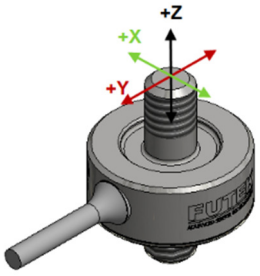
Extraneous Load Factors



Equation: $\sigma_{max} \geq$ (A)Fx +(B)Fy +(C)Fz +(D)Mx +(E)My +(F)Mz

Material: 17-4 P.H. Stainless Steel

Capacity (lb)	A	B	C	D	E	F
2.2 (1000 g)	36000	36000	7500	180400	180400	14100
5 / 10	19500	19500	4000	98000	98000	12000
25	11100	11100	2300	57000	57000	11100

All Force and Moment to be calculated using lb and in-lb units

σ_{max} Table

Material	Static Load (=60% Y.S.)	Fatigue (Non Reversing Loads)	Fatigue (Full Reversing Loads)
17-4PH S.S	87,000	78,000	62,000*

*Value is 75% of Fatigue Strength based on 10-20 x 10^6 cycles and allow for factors that influence Fatigue such as surface finish, stress concentrations, corrosion, temperature and other variables for the production of the transducer, for infinite Fatigue Life (100 x 10^6) use 75% of values shown.

Deflection & Natural Frequency

Capacity (lb)	Deflection (in.)	Natural Frequency (kHz)	β
2.2 (1000 g)	*0.0001*	*19*	*0.0006*
5	*0.0001*	*26*	*0.0007*
10	*0.0002*	*26*	*0.0007*
25	*0.0002*	*42*	*0.0007*

Natural Frequency & Frequency Response Equation's:

$$\text{Natural Frequency (FN)} = 3.13 \sqrt{\frac{1}{\frac{\beta}{Capacity} \bullet Deflection}} \text{ (Hz)}$$

$$\text{Frequency Response with load (FR)} = 3.13 \sqrt{\frac{1}{\frac{\beta + AppliedLoad}{Capacity} \bullet Deflection}} \text{ (Hz)}$$

*Where β values are obtained by FUTEK Engineers

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