

Specifications for Electromagnetic Zero-Net-Mass-Flux Actuators and Installation for the 14x22 Active Flow Control Experiment on the ROBIN-mod7

What Is Needed:

Twelve identical electromagnetic voice-coil zero-net-mass-flow actuators, cavities for these actuators, and the fitting of these actuators and cavities into an existing Government-owned wind tunnel model are required. The twelve actuators, twelve cavities and twelve slots shall meet the following specifications.

Actuator, Cavity, and Slot Specifications:

1. The actuator-driven slot velocity must exceed 100 m/s over a frequency range 60-200 Hz.
2. The slot width must be in the range from 0.020 - 0.030 inches. Required slot lengths are on the order of 4.5 inches to 6 inches. Slot locations will be provided by the Government.
3. The nominal impedance of each of the actuators must be 4 Ohms.
4. The power requirement for each actuator must not exceed 120 Watts.
5. Each actuator shall have a set of terminals that allows the shielded signal wire to be connected mechanically.
6. The vendor must receive delivery of part of a Government-owned wind tunnel model, the ramp, which is approximately 20 inches x 20 inches x 50 inches, and made of fiberglass. Then, create the slots through the thickness of the ramp, create the cavities for the actuators and the installation points on the ramp interior. The actuators and cavities must then be installed and tested. The ramp must then be shipped back to the Government at no additional cost.
7. The total installed height of the actuator and cavity must not exceed three (3) inches from the inside surface of the ramp.
8. The slots should be designed to inject the jet into the outer flow as tangentially as possible. The maximum allowable angle for the jet exit is 25° relative to the local surface.