A resistored two stage switch module for retrofitting in E series type tail caps has been

designed after much trial and error and production components are now designed and

partially completed.

The switch module itself can be hosted by the SF E series LOTC as well as both the

guarded and standard Z57 switch caps. There is also a limited production guarded, utility

tail cap designed around this module. The lights below all have a high/ low two stage switch

within their tail caps. Momentary low and then high can be reached by depressing the

rubber switch button to varying depths. Constant low and then high output can be obtained

by screwing the cap down further on the battery tube. If the light is in constant

low output,

the button can be depressed to obtain momentary high output.

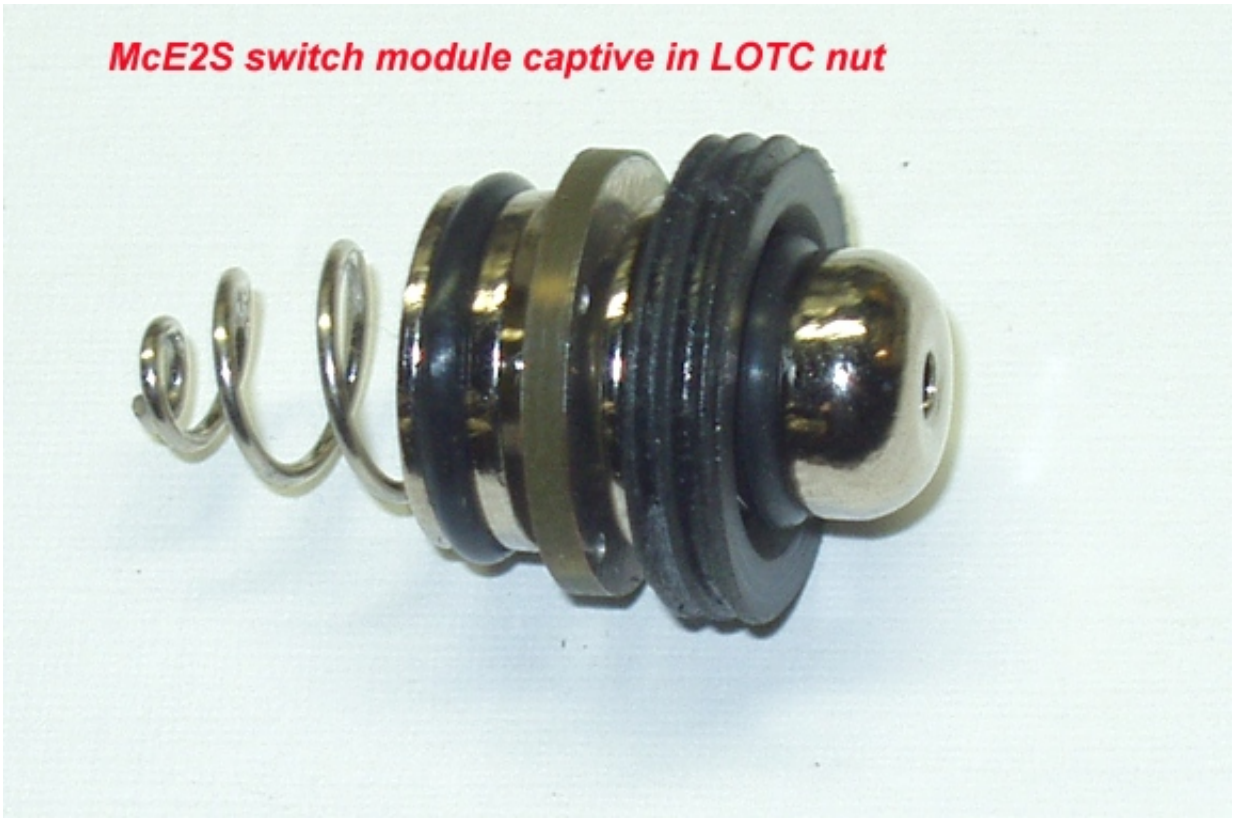
To install in the E series LOTC, the boot jam nut must be modified:

