



Flash of Genius Inc

Memo

To: Manufacturing Design Teams
Date: 2012-03-26
From: Ralph Stirling
Subject: Flashlight Manufacturing

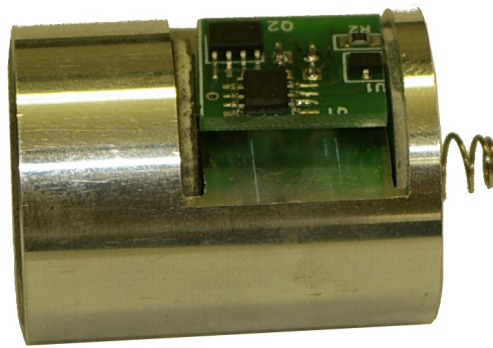
Summary

FlashOfGenius will be manufacturing an updated single-cell flashlight in 2012. This flashlight will have an all-aluminum, sealed body, a magnetic switch, a Cree XR-E light emitting diode, and a 3.6v rechargeable LiFePO4 battery. The components of the body will be produced on a Mori Seiki DuraTurn 2050 CNC turning center, with minimal secondary operations on a Haas TM-1 CNC vertical mill. Material is 6061 aluminum bar stock. The flashlight will be assembled using a custom automation system.

Criteria

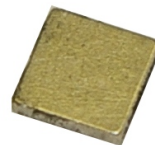
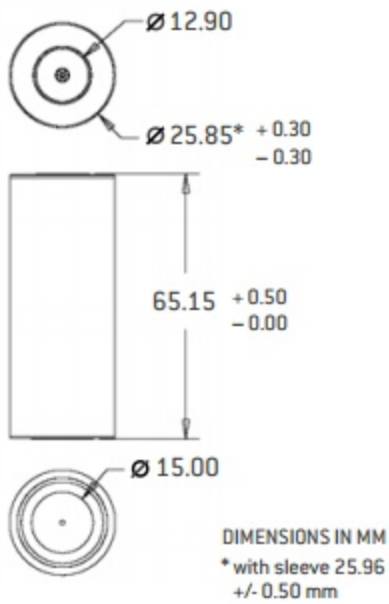
1. Components are:
 - 26650 size battery (LFP-26650-3300 from batteryspace.com or equivalent)
 - Cree XR-E LED mounted to a custom printed circuit board and heatsink
 - Plastic lens
 - O-ring to seal lens
 - O-ring to seal body halves
 - Fiber washer to hold nose components together
 - Magnet to activate Hall switch (4mm x 4mm x 1mm magnet) in a rotating ring
2. Flashlight body will consist of three major assemblies
 - Nose, with lens, o-rings, LED module, and fiber washer
 - Tail, with battery
 - Ring, with magnet
3. The magnet ring rotates around the nose at an axial position able to activate the magnetic switch. Rotation of the ring must be smooth and must not unscrew the flashlight halves.
4. The nose, tail, magnet ring, LED module with lens, battery, and seals are to be automatically assembled.
5. The nose and tail will be sealed together with a face o-ring.

Additional criteria may be issued as the design is finalized. You will develop the final flashlight design, generate CNC programs for machining the custom components, and create the automation system to assemble the flashlights. Two teams will use Motoman MH5L robots for assembling flashlights, and one team will use the pneumatic turntable system. Tooling assemblies from previous years may be adapted for this flashlight design.



LED Module: 28.5mm OD x 37mm
includes lens

Fiber washer: 29.5mm



Magnet: 4x4x1mm