



Measurement results of gear wheel teeth thickness before and after  
XADO® technology treatment

Number of tooth	Date of measurement	Run, km	Wheel-engine block					
			Wheel-engine block 1 №4812	Wheel-engine block 2 №2152	Wheel-engine block 3 №064H1	Wheel-engine block 4 №6498	Wheel-engine block 4 №8329	Wheel-engine block 5 №2656
			Number of gear wheel in wheel-engine block					
			1291	2795	83	70	3704	143
			Tooth thickness in mm at height h = 9mm from the tooth top					
1	Before treatment 16.05.2002	-	15.7	14.7	15.9	15.6	15.8	15.8
	12.11.2002	85039	16.25	15.05	16.45	16.05	16.35	16.25
	13.01.2004	238451	16.25	15.05	16.6	16.0	16.5	16.3
	16.07.2004	323457	16.25	15.0	16.55	15.95	16.4	16.3
2	Before treatment 16.05.2002	-	15.8	14.8	15.9	15.65	15.8	15.8
	12.11.2002	85039	16.3	15.15	16.4	16.0	16.4	16.35
	13.01.2004	238451	16.3	15.1	16.6	16.0	16.4	16.35
	16.07.2004	323457	16.3	15.05	16.55	16.0	16.35	16.3
3	Before treatment 16.05.2002	-	15.8	14.85	15.9	15.65	15.85	15.75
	12.11.2002	85039	16.45	15.15	16.45	16.0	16.4	16.25
	13.01.2004	238451	16.35	15.1	16.55	16.0	16.4	16.35
	16.07.2004	323457	16.25	15.05	16.55	16.0	16.3	16.3
4	Before treatment 16.05.2002	-	15.8	14.7	16.0	15.5	15.8	15.8
	12.11.2002	85039	16.4	15.05	16.5	15.95	16.35	16.35
	13.01.2004	238451	16.4	15.15	16.6	16.0	16.35	16.4
	16.07.2004	323457	16.25	15.05	16.5	16.1	16.3	16.3
5	Before treatment 16.05.2002	-	15.85	14.7	15.9	15.65	15.8	15.7
	12.11.2002	85039	16.3	15.1	16.45	16.05	16.3	16.3
	13.01.2004	238451	16.3	15.1	16.6	16.0	16.4	16.35
	16.07.2004	323457	16.25	15.1	16.6	16.0	16.35	16.3

Note:

Before treatment of tooth №5 of gear wheel №70 (wheel-engine block №6498) an accumulation of pitting blisters with maximum diameter up to 6 mm and depth up to 0.7 mm has been detected on the working surface of contact patch. Contact patches of gear wheels №143 (wheel-engine block №2656) and №83 (wheel-engine block №064H1) had hairlines and blisters with maximum diameter up to 2 mm and depth up to 0.4 mm.

**Conclusions:** 1. After a 85039 km run all pitting blisters and hairlines on the working surfaces of gear wheel teeth detected before treatment were eliminated, all contact patches of gear wheel teeth had the form of smooth polished surface. An increase of gear wheel teeth thickness by the value of 0.35 - 0.6 mm has been detected, proving the complete absence of wear on the working surfaces of gear wheel teeth of traction gear boxes.

2. After a 238451 km run the thickness of gear wheel teeth remain stable compared to the measurements after a 85039 km run. On many gear wheels the formation of ceramic metal layer continued, while the increase of thickness made up additionally 0.05-0.2 mm compared to a 85039 km run. Total increase of teeth thickness from the beginning of treatment made up 0.35-0.7 mm.

3. After a 323457 km run general retention of the obtained teeth thickness is observed. Insignificant decrease of teeth thickness is observed on several gear wheels within the limits of 0.05- 0.1 mm. But in general the teeth thickness remain higher than the initial values by 0.35-0.6 mm. A layer of ceramic metal is visually observed on contact patches of all teeth, which eliminated all small blisters and burrs on the working surface of gear wheel teeth. Surface of the contact patches remain smooth and without visible mechanical damages.

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