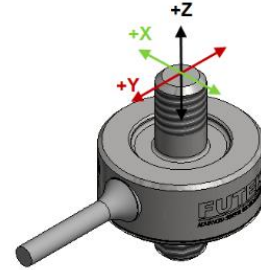


Extraneous Load Factors

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
50	8470	8470	1320	69700	69700	10000

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 10⁶ 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 10⁶) 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
50	0.0005	42	0.0001

Natural Frequency & Frequency Response Equation's:

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

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

*Where β values are obtained by FUTEK Engineers

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