JR3 Multi-Axis Force-Torque Sensor Technical Specifications

Sensor Model: **Mechanical Load Rating:**	**45E15A4** **25 lb**	**45E15A4** **50 lb**	**45E15A4** **100 lb**	**45E15A4** **250 lb**
Diameter (in)	4.50	4.50	4.50	4.50
Thickness (in)	1.50	1.50	1.50	1.50
Material	AL 2024	AL 2024	AL 2024	AL 2024
Weight (lb)	1.75	1.75	1.75	1.75
Nominal Accuracy, all axes (% measuring range)	±0.25	±0.25	±0.25	±0.25
Operating Temp. Range, non-condensing (°F)	-40 to +150	-40 to +150	-40 to +150	-40 to +150
F_x, F_y				
Standard Measurement Range (lb)	±25	±50	±100	±250
Digital Resolution (lb)	0.0031	0.0063	0.013	0.031
Stiffness (lb/in)	0.040e6	0.056e6	0.11e6	0.17e6
Single-axis Overload (lb)	230	290	550	1150
Multi-axis Overload Coefficient, a (lb)	230	290	550	1700
Multi-axis Overload Coefficient, b (lb)	310	440	1030	1150
F_z				
Standard Measurement Range (lb)	±50	±100	±200	±500
Digital Resolution (lb)	0.0063	0.013	0.025	0.063
Stiffness (lb/in)	0.46e6	0.62e6	1.17e6	1.8e6
Single-axis Overload (lb)	840	1050	2200	4100
Multi-axis Overload Coefficient, c (lb)	840	1050	2200	4100
M_x, M_y				
Standard Measurement Range (in-lb)	±110	±225	±450	±1125
Digital Resolution (in-lb)	0.014	0.028	0.056	0.14
Stiffness (in-lb/rad)	0.80e6	1.1e6	2.05e6	3.1e6
Single-axis Overload (in-lb)	790	990	2050	3750
Multi-axis Overload Coefficient, d (in-lb)	790	990	2050	3750
M_z				
Standard Measurement Range (in-lb)	±110	±225	±450	±1125
Digital Resolution (in-lb)	0.014	0.028	0.056	0.14
Stiffness (in-lb/rad)	0.19e6	0.31e6	0.64e6	0.86e6
Single-axis Overload (in-lb)	570	860	1750	3150
Multi-axis Overload Coefficient, e (in-lb)	570	860	1750	3150

Standard Measurement Range

- This is the range of loads that each sensor model is ideally suited to measure. Factory adjustments to internal or external electronics allow custom measurement ranges to meet application-specific needs.

Bolt Patterns

- The 45E15A4 sensors are available standard with the ISO 9409-1 ∅63mm bolt pattern.
- Alternate and custom bolt patterns are also available.

Multi-axis Overloads

- *Insert your estimated applied loads and the coefficients from the above table into the equations below to determine safe loading:*

$$F_x/a + F_y/b + F_z/c + M_x/d + M_z/e \leq 1$$

and

$$F_x/b + F_y/a + F_z/c + M_y/d + M_z/e \leq 1$$

Both equations must be satisfied to avoid damage.

- If additional overload capability is desired we recommend using a higher-rated sensor with its measuring ranges electronically lowered.

***JR3*, *INC*.**
22 HARTER AVENUE WOODLAND, CA 95776
(530) 661-3677 www.jr3.info