



TECHNICAL REPORT OF THE LOCOMOTIVE DEPOT, 07.07.2004

ChME-3 locomotive HPFP: delivery of worn elements restored without teardown

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Tbilisi, Georgia · contract work 08.01–07.07.2004 · report dated 07.07.2004

PRODUCT	TREATED UNIT	DOCUMENT TYPE
XADO gel for fuel injection equipment 9 blisters, added to the fuel tank in a single step	HPFP of ChME-3 locomotive No. 3329 plunger pairs I–VI, delivery measured on the depot shop test bench	Depot technical report commission signatures, seal

EQUIPMENT	CONDITION AT START OF WORK	WHAT WAS MEASURED
ChME-3 locomotive No. 3329, shunting	HPFP in service, worn: element delivery 60-130 ml , spread between elements more than twofold	Delivery of plunger pairs I–VI on the depot shop test bench

The product was added to the fuel tank; the pump was neither removed nor disassembled. Control measurement — after {{50 h}} of locomotive operation, half of the {{100 h}} specified by the technology.

Key result

↑ **58-131%**

delivery of worn HPFP elements, 60-118 → 95-232 ml

HPFP plunger pair delivery before and after treatment

PLUNGER PAIR	DELIVERY BEFORE, ml	DELIVERY AFTER, ml	CHANGE
I	130	137	+5.3 %
II	114	232	+103 %
III	60	95	+58.3 %
IV	118	199	+68.6 %
VI	90	208	+131 %

Depot shop test bench: **100 rpm**, cycle **2 min**, conditions before and after identical. The smallest gain is on element I, the least worn one: its delivery before treatment was the highest.

Depot decision

The commission of the Tbilisi Locomotive Depot recorded: after the XADO gel was added to the fuel tank, ChME-3 locomotive No. 3329 ran **50 h** — half of what the technology specifies — and the delivery of the HPFP plunger pairs, measured on the shop test bench under identical conditions, increased: **60-130 → 95-232 ml**. The pump was neither removed nor disassembled, and the precision pairs were not replaced: delivery was restored on the running locomotive, in regular service. Verbatim conclusion of the report: «In view of the positive result, it was decided that restorative repair of high-pressure fuel pumps on other locomotives is advisable».

XADO

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The results refer to the high-pressure fuel pump of shunting locomotive ChME-3 No. 3329 of the Tbilisi Locomotive Depot; on other equipment and under other operating modes the figures may differ. The original technical report dated 07.07.2004, with signatures and seal, is published in full and available for download.