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 P.H. Stainless Steel

Model#	Capacity (lbs)	A	B	C	D	E	F
LSB206	*1*	6168	4916	32699	20223	13331	15335
	2	5163	4851	17710	10103	11064	11739
	5	4933	4730	7801	9855	10668	8338
	10	4772	4529	4590	9421	10377	6972
	25	4215	3872	2602	7919	9171	5167
	50	2055	2276	1185	3584	3728	4017
	100	2038	2289	858	3592	3632	3646

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

Model #	Capacity (lbs)	Deflection (in.) (Fz Only)	Natural Frequency (Hz) (Z-Direction Only)	β
LSB206	*1*	*0.005*	*690*	*0.004*
	2	*0.004*	*1180*	*0.004*
	5	*0.003*	*2180*	*0.004*
	10	*0.003*	*3010*	*0.004*
	25	*0.003*	*5380*	*0.003*
	50	*0.003*	*6620*	*0.003*
	100	*0.004*	*8250*	*0.003*

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.

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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