



CRC GAS-GAP HEAT SWITCHES



These devices are delicate and care must be taken not to bend, twist or drop them. Distortion is likely to cause a thermal short.

1. GENERAL USER NOTES

A heat switch is mounted with the bottom 'foot' end bolted onto a cold surface, for example the main plate of a cryocooler, and the top 'head' end bolted to a user item that needs to be either thermally sunk to, or thermally isolated from, the cold surface. In the 'ON' state the heat switch provides thermal connection, while in its 'OFF' state it provides thermal isolation.

Important: For good thermal contact, ensure that all mechanical/thermal connections are tight, and use spring washers under all bolt/screw heads.

The 'foot' end of the heat switch has a gas absorber pod connected via a short tube. To protect the absorber pod from radiant heating and consequent inadvertent turn-on, a small copper radiation shield is provided. This shield should be secured to the switch base by one of the fixing bolts/screws

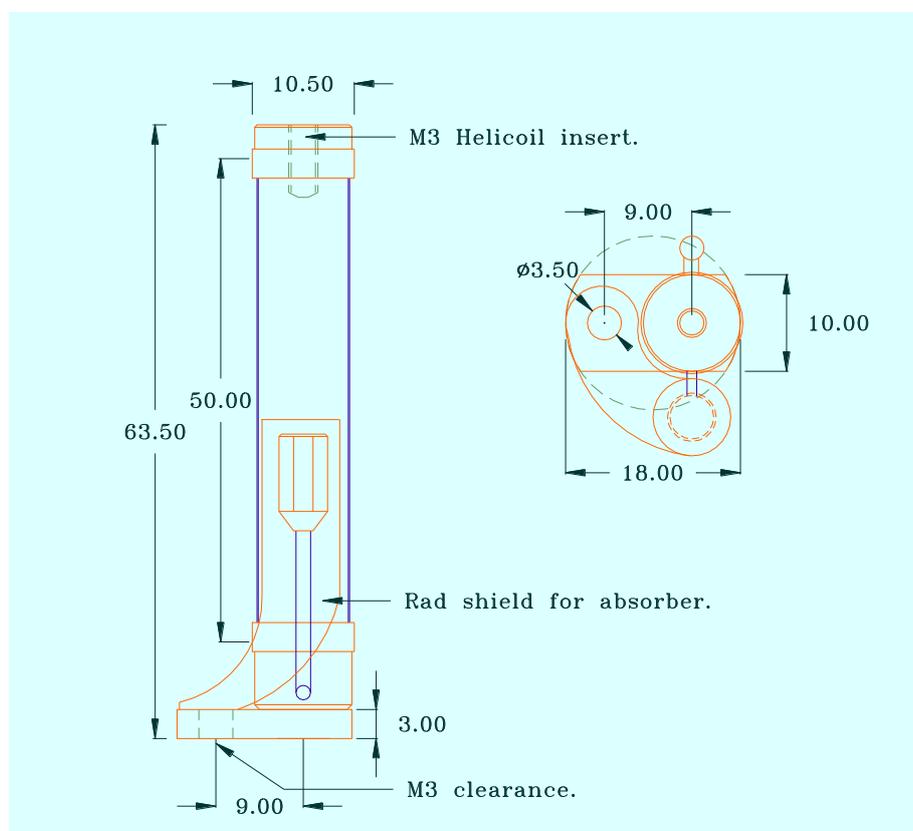
used to anchor the switch. If radiant heating of the absorber is unlikely to occur then the shield may be omitted.

Each switch is equipped with a small heater and thermometer, attached to the gas absorber pot. Wiring to the 10k Ω heater (two brown-coloured wires), and the diode thermometer (Pink/Gold wires, pink is +ve) is provided.

The switch will turn ON when the absorber is hotter than about 12K, and will be fully ON when it is at about to 20K. The switch turn-on/turn-off timescale is of the order of a few minutes. A potential of about 3 to 5 Volts applied to the 10k Ω heater resistor (i.e. a current of around 400 to 500 μ A, power of a few mW) is sufficient to warm to gas absorber pod and turn the switch ON.

The switch temperature can be monitored using the diode thermometer. The diode should be excited with 10 μ A and the junction voltage read out with a suitable high impedance circuit, e.g. a buffer amplifier or high impedance DVM. A generic calibration file for the diode may be obtained on request by e-mail from info@chasecryogenics.com.

Figure 1: External dimensions of standard gas-gap heat switches type CRC-GHS3-2.5 and CRC-GHS4-2.5.



N.B. Heat switches are made in both Metric and Imperial thread versions on customer request.