Lewis Machine & Tool Co.

1305 West 11th Street
Milan, Illinois 61264
309•787•7151
FAX 309•787•7193

ISO 9001 : 2000 Certified

Gas Key Study

We appreciate each and every one of our customers and strive to keep the relationship by developing new and innovative products and enhancing the performance of existing products in the areas of weight reduction, durability and accuracy.

I will attempt to answer your question and at the same time not disclose Proprietary Information.

We currently use the Stoner System and found that wear on the gas tube decreases the performance of the system, as well as, friction of the key on the upper receiver. Our goal was to increase performance of the weapon on the previously mentioned areas with no consideration for impact on cost and/or delivery.

We started by measuring the wear and friction on the weapon and how this affected the performance of the system. After analyzing the results, we concluded that performance could be enhanced by improvements to two areas; heat treating and coating. There were preliminary tests conducted on several processes and further tested until one was selected for validation.

This study was started in early 2008 and finished toward the end of April 2008. We used over 135,000 rounds of ammunition to test and validate our improvements. Results confirmed improvement to wear resistance, decreased coefficient of friction, enhanced corrosion resistance, decreased surface roughness, while still meeting or exceeding military specifications for performance standards. See attached copy of test data collected.

To address the visual indication you see with or without magnification in the area of displaced material around the two fasteners. This is the result of a very hard outside surface and surface treatment. This does not affect the core strength and durability. It also does not affect the staking of the fasteners, nor reduce the back out torque requirement. This has nothing to do with the material makeup or how it was produced.

You also inquired about metal injection molding (MIM) components. In broad terms, selection of material and its condition/form i.e. forgings, bar stock, cold/hot rolled steel, extrusion, metal injection molding, investment castings, stampings and any other material should not be viewed as one size fits all or one method is far superior to another. Each has benefits when properly used in the correct application. A great method poorly executed or without adequate quality controls will produce an inferior product. Conversely, a good method properly executed with stringent quality controls produces a superior product.

Rest assured, we will never compromise the quality of our product; material, methods of manufacturing and testing will continue at the highest standards to supply you with the best today and in the future.

Karl Lewis
President
Lewis Machine and Tool Co.

Parts Test					
Test Part	*Test Gun*	*Part Descr.*	Rounds	Reason for Replacement	QC Request
Key 2 Standard Tube	15	Carrier Key	13387		Surface Finish
		Gas Tube	19397		Diameter
Key 3 Standard Tube	16	Carrier Key	18110		Surface Finish
		Gas Tube	18110		Diameter
Key 4 Standard Tube	17	Carrier Key	18005		Surface Finish
		Gas Tube	18005		Diameter
Key 5 Black Tube	18	Carrier Key	18950		Surface Finish
		Gas Tube	18950		Diameter
Carrier Assy Standard Tube	20	Carrier Key	15390		Surface Finish
		Gas Tube	15390		Diameter
Carrier Assy Black Tube	21	Carrier Key	17717		Surface Finish
		Gas Tube	17717		Diameter
Standard Key Black Tube	22	Carrier Key	16083		Surface Finish
		Gas Tube	16083		Diameter
Standard Key Standard Tube	23	Carrier Key	17486		Surface Finish
		Gas Tube	17486		Diameter