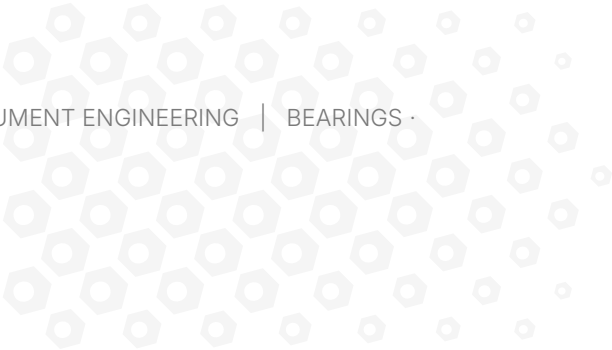




TECHNICAL REPORT, JSC OK-LOZA, 2008

04-80063YuTS-KhD bearings: friction torque several times lower than on the standard grease

JSC OK-LOZA, chief design department · approved by executive director R. B. Volkov; performed by:
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Loza, Russia · technical report approved 24.11.2008

PRODUCT	TEST OBJECT	DOCUMENT TYPE
XADO «Protective - 60K» grease 2-3 mg packed per bearing, on both sides	Instrument rolling bearings 04-80063YuTS-KhD, batch of 12 pcs · original designation 04-80063YuUTS21	Technical report JSC OK-LOZA

OBJECT	CONDITION AT TEST START	WHAT WAS MEASURED
Bearings 04-80063YuUTS21, 12 pcs	Standard ERA filtered grease, 10-20 mg per drawing	Friction torque, overall vibration acceleration level
The same 12 bearings, designation 04-80063YuTS-KhD	Washed, XADO «Protective - 60K» packed, 1-4 mg	Friction torque, overall vibration acceleration level

Comparative test: the same bearings were measured with the standard grease, then washed, reassembled with XADO grease and measured again.

Key result

↓ **3.5x**

batch average friction torque, 2.61 → 0.75 gf·cm

Friction torque: the same 12 bearings before and after the grease change

BEARING	STANDARD ERA F GREASE, gf·cm	XADO «PROTECTIVE - 60K» GREASE, gf·cm
No. 750	2.94 / 2.59	0.63
No. 742	2.87 / 2.80	1.1
No. 775	2.87 / 2.59	0.91
No. 744	3.0 / 2.80	0.67
No. 764	2.80 / 2.52	0.98
No. 770	2.94 / 2.70	0.63
No. 707	3.05 / 2.45	1.1
No. 710	2.70 / 2.45	0.56
No. 740	2.90	0.53
No. 729	2.50	0.84
No. 634	1.50	0.67
No. 665	1.20	0.42
Batch average	2.61	0.75

SU17 test rig, n=15000 rpm, axial load A=(0.5+0.1) kgf. Friction torque decreased on all twelve bearings of the batch.

Overall vibration acceleration level across the batch

MEASUREMENT STAGE	GREASE	AVG. VIBRATION LEVEL, m/s ²
Before run-in	ERA filtered (standard)	0.33
After 15 min run-in	ERA filtered (standard)	0.30
After first 30 min run-in	XADO «Protective - 60K»	0.35
After second 30 min run-in	XADO «Protective - 60K»	0.38

KZ-13 instrument, axial load A=(0.4+0.1) kgf. All readings for both greases stayed within 0.2-0.6 m/s².

Comparison background: friction torque on standard and imported greases

GREASE	BEARINGS	AVERAGE FRICTION TORQUE, gf·cm
ERA filtered	04-80063YuUT, 10 pcs	2.9
ERA unfiltered	04-80063YuUT, 10 pcs	4.3
Chevron	04-80063YuUT, 3 pcs	4.9

A separate batch of bearings, 8 min run-in; XADO grease was not included in this comparison. On Chevron, two bearings showed unstable friction torque of ± 2 gf·cm.

Report conclusions

JSC OK-LOZA recorded in the section «Conclusions and recommendations»:

1. The «Protective - 60K» grease by XADO provides a stable low friction torque of 04-80063YuTS-KhD bearings.
2. The vibration level of bearings with ERA F and «Protective - 60K» greases lies within the range **0.2-0.6 m/s²**.
3. Send LLC «Medtorg+» a batch of 04-80063YuTS-KhD bearings, **12 pcs**, for testing within the products in comparison with the standard bearings. The batch average friction torque thereby decreased from **2.61** to **0.75 gf·cm**, and the reduction was obtained on each of the twelve bearings — from **0.42** to **1.1 gf·cm** against **1.20-3.05 gf·cm** on the standard grease.

XADO

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The results apply to 04-80063YuTS-KhD instrument rolling bearings and to the bench test modes of JSC OK-LOZA: n=15000 rpm at an axial load of 0.5 kgf; with other sizes and operating modes the figures may differ. The original signed technical report of 24.11.2008 is published in full and available for download.