

CALCULATION OF TOTAL FORCE FOR HYDRAULIC PRESS

To determine the total force delivered by a hydraulic press the hydraulic pressure gauge must be located. The gauge should read in PSI.

Next determine the diameter of the hydraulic ram. Divide the diameter by 2 to get the radius. Calculate the area of the ram by squaring the radius and multiply by 3.14 (pi).

$$r^2 = \left(\frac{D}{2}\right)^2$$

r = the radius of ram

D = the diameter of the ram

$$R = \Pi r^2$$

R = the area of the ram

$\Pi = 3.14$ (pi)

Multiply the area of the ram times the number of rams, times the hydraulic pressure gauge reading. This gives you the total force.

Divide the total force by the surface area of the stock to determine the pressure in PSI over the surface of the stock.

Example: With a known gauge reading the PSI being applied to the stock area can be calculated with the following formula.

$$P = \frac{R \times N \times G}{A}$$

To determine the proper gauge reading to achieve a desired pressure, use the following formula.

$$G = \frac{P \times A}{R \times N}$$

Where: R = Area of hydraulic ram in square inches
 N = Number of rams
 G = Hydraulic pressure gauge reading
 A = Surface area of stock in square inches
 P = Pressure in PSI over the surface area of stock