Fluids HW 1

48) $P_{ai} = \frac{F}{A}$

$= \frac{18,000 lb}{(2.5 in)^2 \frac{\pi}{4}} = \boxed{3666.92 \frac{lb}{in^2}}$

58) $\Delta P = -E\left(\frac{\Delta V}{V}\right)$ $\quad E = 3.59 \times 10^6$

$-3.59 \times 10^6 \left(\frac{-1.00}{100}\right)$

$-3.59 \times 10^6 (-0.01)$

$\boxed{= 35900 \text{ Psi}}$

$-24,750 (-0.01)$

$= \boxed{247.5 \text{ mPa}}$

63) $E_{Oil} = 189,000 \text{ psi}$

$A = \frac{\pi}{4} d^2$

$= \frac{\pi}{4} (0.5)^2 = \boxed{0.1963 in^2}$

$\frac{(EYA)}{L}$

$= \frac{\left(189,000 \frac{lb}{in^2}\right)(0.1963 in^2)}{42 in} = \boxed{883.57 in}$