X195型柴油机活塞结构尺寸对其性能的影响研究

Effect of Piston Structure and Size on the Performance of the X195 Diesel Engine

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中文摘要：

分析了活塞结构对发动机动力性和经济性的影响，对X 1 9 5型柴油机的活塞结构进行了改进，设计采用了3种方案，并在原机上只换用活塞，其它条件不变进行了发动机台架试验. 结果表明：进一步将原节能活塞的环数由4个减少为3个，将3道气环改为2道气环，并加大活塞顶部直径尺寸，改进补偿槽尺寸，同时将活塞裙部缩短，裙部的凹台形改变为锥形，可减少摩擦面积，改善润滑条件，有效地减少摩擦损失，使发动机的最大输出功率提高最大达4． 5 7％，降低耗油率最大达9． 3 4％。

英文摘要：

The effect of piston structure and size on the power and economy performance of the engine was analyzed. The piston structure of the X195 diesel engine was reformed and 3 types reformed piston were used to make test bed test. The test was made with in the same condition except to change the piston. The results showed by changing that the original design of 4 piston ring slots to 3 ones, changing 3 gas rings into 2 ones,increasing the top diameter of the piston, informing the compensating slot, reducing the length of the piston skirt, and changing the step form of the piston skirt into taper, the friction area can be reduced, the lubricate condition of the piston can be ameliorated, the frictional loss was effectively reduced, so that the maximum output power of the engine can go up 4.57 %, and the rate of fuel consumption can reduce by 9.34 %.

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