

TECHNICAL REPORT OF 15.09.2000

EK4B-M compressor: cylinders restored, faster charging, lower current

Fili electric depot of the Moscow Metro · approved by depot head V. A. Bersenev · endorsed by R&D;
company "Problems of Friction and Wear"

Moscow, Russia · acceptance by the customer's commission: chief mechanic, head of the production
and engineering department, process engineer, foreman, technician · two seals

PRODUCT

XADO technology®
treatment of the compressor
cylinder-piston group

TEST OBJECT

EK4B-M compressor
serial no. 16484 · cylinders I and
II

DOCUMENT TYPE

Technical report
of the Fili electric depot

EQUIPMENT

EK4B-M compressor, serial
no. 16484

**CONDITION AT THE START
OF TESTS**

Worn parts of the
cylinder-piston group

WHAT WAS MEASURED

Current draw · reservoir charging time ·
geometry of cylinders I and II

The "after" measurements were taken at {{280 engine hours}} of operation with a cycle of {{350 engine hours}} — by that point the compressor had not completed the cycle.

Key results

↓ **4.8 %**

compressor current draw, 8.3 → 7.9 A

↑ **36 %**

compressor output by reservoir charging time, 2 min 32
s → 1 min 52 s

Compressor operating mode: current and reservoir charging

PARAMETER	BEFORE TREATMENT	AFTER TREATMENT
Current draw	8.3 A	7.9 A
Reservoir charging time from 0.0 to 4.0	2 min 32 s	1 min 52 s

The measurement mode before and after is identical. From these figures the report records a **5 %** reduction in power consumption and a **36 %** gain in output.

Compressor cylinder geometry — the cause of everything else

MEASUREMENT POINT	CYL. I, BEFORE	CYL. I, AFTER	CYL. II, BEFORE	CYL. II, AFTER
Horizontal, 1	0.150	0.145	0.130	0.125
Horizontal, 2	0.150	0.150	0.140	0.130
Horizontal, 3	0.130	0.130	0.160	0.130
Vertical, 1	0.130	0.130	0.170	0.145
Vertical, 2	0.150	0.135	0.170	0.150
Vertical, 3	0.150	0.120	0.150	0.120

Values are given as in the table of the report. Of the 12 measurement points, 9 decreased and none increased.

Conclusion of the report

The technical report of the Fili electric depot of the Moscow Metro states: "Restoration of the geometry of worn parts has been performed". The compressor arrived for treatment worn, and the coating grown on the friction surfaces returned the cylinders to their geometry — hence everything else: the current draw fell from **8.3** to **7.9 A**, and the reservoir charging time from **2 min 32 s** to **1 min 52 s**, "which corresponds to: a 5% reduction in power consumption and an increase in output of 36%". The measurements were taken ahead of time: the compressor "had run 280 engine hours instead of the 350 required", and the report concludes — "Consequently the effect of applying XADO technology will be improved". The economic effect, excluding the restoration of worn parts, is estimated by the report at **41 %**.



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The results relate to the EK4B-M compressor, serial no. 16484, of the Fili electric depot of the Moscow Metro and to the measurement modes recorded in the report; on other equipment and under other operating modes the figures may differ. The original technical report of 15.09.2000 with signatures and seals is published in full and available for download.