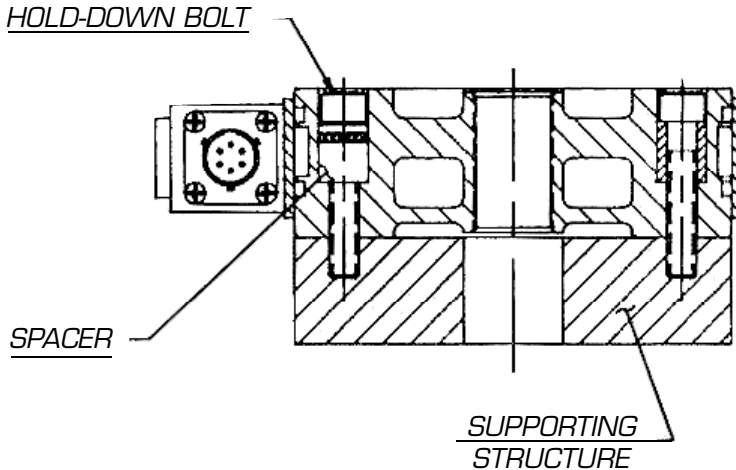


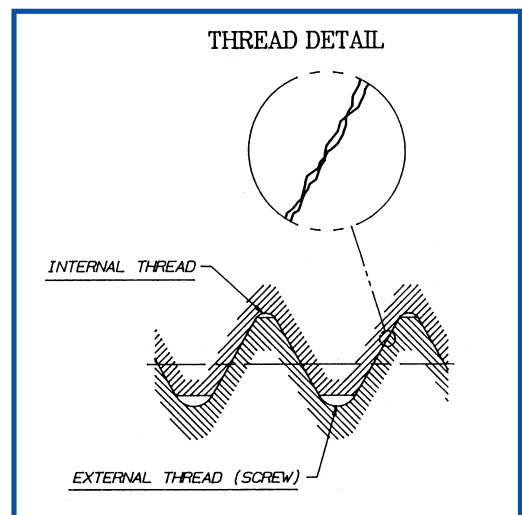
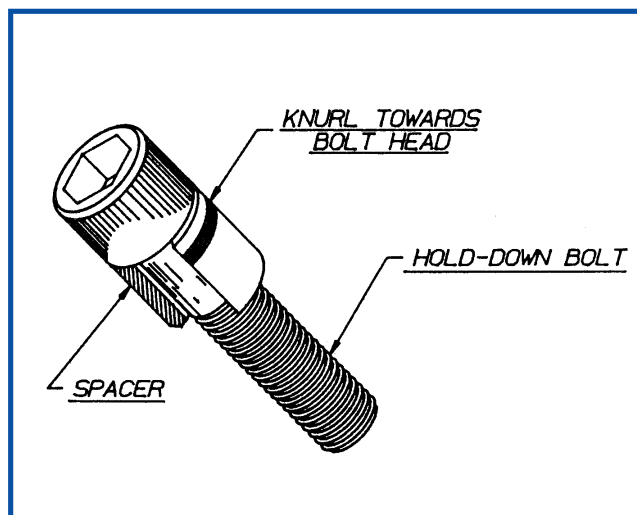
Spacers for Flat Load Cells[®] in Conjunction with Hold Down Bolts



The purpose of spacers is to prevent loosening of Hold-Down Bolts.

Universal & Fatigue Rated Flat Load Cell[®] Hold-Down Bolts must always be tightened to specified torque values, in order to maintain original calibration performance, regardless of the magnitude of the load.

One of the reasons for tension loss in tightened bolts is due to the fact that, microscopic thread surfaces in bolts and mating threads are not smooth, but consist of peaks and valleys, as illustrated. Thus threads are engaged at correspondingly higher than average stress levels, causing continuous crumbling of such high spots. This reduces the elongation of the bolt imparted by tightening.



The longer the bolt, the larger the tightening elongation. In a short stubby bolt, loss of tightening elongation due to thread crumbling can be very serious. To reduce this effect to a manageable condition spacers are used. Spacers add to the length of the bolt, as well as provide some additional deflection themselves, and help maintain the desired bolt preload.