MEASUREMENT PROTOCOLS No. 1–4 · DEPARTMENT EXPLANATORY MEMO

KT-6 locomotive compressors: harder cylinders, lower current and oil use — no disassembly

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PRODUCT

XADO revitalizant repair gels

gel for cylinders · gel for compressors and bearings

TREATED EQUIPMENT

KT-6 compressors

5 compressors of OPE-1 traction units No. 294, 317, 343, 344

DOCUMENT TYPE

Measurement protocols No. 1–4 and explanatory memo of the railway department

TRACTION UNIT / COMPRESSOR	CONDITION AND TREATMENT SITE	WHAT WAS MEASURED
OPE-1 No. 344, KT6 No. 1	In service, 2 years 5 months of operation; treated on the locomotive	Output, oil consumption
OPE-1 No. 344, KT6 No. 2	In service, 2 years 5 months of operation; treated on the locomotive	Output, oil consumption
OPE-1 No. 294, KT6 No. 2	After overhaul; treated on the depot run-in bench	Cylinder wall hardness, current draw
OPE-1 No. 343, KT6 No. 2	After overhaul; treated on the depot run-in bench	Output, oil consumption
OPE-1 No. 317, KT6 No. 1	After overhaul; treated on the depot run-in bench	Output, oil consumption

Two compressors were treated directly on the locomotive during scheduled breaks, three on the depot run-in bench.

Key results

↑ 6-25 %

cylinder wall hardness, 269-278 → 292-347 HB

↓ 18.4 %

compressor current draw, 19 → 15.5 A

Cylinder wall hardness and current draw — compressor of OPE-1 No. 294

PARAMETER	BEFORE TREATMENT	AFTER 2 H RUN-IN	CHANGE
Stage 1 cylinder No. 1, previously in service	269 HB · 23.1 HRC	297 HB · 29.3 HRC	+28 HB · +6.2 HRC
Stage 1 cylinder No. 2, new	275 HB · 24.7 HRC	292 HB · 30.3 HRC	+17 HB · +5.6 HRC
Stage 2 cylinder, new	278 HB · 26.5 HRC	347 HB · 31.0 HRC	+69 HB · +4.5 HRC
Current draw on the bench	19 A	15.5 A	−3.5 A

Three hardness measurements per cylinder: before treatment, after 30 minutes and after 2 hours of run-in. The protocol sums the increase as 5-6 HRC units.

Compressor output on locomotives, air system fill time

TRACTION UNIT / COMPRESSOR	AFTER TREATMENTS No. 1 / No. 2 / No. 3	AFTER 3 DAYS	AFTER 20 DAYS
OPE-1 No. 344, KT6 No. 1	70 / 60 / 51 s	45 s	44 s
OPE-1 No. 344, KT6 No. 2	70 / 65 / 54 s	48 s	44 s
OPE-1 No. 343, KT6 No. 2	55 s (after treatment No. 3)	51 s	39 s
OPE-1 No. 317, KT6 No. 1	58 s (after treatment No. 3)	51 s	44 s

Air system fill time as per the air brake instructions; a shorter time means higher output. Measured on locomotives in service.

Conclusion of the railway transport department

The explanatory memo from the plant's railway transport department to the chief mechanic states:

1. Compressor output increased.
2. Oil consumption decreased and, accordingly, oil carry-over from the compressor crankcase into the pneumatic lines of the locomotive and the dump cars was eliminated.
3. Cylinder wall hardness increased, which will extend their service life.
4. Electricity consumption for compressed air generation decreased. Compressor oil consumption on traction unit No. 344 fell **2×** and **2.5×** on the two compressors; on units No. 343 and No. 317, after **20 days** of operation the oil level in the crankcase remained practically unchanged. The department notes: the treatment requires no removal or disassembly of the compressor and is carried out during scheduled breaks, while the cost per compressor does not exceed **1400 roubles** at 2002 prices.

XADO

The results relate to KT-6 locomotive compressors of OPE-1 traction units used in the industrial rail transport of a mining and processing plant; with other units and operating modes the figures may differ. Measurement protocols No. 1–4 and the explanatory memo signed by the responsible officials are published in full and available for download.