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Equations for Determining Correct Required Tonnage

There are many factors that contribute to a successful operation. Determining the correct tonnage required for punching mild steel is just one of those variables. Cleveland Steel Tool recommends the following formula for computing the approximate tonnage required to punch a **single round hole** in mild steel.

$$\text{Punch Diameter} \times \text{Material Thickness} \times 80 = \text{Tons of Pressure Required}$$

Example: (to punch a 1/2" hole through 1/4" thick mild steel)

$$.500 \times .250 \times 80 = 10 \text{ tons}$$

Cleveland Steel Tool recommends the following formula for computing the approximate tonnage required to punch a **single shaped hole** in mild steel.

$$\frac{1}{3} \text{ of Perimeter} \times \text{Material Thickness} \times 80 = \text{Tons of Pressure Required}$$

Example: (to punch a 9/16 x 1" rectangular hole through 1/2" thick mild steel)

$$(.33 \times 3.124 \times .500 \times 80 = 41 \text{ tons})$$

For punching materials with different tensile strength, first determine the tonnage required using the given formulas, then use the following multiplier:

Material	Multiplier
Aluminum	.38
Brass	.70
Copper	.56
Steel (mild)	1.00
Steel (50% carbon)	1.50
Steel (cold drawn)	1.20
Stainless Steel (303)	1.50