

CALCULATION OF TOTAL FORCE FOR AIR HOSE PRESS

In order to determine the force exerted on the platen of an air hose press, the length and width of the contact area of each air hose must be determined.

The length is typically the length of the platen. The width for the hose can be measured when the press is in operation (see **Note***).

After calculating the contact area of each hose, multiply it by the number of hoses in operation (length of platen times the width of contact of hose, times the number of hoses). This is the total contact area of the hoses.

Multiply the total contact area by the gauge reading to get the total force being applied. The total force divided by the surface area of the stock is the pressure in PSI being applied to the surface of the stock.

Example: To determine the pressure being applied with a known gauge reading use the following formula.

$$P = \frac{L \times W \times N \times G}{A}$$

To find the gauge reading needed to apply a desired pressure use the following formula.

$$G = \frac{P \times A}{L \times W \times N}$$

Where:

- L = Length of platen
- W = Width of contact area of hose in inches
- N = Number of hoses in use
- G = Air gauge reading
- A = Surface area of stock
- P = Pressure in PSI over surface area of stock

***Note:** With an air hose press the length of the stroke greatly affects the contact area of the hose, which in turn affects the total force. When the maximum stroke is reached, the contact width of the hose gets smaller and smaller until the platen is tangent to the hose. At this point the pressure is almost zero.