The boot is left in the tail cap and the modified nut is installed to secure the boot and

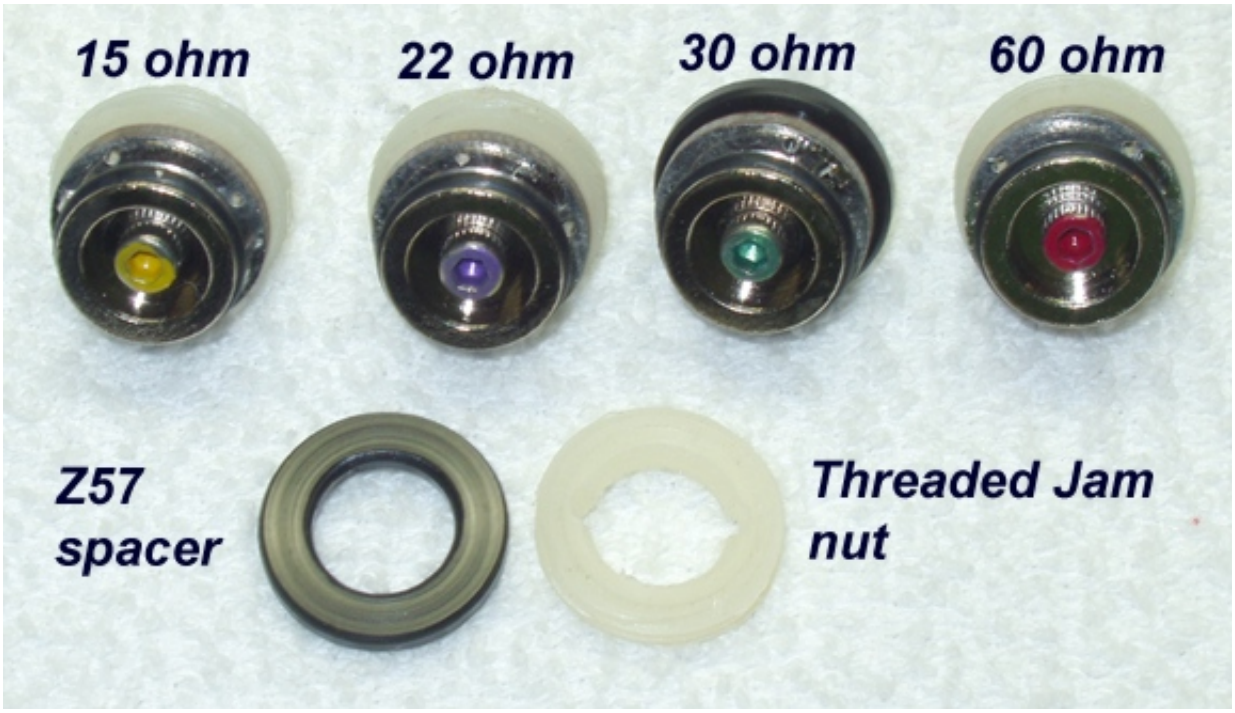
provide a seal. The switch module is then pushed into the tail cap and a retaining O-ring is

forced through the enlarged hole in the nut until it snaps loose beyond the nut. Below , the

nut is shown on the switch module to show how the module is held captive.



For the sake of identification, in switch modules that I am building, I have taken to painting the screw head with nail polish as a means of identifying the resistor value:



A threaded jam nut has been sourced and is shown above (white plastic). The black Delrin

spacer washer shown is for use in the Z57 caps. The threaded jam nut actually

works fine in

the Z57 as well. The nut or washer is dropped in from the back end on the Z57 and then

