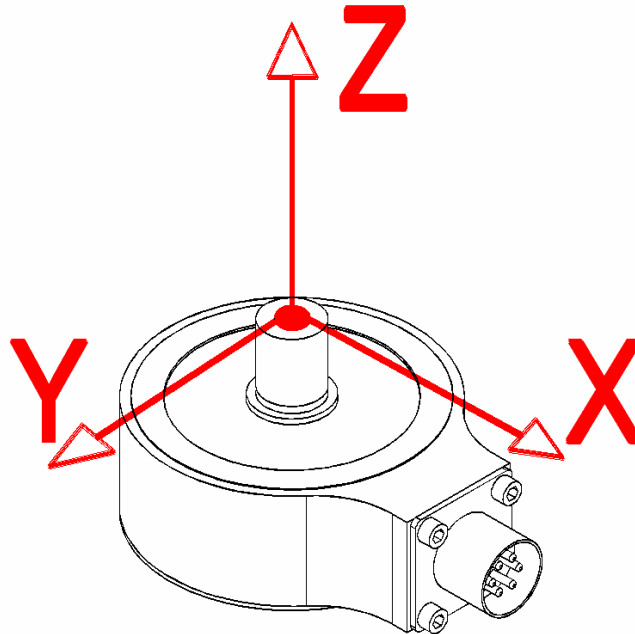


Extraneous Load Factors

Equation: $\sigma_{max} \geq (A)F_x + (B)F_y + (C)F_z + (D)M_x + (E)M_y + (F)M_z$



Material: 17-4 PH Stainless Steel

Material	Capacity (lb)	A	B	C	D	E	F
(S.S.*)	100	39.94	39.94	190.79	94.02	94.02	59.09
	200	71.51	71.51	168.05	98.90	98.90	88.43
	500	229.43	229.43	89.17	160.84	160.84	187.30
	1,000	113.27	113.27	47.00	187.00	187.00	147.17
	2,000	58.14	58.14	22.96	58.45	58.45	144.70
	3,000	59.39	59.39	11.17	39.19	39.19	44.65
	5,000	56.80	56.80	7.67	7.67	44.02	44.02

σ_{max} **Table**

Material	Static Load (=60% Y.S.)	Fatigue (Non Reversing Loads)	Fatigue (Full Reversing Loads)
17-4 PH 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.

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Deflection & Natural Frequency

Material	Capacity (lb)	Deflection (in.)	Natural Frequency (Hz)	β (10^{-4})
(S.S.*)	100	0.0019	1,700	1647
	200	0.0017	2,700	1624
	500	0.0014	4,500	1726
	1,000	0.0014	6,200	1793
	2,000	0.0012	9,400	1931
	3,000	0.0010	9,900	2027
	5,000	0.0020	10,500	2216

*FN results are based on calculation of deflection & weight scene on Sensor arm.

Natural Frequency & Frequency Response Equation's:

$$\text{Natural Frequency (FN)} = \pi \sqrt{1/((\beta / \text{Capacity}) * \text{Deflection})} \text{ (Hz)}$$

$$\text{Frequency Response with load (FR)} = \pi \sqrt{1/((\beta + \text{AppliedLoad} / \text{Capacity}) * \text{Deflection})} \text{ (Hz)}$$

*Where β values are obtained by Futek Engineers

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