

# PitotShield V2™ Thermal Actuator Service Instructions

(Applies to **ALL** PitotShield V2™ FIT SIZES)

**CAUTION: USE ONLY DEGROFF AVIATION  
RECHARGE KIT P/N 77-TBDRK01**

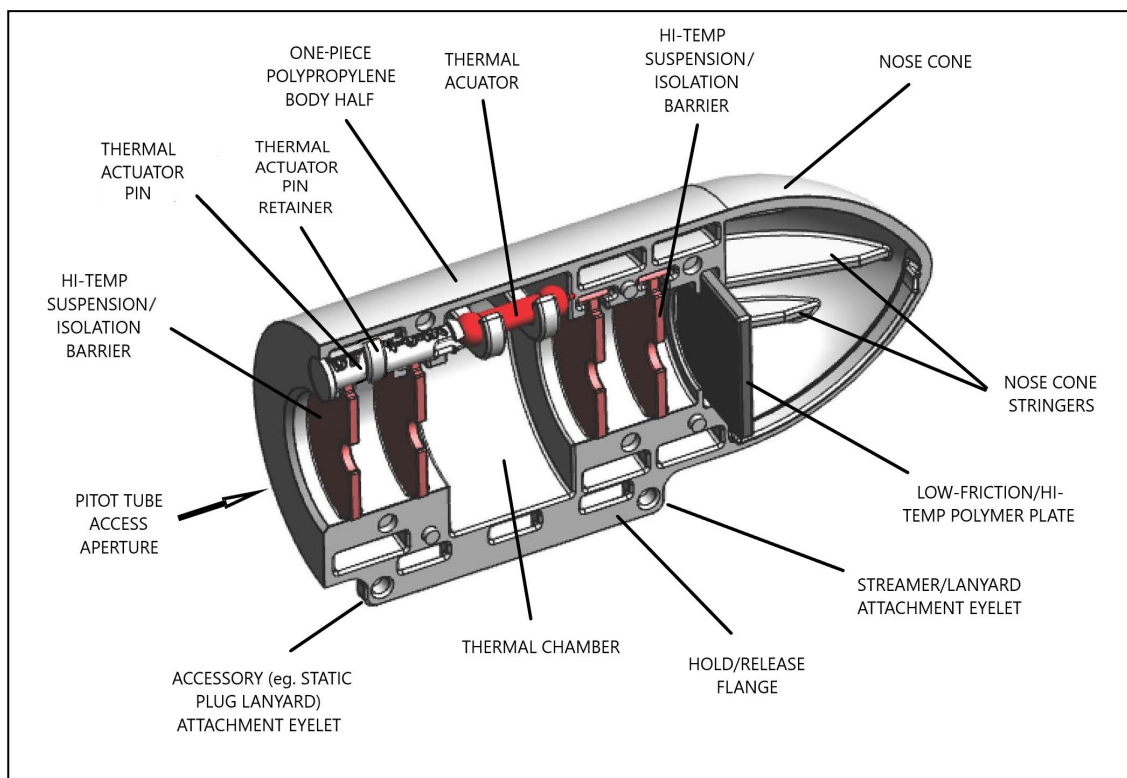


FIGURE 1

The above is an open view of the left half of the PitotShield V2™ SmartCover™ (PSV2) body, showing its components. The right half (not shown) is essentially a mirror-image except there is no Thermal Actuator Retainer (pin) and no Thermal Actuator.

**NOTE:** THE PitotShield V2™ SmartCover™, like any pitot covers, is intended to be **REMOVED BEFORE FLIGHT OR APPLICATION OF PITOT HEAT to avoid at a minimum, damage to a pitot tube, rendering the aircraft unairworthy, and potentially a catastrophic event.** However, unlike all other pitot covers, the PitotShield V2™ SmartCover™ will release from the pitot tube upon application of pitot heat, thereby avoiding damage and maintaining normal Air Data System function.

