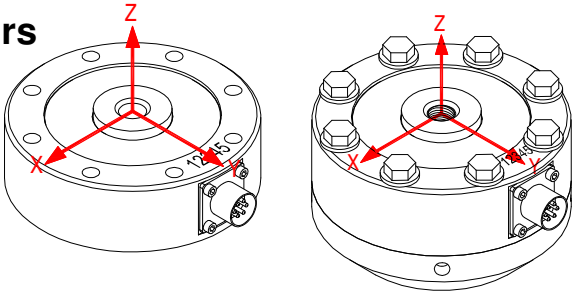
Model # LCF450 Series

Extraneous Load Factors



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

Material: Aluminum 2024-T4 (*AL), **17-4 P.H. Stainless Steel**

Model #	Capacity (lb)	A	B	C	D	E	F
LCF450/455	*250 (*AL)*	*122.0*	*122.0*	*47.0*	*101.3*	*101.3*	*140.0*
	*500 (*AL)*	*67.3*	*67.3*	*23.8*	*37.3*	*37.3*	*47.9*
	*1,000 (*AL)*	*31.6*	*31.6*	*12.2*	*20.3*	*20.3*	*16.9*
	*2,000 (*AL)*	*16.6*	*16.6*	*6.3*	*12.7*	*12.7*	*5.8*
	300 *(SS)*	125.6	125.6	90.4	217.1	217.1	41.8
	500 *(SS)*	111.9	111.9	51.1	139.1	139.1	29.3
	1,000 *(SS)*	52.1	52.1	27.3	62.2	62.2	20.4
	2,000 *(SS)*	25.9	25.9	13.9	39.5	39.5	32.2
	3,000 *(SS)*	18.1	18.1	10.3	28.0	28.0	24.8
	5,000 *(SS)*	13.2	13.2	6.5	12.5	12.5	10.4
	10,000 *(SS)*	7.6	7.6	3.6	6.5	6.5	4.9
LCF451/456	*250 (*AL)*	*67.3*	*67.3*	*23.8*	*37.3*	*37.3*	*47.9*
	*500 (*AL)*	*31.6*	*31.6*	*12.2*	*20.3*	*20.3*	*16.9*
	*1,000 (*AL)*	*16.6*	*16.6*	*6.3*	*12.7*	*12.7*	*5.8*
	2,500 *(SS)*	13.2	13.2	6.5	12.5	12.5	10.4
	5,000 *(SS)*	7.6	7.6	3.6	6.5	6.5	4.9

All force and moments to be calculated using lb & in-lb units

σ_{max} Table

Material	Static Load (=60% Y.S.)	Fatigue (Non Reversing Loads)	Fatigue (Full Reversing Loads)
2024-T4/T351	28,000	18,000	15,000
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.

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Deflection & Natural Frequency

Model #	Capacity (lb)	Deflection (in.)	Natural Frequency (Hz)	β
LCF450/455	*250*	*0.0002*	*7,800*	*0.20*
	500	*0.0003*	*9,000*	*0.20*
	1,000	*0.001*	*7,000*	*0.20*
	2,000	*0.001*	*9,900*	*0.20*
	300	0.001	2,300	0.56
	500	0.001	3,000	0.56
	1,000	0.002	3,000	0.56
	2,000	0.001	6,300	0.50
	3,000	0.001	7,700	0.50
	5,000	0.002	7,000	0.50
	10,000	0.004	7,000	0.50
LCF451/456	*250*	*0.0002*	*9,000*	*0.20*
	500	*0.0005*	*7,000*	*0.20*
	1,000	*0.0005*	*9,900*	*0.20*
	2,500	0.0001	7,000	0.50
	5,000	0.0002	7,000	0.50

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