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| --- | --- | --- | --- | --- |
| Requirement | Specification | Units | Justification | Testing Method |
| Bending Stiffness per unit width | Less than 0.00252 | N\*m | Appendix A | 1. Theoretical Calculation using published values for Modulus of elasticity and determined geometrical properties.
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| Open Circuit Voltage | 2.8  | Volts | [1] |  |
| Control Circuit Minimal Voltage | 2.2 | Volts | [1] |  |
| Control Circuit Current Drain | 10 | µA | [1] |  |
| Pulse requirement  | 25 | µ J | [1] |  |

Appendix A

$Bending Stiffness =EI$

Where $E$ is the Modulus of elasticity, and I is the Moment of Inertia in the deflected axis. We know that for a rectangular cross section

$I=\frac{wh^{3}}{12}$

Where w is the width of the beam and h is the height of the beam. So the bending stiffness per unit width would be

$$Bending Stiffness per Unit Width=\frac{Eh^{3}}{12}$$

A commonly used surgical material is a Dacron patch. A commonly used Dacron (mersiline) has h=300µm and E = GPa [2]. This results in a bending stiffness per unit width of 0.00252 N\*m

The Gore-Tex Cardiovascular Patch has a modulus of 84.46 MPA and a thickness of 0.4 mm [3] which would have bending stiffness per unit width of 0.00045 N\*m which is less than that of the Dacron Patch. However, the Dacron Patch is widly used in surgical applications, so a bending stiffness less than that would would be adequate.