REPORTS OF VEHICLE FLEET No. 13 · OCTOBER 2008 — FEBRUARY 2009

ZIL 130 and ZIL 131: compression evened out without engine teardown

OJSC ArcelorMittal Kryvyi Rih, Vehicle Fleet No. 13 · approved by: head of Vehicle Fleet No. 13 V. N. Tsapenko · measurements: TsPA, S. A. Slepukhin, V. N. Korol

Kryvyi Rih, Ukraine · treatment and monitoring 15.10.2008 — 05.02.2009 · reports dated 20.03.2009

PRODUCT

XADO revitalizant gel for gasoline engines

full cycle — 3 stages of dosing into the oil sump; XADO VitaFlush cleaner, VERYLUBE ANTIKOKS

TEST OBJECTS

Two trucks ZIL 130 and ZIL 131

gasoline eight-cylinder engines, cylinder-piston group

DOCUMENT TYPE

Two technical reports of the plant, 20.03.2009

VEHICLE	MILEAGE AT START	MILEAGE OVER CYCLE	WHAT WAS MEASURED
ZIL 130, plate No. AE 9334 AA	**29 396 km**	**5 668 km**	Compression in all eight cylinders before and after treatment
ZIL 131, plate No. AE 0994 AT	**11 550 km**	**10 450 km**	Compression in all eight cylinders before and after treatment

Both vehicles went through the same three-stage treatment cycle; the before and after measurements were taken with a ZEGA 362 compression tester, and the instrument charts are attached to the reports.

Key result

↑ 1.8 kgf/cm²

compression in the most worn cylinder of the ZIL 131, was 5.5

compression evened out across the cylinders

Compression by cylinder, kgf/cm² — both vehicles side by side

CYLINDER	ZIL 130 BEFORE	ZIL 130 AFTER	ZIL 131 BEFORE	ZIL 131 AFTER
I	8.0	7.7	7.3	7.5
II	7.5	8.1	5.5	7.3
III	6.8	7.0	7.3	7.7
IV	6.9	7.7	8.0	8.1
V	8.8	8.3	7.3	7.6
VI	8.3	8.3	7.4	7.6
VII	6.8	7.5	7.3	7.5
VIII	8.7	8.4	7.5	7.8
Spread	2.0	1.4	2.5	0.8

ZEGA 362 compression tester; spread is the difference between the highest and the lowest cylinder of the engine. The rise in compression is capped by the manufacturer's nominal value.

What changed on each vehicle

VEHICLE	CYLINDER-TO-CYLINDER SPREAD	LARGEST GAIN IN A SINGLE CYLINDER	MILEAGE OVER CYCLE
ZIL 130	**2.0 → 1.4 kgf/cm²**	**0.8 kgf/cm²** — cylinder IV (was **6.9**)	**5 668 km**
ZIL 131	**2.5 → 0.8 kgf/cm²**	**1.8 kgf/cm²** — cylinder II (was **5.5**)	**10 450 km**

On the ZIL 131 compression rose in all eight cylinders, on the ZIL 130 — in the four most worn ones: the coating builds up where the wear was.

Conclusions of the plant reports

The commission of OJSC ArcelorMittal Kryvyi Rih recorded the same thing on both vehicles: after the full treatment cycle of the oil system, repeat measurements established that compression had evened out across all cylinders. For the ZIL 130 — "in individual cylinders the compression value rose by **0.2-0.8 kgf/cm²**". For the ZIL 131 — "in the second cylinder the compression value rose by **1.8 kgf/cm²**, which indicates the elimination of significant wear on the working surface of this cylinder": that cylinder was the weakest in the engine, **5.5 kgf/cm²** before treatment. Evening out compression across the cylinders, according to the conclusion of both reports, removes crankshaft imbalance and helps extend engine service life. Both results were obtained on vehicles in normal service, without disassembling the engines or taking them off the line.

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The results refer to the gasoline engines of the ZIL 130 and ZIL 131 trucks of Vehicle Fleet No. 13 at OJSC ArcelorMittal Kryvyi Rih; on other equipment and under different operating conditions the figures may differ. The originals of both reports are published in full and available for download.