NASA TECH BRIEF

Simplified Computation of Compressible Fluid Flow Parameters

A mathematical approach has been formulated that yields solutions to three typical problems in compressible fluid flow: through a circular duct, through an enlarged or constricted circular duct, and across an orifice or nozzle. Each condition is analyzed separately. The techniques developed may be used in the study and design of fluid systems.

The document referenced under Note (TSP70-10225) can be used as an engineering handbook for the analysis of subsonic, compressible fluid flow under any of the three stated conditions. Using the subsonic Mach number as the basic flow parameter, a series of working graphs is presented that displays the variation of various physical parameters in each of the flow conditions. Graphs are also plotted from experimental data to substantiate some of the derivations.

Several example problems and step-by-step solutions are included to illustrate the use of the graphs in solving specific problems in fluid flow.

Note:

Requests for further information may be directed to:
Technology Utilization Officer
Kennedy Space Center
Kennedy Space Center, Florida   32899
Reference: TSP70-10225

Patent status:

No patent action is contemplated by NASA.

Source: H. W. Beimgraben of
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