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DEVELOPMENT OF A LINEAR SWEEPING FREQUENCY PRESSURE GENERATOR FOR
DYNAMIC PRESSURE CALIBRATION**Abstract**

With the development of aerospace technology, more and more accuracy experiment results are expected to improve the performance of rocket and aerospace crafts. Pressure transducers are widely used in experiments of aerospace technique. Knowing well the characteristics of pressure transducers before used is very important to improve the experiment results of rocket and aerospace crafts. So the need for dynamic pressure calibration has been increasing. Many solutions have been developed to satisfy this demand. Some of them are periodic, and the others are aperiodic. Usually, sinusoidal pressure generator is used to calibrating the amplitude response and phase shift as a function of frequency for transducers. But there are two problems for this generator: one is that the calibrating data are dispersed, it is difficult to get a continuous curve of amplitude response and phase shift as a function of frequency for transducers; the other is that the amplitude response and phase shift cannot be obtained near and at the resonant frequency of tested transducer. In order to overcome these disadvantages of sinusoidal pressure generator, we developed a linear sweeping frequency pressure generator. The generator outputs a linear sweeping frequency pressure signal to both of the standard and tested pressure transducers at same time. After processing the outputs of the transducers, the continuous frequency—amplitude and frequency—phase curves of the tested pressure transducer can be obtained directly. The whole performance of the tested transducer in the sweeping frequency range is clear. If the resonant frequency of tested transducer in the sweeping frequency range, the resonant frequency of tested transducer can be obtained from the frequency—amplitude curve. The sweeping frequency range and working pressure of the generator can be set up before test. In this report, the composition of the generator and the calibration method for tested pressure transducer with it are introduced. The sweeping frequency range of the generator is (0.1-10000)Hz, and the working pressure range is (0.25-10)MPa.