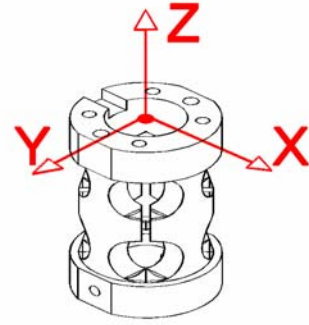


Model # TFF325 (T5160)

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: Aluminum 2024-T4 (AL*)

Model#	Capacity (in-oz)	A	B	C	D	E	F
TFF325	20 (1.25 in-lb)	2188.00	2188.00	102.50	509.18	509.18	7888.52
	50 (3.12 in-lb)	1272.50	1272.50	54.82	269.01	269.01	5399.91

*When calculating σ_{max} for capacities 20-50 in-oz use in-lb & lb units for applied moments and loads, respectively.

Model#	Capacity (in-lb)	A	B	C	D	E	F
TFF325	12	574.64	574.64	26.76	122.17	122.17	1495.20
	50	167.71	167.71	13.52	50.69	50.69	265.89
	100	112.33	112.33	10.27	45.37	45.37	145.25

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

*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.

Sample Calculation for Customer

Model#	Capacity (in-lb)	Shear Force (lb)	Axial Load (lb)	Moment (in-lb)
TFF325	50	20 (F _x or F _y)	10 (F _z)	35 (M _z)

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

$\sigma_{max} \geq (167.71)*(20) + (167.71)*(0) + (13.52)*(10) + (50.69)*(0) + (50.69)*(0) + (265.89)*(35)$

$\sigma_{max} \geq (167.71)*(20) + 0 + (13.52)*(10) + 0 + 0 + (265.89)*(35) = 3,234 + 135 + 9,306 = 12,675 \text{ psi.}$

$\sigma_{max} \geq 12,675 \text{ psi.}$

15,000 psi. \geq 12,675 psi.

Conclusion: The applied loads & moments will more than suffice for the design of the TFF325.

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.