CONTACT AREA DURING COLD WELDING

1a. MACROSCOPIC

APPARENT CONTACT AREA = $A_a$

Contact Pressure

$P_a (\text{Max}) = s_{\text{yield}} = \frac{F}{A_a (\text{Max})}$

1b. MICROSCOPIC

TRUE CONTACT AREA = $A_t$

Contact Pressure

$\bar{P} \sim 3 \cdot s_{\text{yield}} = \frac{F}{A_t}$

The Maximum true area of contact is only 30% of the apparent area. Hence, high normal forces will not induce strong bonding.

Figures 1a and 1b