Model # LRF300 (L2320) Series
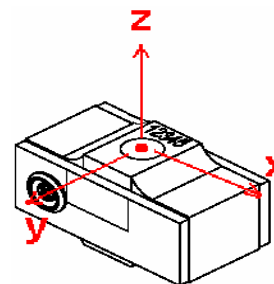
FUTEK
ADVANCED SENSOR TECHNOLOGY, INC.

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
LRF300 (*AL)	10	2157.73	2036.55	1083.13	3298.01	1500.34	1046.91
LRF325 (*AL)	25	717.93	779.52	313.84	1172.03	461.71	418.20
	50	698.17	538.85	172.68	1118.38	307.51	301.48
	75	329.47	351.68	117.78	582.10	244.76	211.09
	100	248.56	265.41	103.34	415.77	279.08	173.04
LRF350	150	178.12	170.65	92.55	225.35	116.79	76.16
	200	142.19	137.82	70.23	166.34	116.54	70.99
	300	106.81	99.85	47.33	120.06	108.78	63.68
	500	212.32	147.82	75.04	177.40	127.64	81.17
	750	110.17	110.72	53.01	139.27	99.64	88.95
	1000	86.90	83.25	37.61	132.65	133.26	92.99

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.

Deflection & Natural Frequency

Model #	Capacity (lb)	Deflection (in.)	Natural Frequency (Hz)	β
LRF300 (*AL)	10 (*AL)	0.002	2,100	0.0110
LRF325 (*AL)	25 (*AL)	0.002	2,700	0.0170
	50 (*AL)	0.002	3,600	0.0190
	75 (*AL)	0.002	4,200	0.0210
	100 (*AL)	0.002	4,600	0.0230
LRF350	150 (*AL)	0.002	4,100	0.0440
	200 (*AL)	0.002	4,600	0.0470
	300 (*AL)	0.002	5,300	0.0520
	500	0.002	4,300	0.1310
	750	0.002	5,100	0.1430
	1,000	0.006	3,200	0.1600

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Natural Frequency & Frequency Response Equation's:

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

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

*Where β values are obtained by Futek Engineers

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