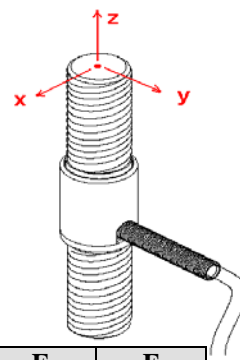


### Extraneous Load Factors



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

**Material:** 17-4 PH Stainless Steel

Model #	Capacity (lb)	A	B	C	D	E	F
LCM500	2,000	1310.90	1310.90	28.75	761.97	761.97	647.97
	5,000	311.02	311.02	12.98	193.95	193.95	148.64
	10,000	185.54	185.54	6.29	71.72	71.72	59.87
	20,000	58.70	58.70	3.37	27.36	27.36	20.50
	50,000	27.14	27.14	1.53	7.49	7.49	5.40

$\sigma_{max}$  **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<sup>6</sup> 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<sup>6</sup>) use 75% of values shown.

### Deflection & Natural Frequency

Model #	Capacity (lb)	Deflection (in.)	Natural Frequency (Hz)	$\beta$
LCM500	2,000	0.002	11,800	0.0700
	5,000	0.003	15,300	0.0700
	10,000	0.003	8,100	0.5000
	20,000	0.004	9,900	0.5000
	50,000	0.005	8,100	1.5000

**Natural Frequency & Frequency Response Equation's:**

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

This documentation was generated and completed to the best ability of FUTEK's Engineering Team using FEA Analysis, Empirical data and Multiple Testing Simulations. The information and recommendations on this document are presented in good faith and believed to be correct however, FUTEK Advanced Sensor Technology makes no representations or warranties as to the completeness or accuracy of the information.

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

\*Where  $\beta$  values are obtained by Futek Engineers