

Important additions I- August 2023

Documentation on various investigations in connection with the conversion of small KGTs to PEEK deflectors

We have been using **PEEK deflectors** in initial series products since 2010 and have verified their suitability for series production in various customer applications. In addition, we have carried out further basic tests have been carried out internally in this context.

Since 2010, we have been converting various versions of KGT nuts to PEEK deflectors (**currently 14 variants**), in some cases with larger quantities (> **1,000 units p.a.**).

The evaluation of these accompanied customer applications confirmed our decision to switch to PEEK deflectors for small KGTs, not only in terms of service life, but also via the improvement in running properties.

With our new test stand, on which also very small KGT's can be tested, we have carried out the following endurance test:

KGT-size Ø4x1, Ball-Ø0,8 mit 3 circulations and PEEK-deflectors:

Feed rate:	100 mm/s corresponds to a speed of 6.000 rpm <small>The test speed is above the approved range of max. 4,500 rpm to shorten the test time.</small>
Acceleration:	10 m/s ²
Horizontal moving mass:	10 kg
Stroke:	45mm
Lubrication:	Grease Klüber Staburags NBU 8
Number of revolutions:	147,338,730 at the end of the test
Number of cycles:	1.944.343
Corresponds to a mileage of:	175 km

Test result:

- At the beginning of the test, the nut was preloaded without play, and the running properties were OK.
- At the end of the test, a small amount of play (<0.01mm) could be detected between the nut and the spindle, but the running properties were still OK.
- Apart from this loss of preload, no other abnormalities or damage could be detected.

This test shows that our PEEK deflectors can withstand extreme speeds without any problems and are fatigue resistant!

Important additions II- August 2023

Documentation on various investigations in connection with the conversion of small KGTs to PEEK deflectors

Further basic tests under unusual conditions:

Endurance test performed:

- Exposure to aqueous media and emulsions
- Exposure to oils and gasoline
- High temperature application up to 100°C
- Low temperature up to -50°C

Target result:

Function of the KGT is still guaranteed even under these unusual conditions:

- No jamming
- No losing or falling out of the switches

Actual result:

Switch holds sufficiently tight in the nut:

- No loss of the switch due to different thermal expansions
- No loss of strength properties

The shape of the switch is retained:

- No chemical or thermal effect

The channel of the deflection remains intact

- The optimized running properties are fully preserved.

Important notice:

A lifetime test for a wide variety of applications and KGT sizes is not feasible. However, we have been able to verify our assumptions and theoretical designs with the number of KGTs supplied and the period over which they run trouble-free, verify our assumptions and theoretical designs, so that we are now absolutely certain that the changeover from brass to Peek deflectors has **no negative impact on service life, reliability and running characteristics.**