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A PNEUMATIC SEPARATION SYSTEM FOR ROCKET SEPARATION

Abstract

Traditional liquid rocket separation system, including inter-stage separation, faring separation etc. basically use pyrotechnic separation devices, including explosion bolts, separation nuts, cutters, various types of pyrotechnic locks, and pyrotechnic push rods. , unlock and impulse device. Instead, A pneumatic separation system is used with the advantages of of small size, low impact, simple structure, strong bearing capacity, reliable action, short action time and high synchronization. In this paper, the theory , design, simulation , experiment and its application is introduced. Additionally, this mechanism is successfully applied in Chinese commercial rocket PR-1, which performed its maiden flight at 27th July, 2022.