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# On A Petrol Engine with Innovative Kinematics

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**Abstract** | **Original Research Article**

We provide a brief description of the new kinematic scheme which allows

- to construct engines with extra mechanic efficiency factor;
- to create simple constructions without requiring expensive production technique;
- to have big specific capacity;
- to transform pressure force into a rotational torque effectively.

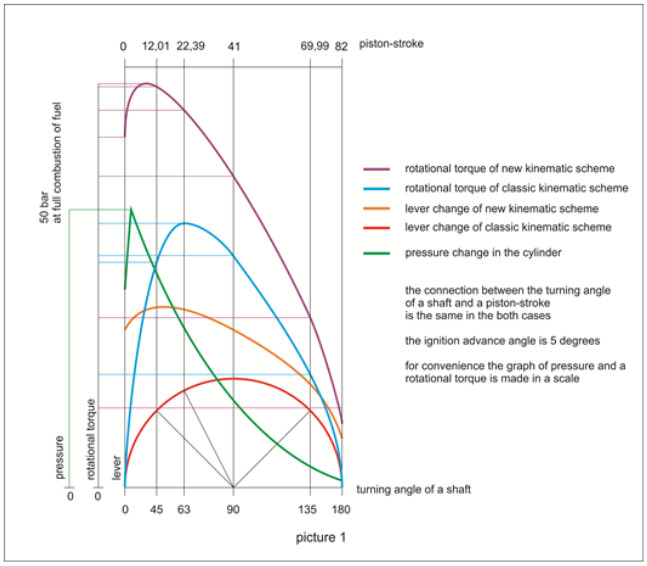
**Keywords:** Kinematic scheme, force transfer, reciprocating motion, rotating motion.



## INTRODUCTION

Two variants of absolutely new kinematic schemes of force transfer from reciprocating to rotating motion are provided. Despite of the classic kinematic scheme the new one has enough big lever on the top and bottom dead centres. Although lever in these centres equals zero in the classic kinematic scheme. One more peculiarity of the new schemes is that there is no rigid connection between a piston-stroke and max lever.

In the classic kinematic scheme [1,2] a piston-stroke is H=2R, where R is a max lever which appears when turning angle of a shaft is ninety degrees. In a supposed scheme the value of max lever is much bigger than the value of "R" and it can be chosen during the project. There is also no connecting rod in the new scheme. A detail part instead of a connecting rod moves strictly linear which minimizes friction between a piston-stroke and cylinder. A new scheme has a number of advantages. All of them increase efficiency factor because of the reduction of energy loss during force transfers from a piston to a shaft. As a result, the engine weight decreases making it more compact.




**Picture-1**

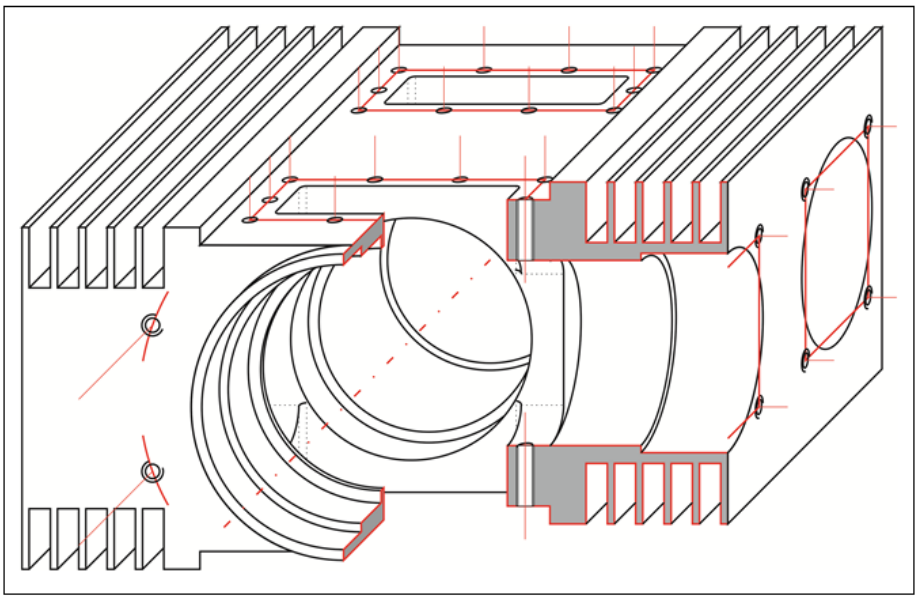
In the picture 1 there is an indicator diagram where one can see working tacts of a classic four-stroke engine [3, 4] and an engine with the new kinematic scheme. It's easy to notice that the change of a lever and a rotational torque with the new kinematic scheme is always much bigger than a lever and a rotational torque with the classic internal combustion engine in any problem.

An experimental model of the first kinematic scheme is being made now. Mechanism tests will be held in a real time of two-stroke gasoline four-cylinder engine with 40mm diameter of a piston and 36mm of a piston-stroke. Total working volume is 180,95cm$^3$. The construction of an experimental model is planning to be completed in September of this year.

**During the tests working characteristics of this engine are planning to be identified**

- developed mechanic capacity;
- a rotational torque;
- fuel consumption;
- efficiency factor;
- thermal characteristics;
- max engine speed.

The prototype engine block is presented below.



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