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Ikarus 280 and LiAZ 677: compression increased on both engines

Khabarovsk Municipal Passenger Motor Transport Enterprise No. 3 · measurements taken in the presence of the enterprise process engineer and diagnostic mechanic

Khabarovsk, Russia · treatment 9 Nov 2001 · repeat measurements 26 Nov and 6 Dec 2001

PRODUCT

XADO technology

restorative engine repair while the vehicle stays in service

UNITS IN THE SERIES

Two city buses

Ikarus 280, fleet No. 532 · LiAZ 677, fleet No. 609

DOCUMENT TYPE

Enterprise technical reports signed and stamped

VEHICLE	ENGINE	TREATMENT → REPEAT MEASUREMENT	WHAT WAS MEASURED
Ikarus 280 bus, fleet No. 532	Diesel, 6 cylinders, No. 101490218	9 Nov 2001 → 6 Dec 2001, mileage **2063 km**	Compression in all cylinders
LiAZ 677 bus, fleet No. 609	8 cylinders	9 Nov 2001 → 26 Nov 2001, mileage **2987 km**	Compression in all cylinders

Both vehicles were treated on 9 November 2001 and ran on city routes until the repeat measurement.

Key results

↑ 8.3-40 %

compression by cylinder, Ikarus 280, 25-27 → 28-30 kgf/cm²; the rest unchanged; gain in 13 of 14 measurements; the rest unchanged

↑ 8.3-40 %

compression by cylinder, LiAZ 677, 5.0-6.0 → 6.0-7.0 kgf/cm²; the rest unchanged; gain in 13 of 14 measurements; the rest unchanged

Result for each vehicle

VEHICLE	ENGINE	COMPRESSION BEFORE, kgf/cm²	AFTER, kgf/cm²	GAIN BY CYLINDER
Ikarus 280, fleet No. 532	Diesel, 6 cylinders	25-27	28-30	+11-16 %
LiAZ 677, fleet No. 609	8 cylinders	5.0-6.0	6.0-7.0	+8-40 %

The absolute levels of the two engines are not comparable with each other: the gain in each cylinder is what should be compared.

Compression by cylinder — both engines

VEHICLE	CYLINDER	BEFORE, kgf/cm²	AFTER, kgf/cm²	CHANGE
Ikarus 280, fleet No. 532	1	26	29	+11.5 %
Ikarus 280, fleet No. 532	2	27	30	+11.1 %
Ikarus 280, fleet No. 532	3	25	29	+16.0 %
Ikarus 280, fleet No. 532	4	26	29	+11.5 %
Ikarus 280, fleet No. 532	5	25	28	+12.0 %
Ikarus 280, fleet No. 532	6	25	28	+12.0 %
LiAZ 677, fleet No. 609	1	6.0	6.5	+8.3 %
LiAZ 677, fleet No. 609	2	5.5	7.0	+27.3 %
LiAZ 677, fleet No. 609	3	5.0	7.0	+40.0 %
LiAZ 677, fleet No. 609	4	6.0	6.5	+8.3 %
LiAZ 677, fleet No. 609	5	5.0	7.0	+40.0 %
LiAZ 677, fleet No. 609	6	6.0	6.0	0 %
LiAZ 677, fleet No. 609	7	6.0	7.0	+16.7 %
LiAZ 677, fleet No. 609	8	6.0	7.0	+16.7 %

The more worn the cylinder, the larger the gain: in the LiAZ cylinders that started at 5.0 kgf/cm², compression rose by 40 %.

Conclusion for the series

Two buses of different classes were treated on the same day, 9 November 2001, and came back for measurement after ordinary service runs — **2063** and **2987 km**. On the Ikarus 280 diesel, compression rose in all six cylinders: **25-27 → 28-30 kgf/cm²**. On the eight-cylinder LiAZ 677 engine the whole range moved up, **5.0-6.0 → 6.0-7.0 kgf/cm²**: the weakest cylinder reached the level that had been the engine's best before treatment. The gain followed the wear — where compression was lower, the gain was larger: the revitalizant builds up the coating where metal is missing. Compression cannot rise above the factory nominal, so bringing the lagging cylinders up to the common level is the maximum achievable. The result repeated on two different engines, without taking the vehicles out of service.

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The results apply to the Ikarus 280 and LiAZ 677 bus engines in city service at KhMPATP No. 3, Khabarovsk; on other equipment and under other duty cycles the figures may differ. The originals of both technical reports, signed and stamped, are published in full and available for download.