With the strains now known, the equilibruim equation, (20), can be integrated, with the aid of (9), to give the radial stress result shown in (38). The integration is lengthy, but can be accomplished with the formulas appearing in a short table of integrals. The constant of integration is assessed by requiring that the radial stress be equal to the containing pressure P_1 at the external wafer surface. If the containing ring is absent, P_1 vanishes. The remaining stresses are easily found from the use of equations (17), (18), and (19). The tangential and axial normal stresses are given in (39) and (40), respectively, and equation (41) is the shearing stress. The foregoing three normal stress equations represent the orthogonal stress state existing at any point in the wafer, and are based on the assumptions of low shear stress, elastic deflection of the anvil and containing ring, and linear strain hardening of the wafer material. The mean stress or pressure distribution across the diameter of the wafer may be obtained by taking the average of (38), (39), and (40).

The area under the axial normal stress σ_z curve, evaluated at the mid-meridian wafer plane, (Z = 0) corresponds to the applied force transmitted to the wafer from the anvils. The mid-meridian is selected, since at any other plane the wafer is distorted, and is under the influence of shearing stresses, which can support a portion of the applied load. In integral form, the area is expressed as