

DIE-PRESS CALCULATOR

(Version 2.0)

Introduction - DIE-PRESS software calculates the radial and tangential stresses in the inserts and casing in a press-fit die assembly. It determines the optimum interference between the inserts and casing to allow the required pressure for that application. For a 2 or 3 ring die assembly, it determines their dimensions that would allow the dies to take the maximum internal pressure. This Calculator has been developed for tool designers and engineers in the metal forming field including cold forging, hot forging, extrusion and press fitting applications.

Application - Cold and Hot forging tooling, Extrusion Tooling, Press fitting of components. Any application where the tool has to withstand high internal pressure.

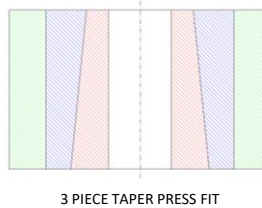
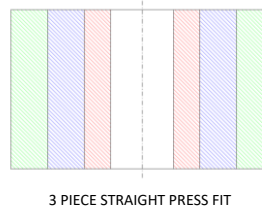
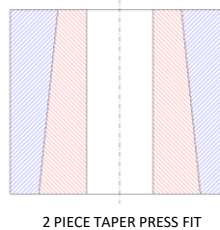
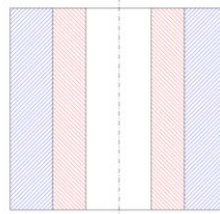
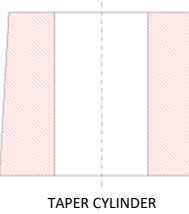
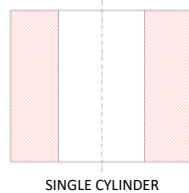
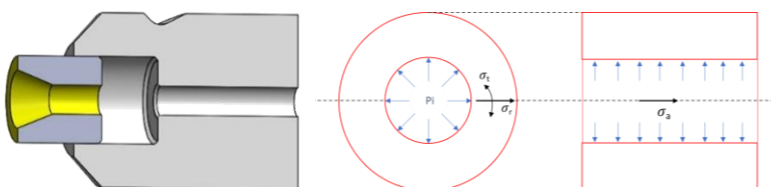
Benefits - Helps to Improve tool life. Allows die assembly to work under higher die pressure. Determines the inserts and casing dimension that optimizes tool material usage. Determine the best press fit amount quickly. Visual presentation of stresses helps in understanding the effect of interference fit in tools.

Calculators Included in the Software - The software uses the simple theory of thick cylinders to determine the following:

1. **Radial and tangential stresses** in one ring, two ring and three ring die assemblies with press fit and internal forging pressure
2. **Optimum Interference** to withstand internal pressure in a two and three ring die assembly
3. **Optimum Insert Outer Diameter** in Two ring assembly for given insert bore and outside diameter of casing
4. **Optimum Insert / Middle Sleeve Diameters** in a Three ring assembly for given insert bore and casing outside diameter
5. **Fatigue Plot** - This plot shows the stress amplitude and mean stress that determine life of a tool under fatigue conditions.
6. Calculation of **'Set Back distance'** for taper insert – casing assembly
7. **Press Force** required to assemble two components under interference conditions.

Cost - \$950 for a Perpetual License.

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Version 2.0 Upgrades - The latest version of Die-Press includes the following additions:

1. The calculation and plotting of Effective stress can now be done based on 'TRESCA' criterion or 'VON MISES' criterion.
2. For two components die assembly, the calculation of maximum interference fit for specified maximum yield stress limit in the insert and casing has been added.
3. For two components die assembly, a cyclic Fatigue plot can be generated to show tangential or effective stresses in the tools during forming and no load conditions.
4. A tool material database has been added to allow the User to add, modify or delete tool material properties used in interference calculations.
5. Following utility calculators have been added
 - Suggested dimensions of two and three components of interference-fit assemblies
 - Press Force Calculator
 - Set Back distance Calculator
 - Calculation of effective stress, TRESCA and VON MISES, for given radial, tangential and axial stresses.

