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PVD 涂层阶梯杆的磁粒研磨加工研究

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摘要: 为了改善 PVD (Physical Vapor Deposition) 涂层阶梯杆的表面质量, 实验中采用磁粒研磨的方法对阶梯杆进行磨削加工, 并对实验参数进行优化, 得出最佳磨削加工参数。结果表明, 优化后的实验参数为: 磁性磨粒的粒径大小为 250 μm , 车床主轴转速为 750 r/min, 加工间隙为 3 mm。用优化后的参数对阶梯杆进行磨削加工 40 min, 阶梯杆表面粗糙度从原始的 Ra 1.35 μm 降低到 Ra 0.26 μm , 阶梯杆表面光洁度有明显提高。

关键词: 磁粒研磨; 表面粗糙度; 表面光洁度; 磨削加工

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Study on Magnetic Abrasive Machining of PVD Coated Stepped Rod

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Abstract: In order to improve the surface quality of the step rod coated with PVD (Physical Vapor Deposition), the magnetic abrasive finishing was used to grind the step rod in the experiment, and the experimental parameters were optimized to obtain the optimal grinding parameters. The results showed that the optimized experimental parameters were as follows: the particle size of magnetic abrasive particles was 250 μm , the spindle speed of lathe was 750 r/min, and the machining gap was 3 mm. After the optimized parameters were used to grind the step rod for 40 min, the surface roughness of the step rod was reduced from Ra 1.35 μm to Ra 0.26 μm , and the surface finish of the stepped rod was obviously improved.

Keywords: magnetic abrasive finishing; surface roughness; surface finish; grinding process

随着制造业的不断发展, 生产技术的不断提高, 体积小、性能优的产品的市场正在不断的扩大。起密封作用的活塞类运动杆件, 对其表面质量的要求一般都非常高, 对同轴度、耐磨性能、耐腐蚀性能

等要求严格, 再加体积的不断缩减, 加工的难度不断升高, 加工后保证其具有较好使用性能也成为一难点^[1]。为了解决加工后杆件的耐磨、耐腐蚀等性能上的不足, 有必要对杆件进行镀膜, 以此来提

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