A Comparison of the Effect of Single and Multiple Cavities on Base Flows

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Abstract

The paper represents a novel approach to understand the effect of single and multiple cavities on base pressure. We considered a control plate of 1 mm thick between a square nozzle of the cross-sectional area of 100 mm(2) and square duct of the cross-sectional area of 625 mm2. Both single and multiple cavities results are compared for a different level of expansion. The nozzle pressure ratio taken are 1.27, 1.33, 1.53 and 1.7. The high-speed compressible subsonic nozzle is being used with internal flow apparatus to achieve flows ranging between Mach 0.6 to Mach 0.9. The comparison between single and multiple cavities are shown graphically with and without control. The multiple cavities were found to be more effective as compared to a single cavity for controlling the base pressure.

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