Approximate Universal Relations Between Shock and Acceleration Waves Speeds for Oblique Plate Impact of Inelastic Solids MIKE SCHEIDLER, U.S. Army Research Laboratory — We obtain some approximate universal relations between wave speeds in inelastic solids subject to oblique plate impact, i.e., a pressure-shear test. Attention is restricted to materials for which the fast wave is purely longitudinal. This includes isotropic solids as well as appropriately aligned orthotropic solids. For the case where the slower wave is a shear shock we derive approximate relations between this shock speed and the shear sound speeds (i.e., acceleration wave speeds) immediately ahead of and behind the shock. These relations are universally valid for a large class of materials which includes elastic solids as well as inelastic solids with instantaneous elastic response.

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