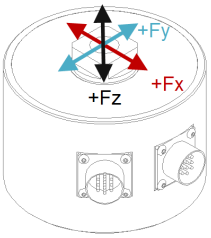
Extraneous Load Factors



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

Material: 17-4 P.H. Stainless Steel

Model#	Capacity (lb)	A	B	C	D	E	F
QLA335	*250*	70	75	127	42	44	13
	500	61	78	78	41	33	18
	1000	60	79	47	38	28	21

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

Model#	Capacity (lb)	Deflection (in.) (Fz Only)	Natural Frequency (Hz) (Z-Direction Only)	β
QLA335	*250*	*0.0065*	*1100*	*0.31*
	500	*0.0065*	*1500*	*0.33*
	1000	*0.007*	*2000*	*0.35*

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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