

## TECHNICAL REPORT ON THE RESULTS OF AN ENGINE TREATMENT

# IZh-2715 engine, no teardown: cylinder geometry restored, even compression, cleaner exhaust

Motor depot of the city association of medical institutions · approved by: General Director V. A. Gashkov · treatment performed by Khado-Yug LLC

Russia · treatment 09.03.2002 · repeat measurements 20.05.2002, after 3000 km of running

## PRODUCT

XADO revitalizant  
engine treatment without  
disassembly, during normal  
service

## TEST OBJECT

IZh-2715 vehicle  
plate No. 1022KKE · engine No.  
7027701 · cylinder-piston  
group, 4 cylinders

## DOCUMENT TYPE

Technical report  
signed and stamped by  
both parties

## EQUIPMENT

IZh-2715 vehicle, plate  
No. 1022KKE  
engine No. 7027701

## CONDITION AT THE START OF TESTING

Ten years in service; compression  
**10-12 kgf/cm<sup>2</sup>** with a spread of **2  
kgf/cm<sup>2</sup>**; oil pressure "barely above  
zero and only on a warmed-up  
engine"

## WHAT WAS MEASURED

Compression cylinder by cylinder ·  
cylinder diameters at the upper and  
lower measuring planes · running time  
on 200 ml of petrol · CO and HC at  
idle

Service after the treatment — {{3000 km}} of normal operation, from 09.03.2002 to 20.05.2002; the repeat measurements were taken by the same method as the initial ones.

## Key results

↑ **1.125 kgf/cm<sup>2</sup>**

compression cylinder by cylinder, 10-12 →  
12-12.5 kgf/cm<sup>2</sup>

↑ **32 %**

running time on 200 ml of petrol at idle, 11 min  
20 s → 15 min

↓ **25 %**

HC in the exhaust gas at idle, 590 → 450 ppm

↓ **0.06 mm**

cylinder diameter at the upper plane, at the lower one — 0.03 mm

## Compression cylinder by cylinder, kgf/cm<sup>2</sup>

| CYLINDER                 | BEFORE TREATMENT | AFTER 3000 KM | CHANGE |
|--------------------------|------------------|---------------|--------|
| Cylinder 1               | 10               | 12            | +2     |
| Cylinder 2               | 11               | 12.5          | +1.5   |
| Cylinder 3               | 11               | 12            | +1     |
| Cylinder 4               | 12               | 12            | 0      |
| Spread across the engine | 2                | 0.5           | -1.5   |

Compression does not rise above the factory nominal value: the cylinder with the highest initial reading stayed where it was, while the lagging ones caught up with it — this is exactly the evening-out recorded in the conclusions of the report.

## Cylinder geometry: micrometry at two planes

| MEASURING PLANE                                  | CHANGE IN CYLINDER DIAMETER      |
|--------------------------------------------------|----------------------------------|
| Upper plane, <b>10 mm</b> from the cylinder face | - <b>0.06 mm</b> on the diameter |
| Lower plane, <b>60 mm</b> from the cylinder face | - <b>0.03 mm</b> on the diameter |

The diameter decreased — a metal-ceramic layer has built up on the walls, and it is thicker where the wear was greater: at the upper plane, by the zone where the compression ring reverses. The restored geometry is the reason for the rise in compression.

## Fuel, exhaust and oil pressure

| PARAMETER                              | BEFORE TREATMENT                                 | AFTER 3000 KM           |
|----------------------------------------|--------------------------------------------------|-------------------------|
| Running time on 200 ml of petrol, idle | <b>11 min 20 s</b>                               | <b>15 min</b>           |
| CO in the exhaust gas, idle            | <b>2.6 %</b>                                     | <b>1.8 %</b>            |
| HC in the exhaust gas, idle            | <b>590 ppm</b>                                   | <b>450 ppm</b>          |
| Oil pressure                           | Barely above zero and only on a warmed-up engine | Present at idle as well |

Idle consumption was measured with a **200 ml** portion of petrol on an engine warmed up to operating temperature; CO and HC — with a gas analyser at the same engine speed.

## Conclusions of the commission

The report, approved by the customer and signed by the commission of both parties, records: "After the engine treatment, compression evened out across all cylinders and rose by an average of **1.125 kgf/cm<sup>2</sup>**. The geometric dimensions of the cylinders were optimised (on average they decreased by **0.06 mm** on the diameter at the upper plane and by **0.03 mm** on the diameter at the lower one). On 200 ml of petrol the engine ran **3 min 40 s** longer, which gives an economic effect of **32 %**. The CO reading decreased by **6.9 %**; the HC reading decreased by **25 %**. Oil pressure increased, and engine responsiveness increased. We consider that the use of the XADO revitalizant makes it possible to raise the technical reliability of the vehicle fleet and to minimise the material and time costs of its maintenance and repair." Before the treatment, oil pressure barely held and only on a warmed-up engine — a ten-year-old vehicle was brought back without opening the engine, over **3000 km** of the motor depot's ordinary work.

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**XADO**

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The results relate to the petrol engine of an IZh-2715 vehicle after 3000 km of service; on other engines and duty cycles the figures may differ. The original technical report is published in full and available for download. The treatment was carried out and the conclusions of the report were drawn up by Khado-Yug LLC, a XADO representative; the report was approved by the general director of the customer motor depot.