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| 8-29)  For a bolted assembly with six bolts, the stiffness of each bolt **is *kb =* 3 Mlbf**/in and the stiffness of the members is ***km =* 12 Mlbf/in per bolt**. An external load of **80 kips** is applied to the entire joint. Assume the load is equally distributed to all the bolts. It has been determined to use **½ in-13 UNC** grade **8 bolts** with rolled threads. Assume the bolts are preloaded **to 75 percent** of the proof load. (*a*) Determine the yielding factor of safety.  (*b*) Determine the overload factor of safety.  (*c*) Determine the factor of safety based on joint separation. | C := 0.2000000000 |

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| 8-30)  For the bolted assembly of Prob. 8–29, it is desired to find the range of torque that a mechanic could apply to initially preload the bolts without expecting failure once the joint is loaded. Assume a **torque coefficient of *K* 5 0.2.** (*a*) Determine the maximum bolt preload that can be applied without exceeding the proof strength of the bolts. (*b*) Determine the minimum bolt preload that can be applied while avoiding joint separation. (*c*) Determine the value of torque in units of lbf ? ft that should be specified for preloading  the bolts if it is desired to preload to the midpoint of the values found in parts (*a*) and (*b*). |  |

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| 8-50)  For the bolted assembly in Prob. 8–32, assume 10 bolts are used. Determine the fatigue factor  of safety using the **Goodman criterion**.   |  | | --- | | For a bolted assembly, the stiffness of each bolt is ***kb =* 4 Mlbf/in** and the stiffness of the members is ***km =* 12 Mlbf/in per bolt**. The joint is subject to occasional disassembly for main- tenance and should be preloaded accordingly. A fluctuating external load is applied to the entire joint with ***P*max = 80 kips** and ***P*min = 20 kips**. Assume the load is equally distributed to all the bolts. It has been determined to use **½ in-13 UNC grade 8 bolts** with rolled threads.  (*a*) Determine the minimum number of bolts necessary to avoid yielding of the bolts.  (*b*) Determine the minimum number of bolts necessary to avoid joint separation. | |  |