOK Imperial-size Guivex® 4000/4001 series guide bands are an Imperial-sized, profiled piston (4000) and rod (4001) guide bands made of the NEW Quantix® 52-4 carbon fiber-filled polyamide material.  
Patented product design (patent No.: PCT/EP95/03874)

## Applications

- Freudenberg 'Perfect Cylinder' optimized sealing systems
- Long-stroke cylinder (piston-rod deflection)
- Short guiding distance (piston-rod tilting)
- Short stroke (inadequate lubrication)
- High side load

## Operating conditions

Freudenberg-NOK Guivex® 4000/4001 series guide bands can be used in all hydraulic fluids normally found in hydraulic systems such as oils and greases based on mineral oils, water emulsions, water glycol, phosphate ester, fire-resistant hydraulic fluids (HFA, HFB, HFC, HFD) and biodegradable hydraulic fluids (HETG, HEES, HEPG).  
The maximum permissible operating temperature is 257°F.

## Materials Guide

Material	Designation	Color
Carbon fiber-filled polyamide	Quantix® 52-4	Dark grey

## VALUES FOR THE CUSTOMER

Freudenberg-NOK Imperial-size Guivex® guide bands feature:

- Can replace standard 1/8" cross section piston (2000/8000 series) & rod (2001/8001 series) guide bands in current housings
- Higher radial load capacity (up to 40% higher load capacity over standard Freudenberg-NOK guide band materials)
- Allows the reduction of cylinder gland widths and cylinder lengths, reducing over cylinder costs and increased design flexibility
- Less abrasive to sliding surfaces
- Very good guide-length utilization based on uniform stress distribution
- Reduced propensity for stick-slip
- Quieter operation
- Excellent sliding behavior over a short guiding distance (no jamming)
- Available in inch sizes



## FEATURES AND BENEFITS

### Surface finish

Peak-to-valley heights	R <sub>a</sub>	R <sub>max</sub>
Sliding surface	2-12 μin	<100 μin
Groove base	<63 μin	<250 μin
Groove sides	<125 μin	<600 μin

Material content M<sub>r</sub> >50 % to max. 90 % with cut depth c = R<sub>s</sub>/2 and reference line C<sub>ref</sub> = 0%

### Surface finish of the sliding surfaces

Characteristic value	Limit	
R <sub>a</sub>	>2 μin	<12 μin
R <sub>max</sub>		<12 μin
R <sub>pkx</sub>		<20 μin
R <sub>pk</sub>		<20 μin
R <sub>k</sub>	>10 μin	<28 μin
R <sub>vk</sub>	>8 μin	<26 μin
R <sub>vkx</sub>	>8 μin	<80 μin

### Tolerance

Profile thickness
.124" ±.001" (1/8" nominal)

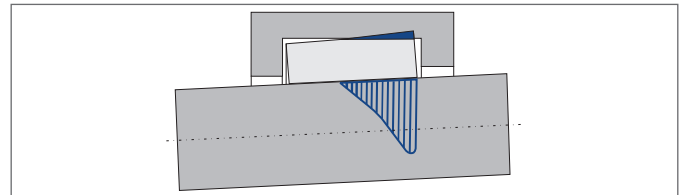
### Operating principle

The use of Guivex® guide elements makes it possible to achieve low-friction and low-wear between the moving components of a hydraulic cylinder. Any side loads occurring during operation are absorbed effectively and any metal to metal contact between the piston rod and/or the piston barrel and the surrounding housing components is precluded.

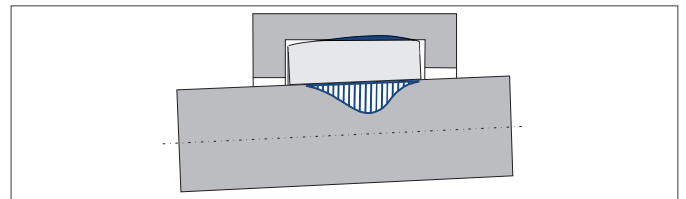
### Sliding properties

Freudenberg-NOK Imperial-size Guivex® 4000/4001 series guide bands are made of the NEW Quantix® 52-4 material in order to achieve high load bearing capability with low abrasion, reduced stick-slip, and quieter operation.

The absorption of lubricating media within the area comprised between the guide and the countersurface is greatly enhanced by the patented profiling of Freudenberg-NOK Guivex® guide bands. Consequently, the sliding behavior is also improved by the Guivex® geometry with correspondingly positive effects in terms of service life and stick-slip behavior.



Rectangular guide band: stress peaks within the edge area



Freudenberg-NOK Guivex® guide band: uniform stress distribution

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