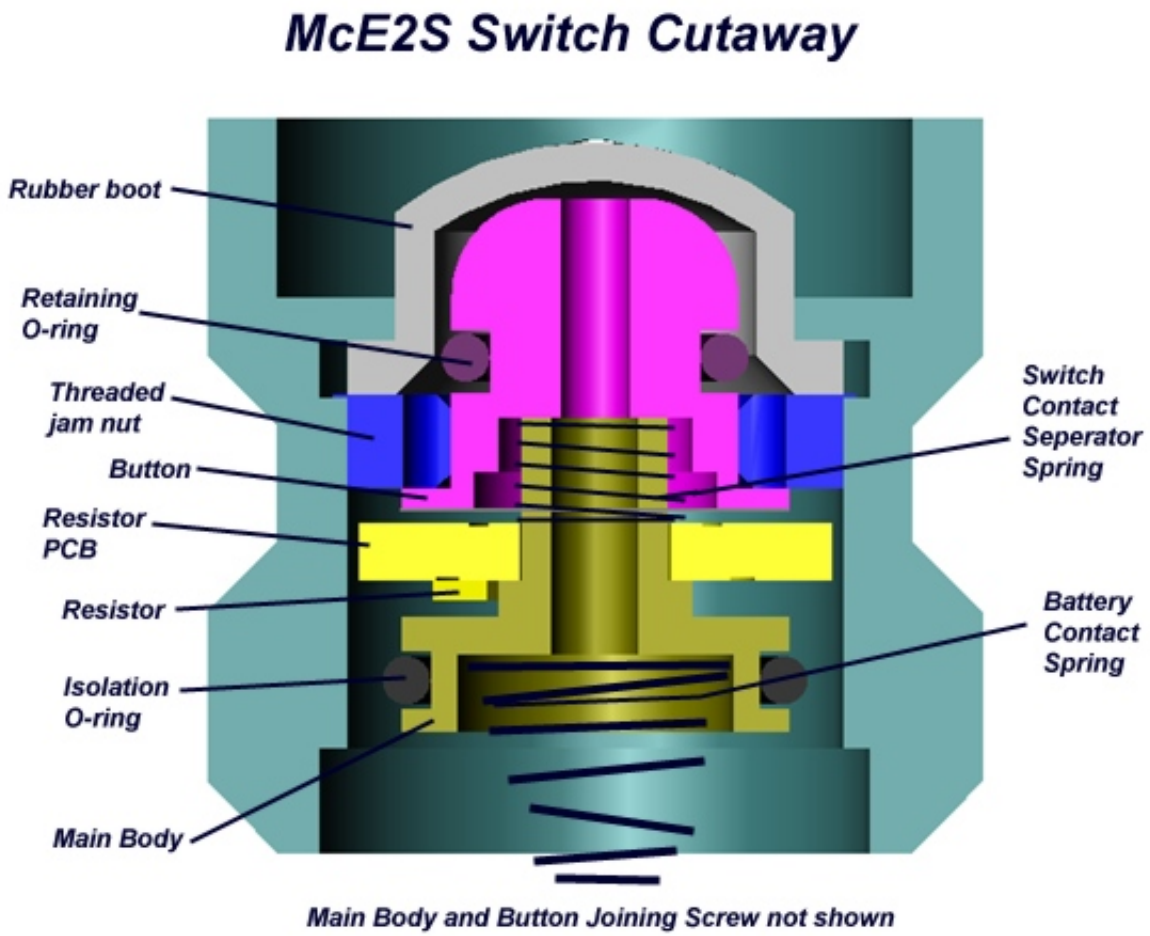
followed by the rubber boot and then the Al jam nut. If the retaining O-ring is properly

lubricated with a grease like Nygel, the switch module easily snaps in and out of either cap

(Z52 or Z57) from the forward or battery tube end of the cap. If the O-ring is not lubricated,

