XADO

IE B056 | PRODUCTION CASE | ROAD TRANSPORT · PASSENGER SERVICES | DIESEL · FUEL INJECTION EQUIPMENT

ACT AND MEMO OF THE DIAGNOSTIC STATION

SISU bus: fuel pump treatment raised power without teardown

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Diagnostics 15.08 · 30.08 · 14.09.2001 · act dated 04.10.2001

PRODUCT

XADO restoration gel

Single treatment of the fuel injection equipment — one tube, no disassembly of the injection pump

TEST OBJECT

SISU bus, reg. No. 216

Diesel, 6 cylinders · injection pump, plunger pairs

DOCUMENT TYPE

Act dated 04.10.2001 and memo of the diagnostic station

“Approved” endorsement by the technical director of the enterprise

EQUIPMENT	CONDITION BEFORE TREATMENT	WHAT WAS MEASURED
SISU bus, reg. No. 216 diesel, 6 cylinders	Heavy black smoke, signs of wear of the injection pump plunger pairs, the vehicle does not hold load at 50 km/h	Power under load in 4th and 5th gear, injection pressure and duration, idle speed

Only the fuel injection equipment was treated, one tube of gel, the unit was not disassembled. Measurement before treatment — 30.08.2001, control measurement — 14.09.2001.

Key results

↑ **18.2 %**

power under load in 4th gear, 110 → 130 kW

↑ **10 %**

power under load in 5th gear, 100 → 110 kW

Power under load

PARAMETER	BEFORE TREATMENT	AFTER TREATMENT	CHANGE
Power in 4th gear, N_4	**110 kW**	**130 kW**	**+20 kW**
Power in 5th gear, N_5	**100 kW**	**110 kW**	**+10 kW**
Minimum idle speed	**610 rpm**	**660 rpm**	**+50 rpm**

The same power values are independently stated both in the act and in the memo of the diagnostic station.

Fuel injection parameters

IDLE MODE	PARAMETER	BEFORE	AFTER
577 → 600 rpm	Maximum injection pressure, Pmax	**14.6 MPa**	**15.1 MPa**
1100 → 1110 rpm	Maximum injection pressure, Pmax	**15.7 MPa**	**15.8 MPa**
1100 → 1110 rpm	Injection duration, T	**1.5 ms**	**1.0 ms**

Injection pressure is held by the worn plunger pair — the rise in Pmax is itself the sign of restored pair geometry, and it is what delivers the power gain.

Engine condition before and after treatment

INDICATION	BEFORE TREATMENT	AFTER TREATMENT
Smoke during power measurement	Heavy, black in colour	Moderate, grey-blue in colour
Behaviour under load	“Absolutely does not hold load at 50 km/h”	Power gain in both measured gears
Injection oscillogram	Significant wear of the injection pump plunger pairs	“Signs of plunger pair wear have disappeared”

Smoke was assessed visually by colour and intensity of the exhaust during the power measurement.

Conclusion of the enterprise diagnostic station

The diagnostic station of JSC “Avtokolonna No. 1118” recorded: “compared with the technical condition as of 15.08 the bus has gained a certain amount of additional power as a result of applying XADO technology; changes in the fuel injection oscillogram can also be noted, indicating a slight restoration of the friction surface of the plunger pairs”. Before the treatment the vehicle emitted heavy black smoke, the oscillogram showed significant wear of the injection pump plunger pairs, and under load the bus “absolutely does not hold load at 50 km/h”. One tube of gel, with no disassembly of the fuel injection equipment, gave power under load of **110 → 130 kW** in 4th gear and **100 → 110 kW** in 5th, while smoke became moderate and grey-blue in colour.

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The results refer to the diesel engine of a SISU bus after a single treatment of the fuel injection equipment; on other equipment and with a different condition of the units the figures may differ. The act dated 04.10.2001 and the memo of the diagnostic station are published in full and available for download. In the 2001 document the compound is called a repair-and-restoration compound (XADO RVS): RVS is an outdated XADO designation, zero-generation compounds; the current product generation is revitalizants.