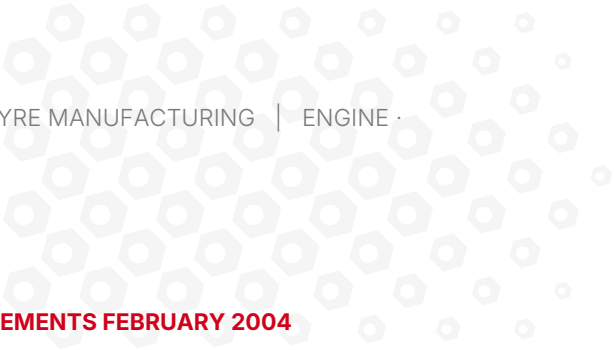




REPORTS OF JSC "JV ROSAVA" · TREATMENT 8–11.12.2003, MEASUREMENTS FEBRUARY 2004

DV 1792 forklift truck: engine, gearbox and hydraulics restored without disassembly

JSC "JV Rosava", in-plant transport shop · commission: head of the in-plant transport shop V. N. Gaponenko, engineer of XADO LLC I. N. Sharaikin, commercial director of APTF "STARK" R. I. Sus · approved by deputy technical director V. M. Savchuk
Bila Tserkva, Kyiv region, Ukraine · treatment 8–11.12.2003 · three reports, February 2004

PRODUCT	TREATED OBJECT	DOCUMENT TYPE
XADO revitalizants treatment by XADO technology, without disassembly of the units	DV 1792 forklift truck, reg. No. T0480KKh diesel engine · hydromechanical transmission · boom lift hydraulics	Three commission reports of JSC "JV Rosava" one for each treated unit

MACHINE AND UNIT	CONDITION AT START	RUN TIME BEFORE MEASUREMENT	WHAT WAS MEASURED
DV 1792, T0480KKh — diesel engine	360 engine hours after overhaul, compression 16–19.5 kgf/cm ²	163 h (compression) 40 h (fuel)	Compression by cylinder, fuel consumption at idle
DV 1792, T0480KKh — hydromechanical transmission	Oil pressure 0.5 kgf/cm ² in all modes	40 h	Oil pressure in "Forward", "Neutral", "Reverse" modes
DV 1792, T0480KKh — boom lift hydraulics	Boom settling under load 30 mm in 5 min	32 h	Boom lifting time, unintended lowering under load

Three units of one machine, treated in a single cycle on 8–11.12.2003. The measurements were made by one commission, each unit covered by a separate report.

Key results for the three units

↑ **7.7-37.5 %**

engine compression by cylinder, 16-19.5
→ 21-22 kgf/cm²

↓ **9.5 %**

fuel consumption at idle, 95 → 105 s per
measuring vessel

↓ **10 mm**

boom settling under the test load in 5 min,
30 → 20 mm

↑ **0.2 kgf/cm²**

transmission oil pressure in all three
modes, 0.5 → 0.7 kgf/cm²

Diesel engine — compression by cylinder and fuel consumption

MACHINE AND PARAMETER	BEFORE TREATMENT	AFTER	CHANGE
T0480KKh · compression, cylinder 1	19.5 kgf/cm ²	21 kgf/cm ²	+1.5 kgf/cm ² · +7.7 %
T0480KKh · compression, cylinder 2	16 kgf/cm ²	22 kgf/cm ²	+6 kgf/cm ² · +37.5 %
T0480KKh · compression, cylinder 3	18 kgf/cm ²	22 kgf/cm ²	+4 kgf/cm ² · +22.2 %
T0480KKh · compression spread between cylinders	3.5 kgf/cm ²	1 kgf/cm ²	levelling out
T0480KKh · fuel consumption, idle (time to empty the measuring vessel)	95 s	105 s	–9.5 % consumption

ZECA 363 compression tester, chart cards attached to the report. The cylinder that was weakest before treatment gained the most — the cylinders came out to a common level of 21–22 kgf/cm². According to the conclusion of the report, compression rose by an average of 17 %, and fuel consumption at idle fell by 10.5 %.

Hydromechanical transmission — oil pressure in all modes

MACHINE AND MODE	BEFORE TREATMENT	AFTER 40 H	CHANGE
T0480KKh · "Forward" mode	0.5 kgf/cm ²	0.7 kgf/cm ²	+0.2 kgf/cm ²
T0480KKh · "Neutral" mode	0.5 kgf/cm ²	0.7 kgf/cm ²	+0.2 kgf/cm ²

MACHINE AND MODE	BEFORE TREATMENT	AFTER 40 H	CHANGE
T0480KKh · "Reverse" mode	0.5 kgf/cm ²	0.7 kgf/cm ²	+0.2 kgf/cm ²

Measured with a pressure gauge in the transmission hydraulic system. The gain is identical in all three operating modes — clearances in the pump and spool valves have been restored, and the system holds pressure again.

Boom lift hydraulics — settling under load and lifting speed

MACHINE AND PARAMETER	BEFORE TREATMENT	AFTER 32 H	CHANGE
T0480KKh · unintended lowering of the boom with the test load in 5 min	30 mm	20 mm	-10 mm
T0480KKh · boom lifting time without load, minimum engine speed	36 s	34 s	-2 s

Settling of a locked boom under load is a direct measure of internal leakage in the hydraulic cylinder and the control valve: over 5 minutes the boom now holds the load a third more accurately.

Conclusions of the commissions in the three reports

The commission of JSC "JV Rosava" recorded the following for each of the three treated units of the DV 1792 forklift truck:

1. For the engine — "over 163 hours of operation of the forklift engine after the treatment, the compression value increased by an average of **17 %**. Fuel consumption at idle decreased by **10.5 %**". The engine treated was not a worn one but one recently overhauled — 360 engine hours since the major overhaul.
2. For the hydromechanical transmission — "over 40 hours of transmission operation, the oil pressure in all operating modes increased by **40 %**".
3. For the boom hydraulics — "the boom lifting time without load decreased by 2 s and the lowering distance of the boom with the test load decreased by 10 mm". Three units of one machine, different in design, responded to treatment in a single cycle, without disassembly and without taking the forklift out of service.