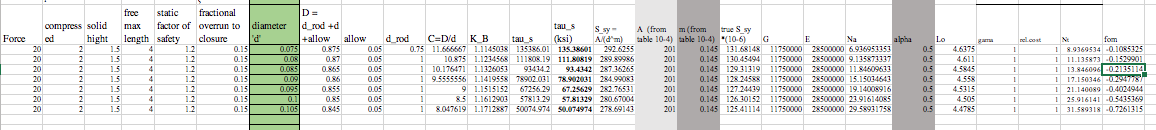
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| 10-21) A static service music wire helical compression spring is needed to support **a 20-lbf load** after being **compressed 2 in**. The solid height of the spring cannot exceed 1in. The free length must not **exceed 4 in**. The static factor of safety must equal or exceed 1.2. For robust linearity use  a fractional overrun to closure ζ of 0.15. There are two springs to be designed. Start with a wire diameter of 0.**075** in.  (*a*)  The spring must operate over a -in rod. A **0.050-in 1diametral clearance allowance** should be adequate to avoid interference between the rod and the spring due to out-of-round coils. Design the spring.  (*b*)  The spring must operate in a 1-in-diameter hole. A 0.050-in diametral clearance allowance should be adequate to avoid interference between the spring and the hole due to swelling of the spring diameter as the spring is compressed and out-of-round coils. Design the spring. |  |



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