



## Numerical Simulation of Diaphragm Rupture (Paperback)

By Paul Petrie-Repar

Biblioscholar, United States, 2013. Paperback. Condition: New. Language: English . Brand New Book \*\*\*\*\* Print on Demand \*\*\*\*\*.The results from computer simulations of the gas-dynamic processes that occur during and after the rupture of diaphragms within shock tubes and expansion tubes are presented. A two-dimensional and axisymmetric finite-volume code that solves the unsteady Euler equations for inviscid compressible flow, was used to perform the simulations. The flow domains were represented as unstructured meshes of triangular cells and solution-adaptive remeshing was used to focus computational effort in regions where the flow-field gradients were high. The ability of the code to produce accurate solutions to the Euler equations was verified by examining the following test cases: supersonic vortex flow between two arcs, an ideal shock tube, and supersonic flow over a cone. The ideal shock tube problem was studied in detail, in particular the shock speed. The computed shock speed was accurate when the initial pressure ratio was low. When the initial pressure ratio was high the flow was difficult to resolve because of the large density ratio at the contact surface where significant numerical diffusion occurred. However, solution-adaptive remeshing was used to control the error and reasonable estimates for the shock...



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