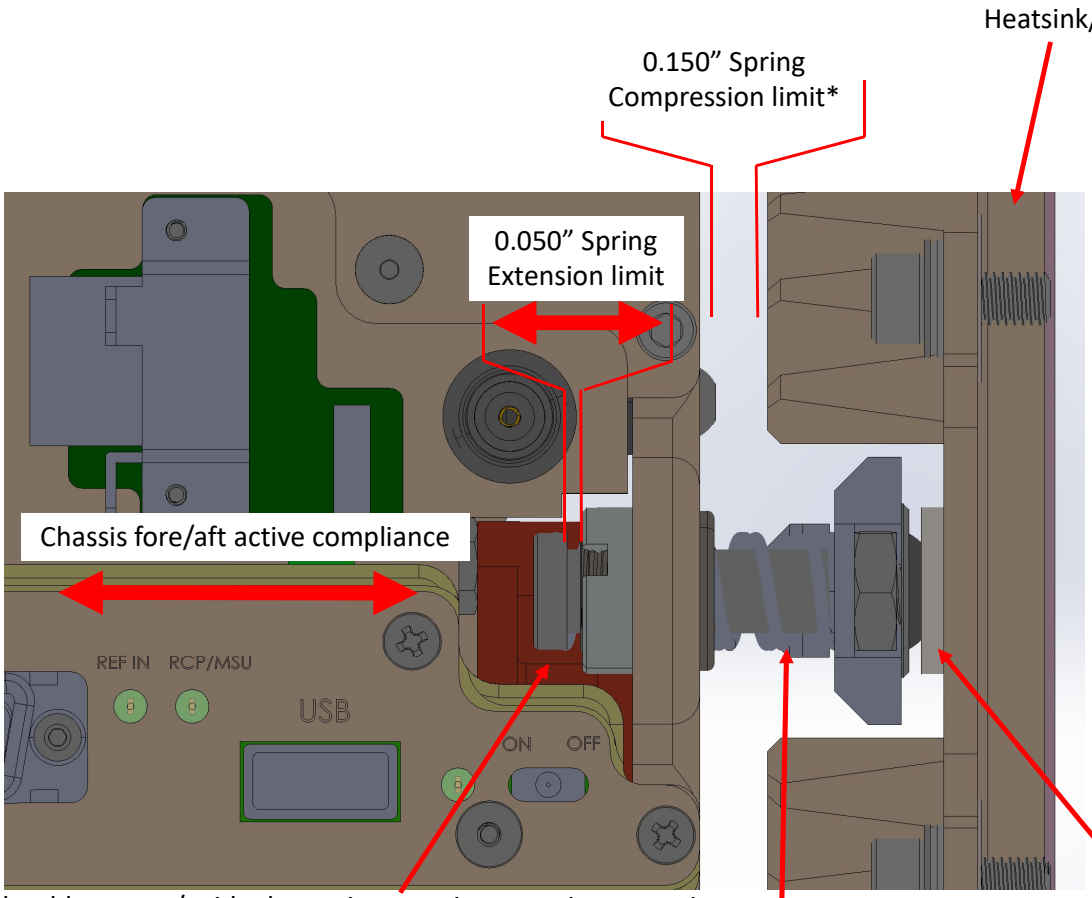
Chassis Fore-Aft Compliance Design Values



- The worst case for spring compression is a short cold housing (0°C) and long hot chassis (45°C) combined with the manufacturing tolerance stack and the maximum hydrostatic pressure. The manufacturing tolerance stack includes of the housing and chassis parts. is calculated as a +/- three sigma distribution in 8 parts, each with a ±0.005 inch tolerance specification. The worst case maximum summed spring compression is **0.0795 inches** and the design travel is **0.150 inches** providing an **89% design margin**. The major contributor is hydrostatic compression of the housing.
- The highly unlikely worst case for spring extension is a long hot housing (40°C) and a cold short chassis (0°C) combined with the manufacturing tolerance stack. Hydrostatic pressure is not a worse case condition because it reduces spring extension. The worst case maximum calculated spring extension is **0.0248 inches** and the design travel is **0.050 inches** providing a **101% design margin**.
- The spring force is generated with 2 separate pairs of slightly different springs pushing the camera chassis against the front housing reference surface. The combined force generated is **57 lbs.** in the nominal position, **77 lbs. force at full design compression** of 0.150 inches and **50 lbs. force** at full extension of 0.050 inches.
- Static spacer allows adjusting for + 0.100 and – any chassis/Canon lens length.
- The resonant frequency of the chassis – spring combination is 0.31 Hz or a ~3 second period, well below typical ROV vibration frequencies.
- Note that the screw head in the illustration is not an interference with the heat sink. The full available travel is over 0.150” of compression.

*set by maximum recommended spring compression

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