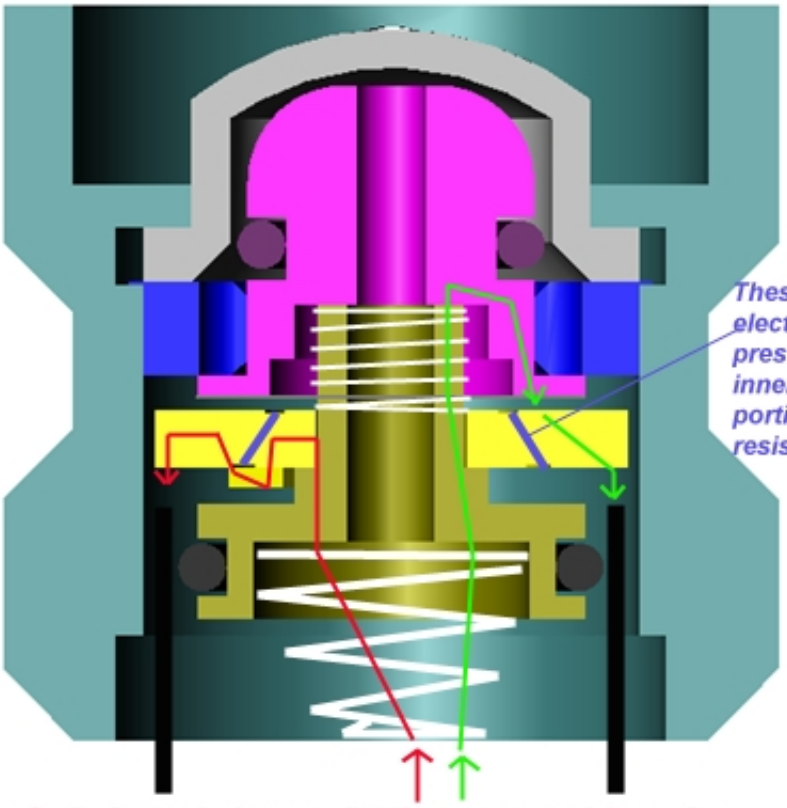
a fair amount of force is required for insertion as well as removal.

A cross section drawing of the module within the guarded McE2S tail cap:



McE2S Switch Cutaway

Explaination of electrical path



As the button is depressed ot the cap screwed down, the resistor PCB initially contacts the battery tube and a ground path, through the resistor is established. (shown in the color of this text)

As the button is moved further down either by depresion or from the tailcap being screwed down, the resistor PCB is held fixed in place by the battery tube and the button and Main body continue down until the button is stopped by contacting the resistor PCB. At this point, an additional ground path is made having no resistance (shown in the color of this text)

Below, a classic size SF LOTC is modified to accept the 2S module(left):

The stock main body is bored out to .545" and a counter bore .080" deep of .615" is made

to accept the resistor PCB in the top. The lip of the main body is staked with a screw driver

and mallet to retain the PCB. A better solution would be to turn a similar piece in brass and

solder the PCB directly to the part. In addition to the modifications pictured, the threaded

boot retaining nut needs to be bored out to 3/8" (.375") and .030" should be faced off of the

inboard face (not the mating side to the boot). With the addition of some nygel or equivalent

lube to all of the O-rings and re used of the stock contact spring, the mod works very well

and the Lock Out feature is retained.

Below, a McE2S in guarded tail cap is added to a L4 to provide similar two stage output to

the L2.

Advantages: Shorter over all length (1.125"), user selectable resistor for low level and features

available from the utility guard cap

Disadvantages: More expensive, resistor system less efficient than L2's dual driver circuit


L4 Digital Lumamax
L2 Digital LumaMax


L4 Digital Lumamax
US PATENT 6547415

The "Classic" tail cap revisited:

The resistor PCB is soldered into a brass disk that has a counter bore to accept the PCB and a shelf on the battery (resistor) side that mates the disk to PCB with solder. Force against the switch module pushes the PCB against the disk and the disk in turn against the rear lip of the battery tube. A large (#203) O-ring is used on the main body to center and isolate it from the battery tube. The jam nut of the classic switch is bored out to 3/8" to allow the button to pass through. The newer style Classic LOTC's have a spiraled rivet that holds the main assembly against a plastic button. To remove the switch assembly, needle nose pliers can be used to pull it, along with the rivet, out of the tail cap. The jam nut is removed with needle nose pliers or circlip pliers.

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