**OVERVIEW OF THERMAL ACTUATOR (THERMOBULB) AND  
ACTUATOR RETAINER PLACEMENT  
SEE PAGE 6 FOR DETAILS**

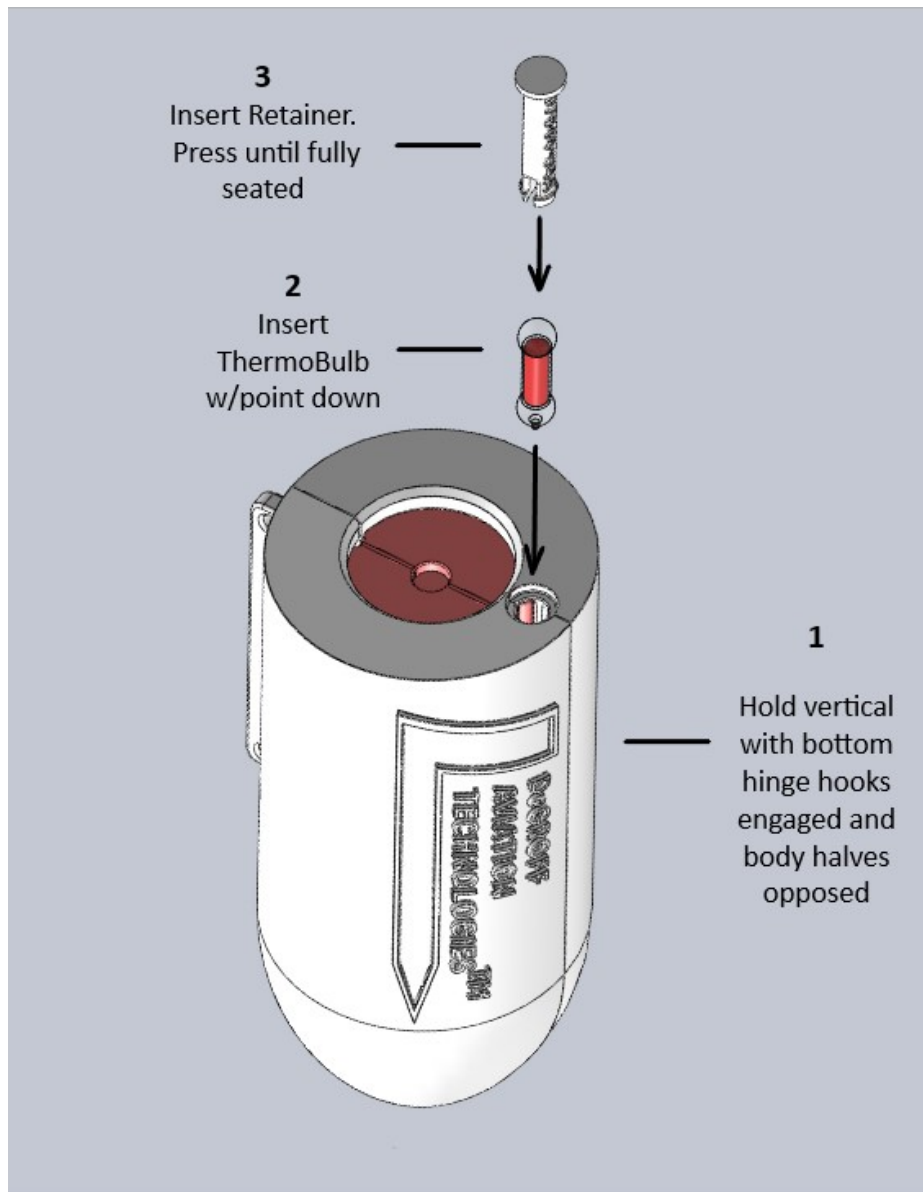


Fig. 2

Scan for  
Instructional  
Video



## MECHANISM OF THERMAL RELEASE FROM A HEATED PITOT TUBE

The PSV2 utilizes a Thermal Actuator (thermal-reactive glass bulb) containing three drops of a non-toxic water-soluble hydrocarbon. If pitot heat is activated while the PSV2 is in place, the ThermoBulb™ will break apart, activating release of the PSV2 from the pitot tube. If an optional PSV2 Detaining Bridle (DeGross Aviation Technologies P/N 77-DBU1) is used, the PSV2 components will remain attached to the pitot tube.

Airline operators have requested, and DeGross Aviation developed a "Recharge Kit" (DAT P/N 77-TBDRK01) for returning a PSV2 to service following a thermal activation and inspection. The following steps must be followed exactly to ensure continued safe function of the PitotShield V2™ SmartCover™.

### STEPS IN RETURNING PITOTSHIELD™ SMARTCOVER™ TO SERVICE:

**1. CAUTION: ENSURE THE PITOT HEAT HAS BEEN TURNED OFF.**

**The pitot tube will remain hot and can cause burn contacted skin severely within in excess of 30 minutes after pitot heat is de-activated.**

**2. RETRIEVE PSV2 Components**

The two ejected PSV2 body halves will fall to the ground-one with the Remove Before Flight (RBF) streamer attached. Collect the parts carefully as they may still be hot to touch and can contain small glass granules. Consider using gloves.

If an optional PitotShield V2™ Detaining Bridle is in place, the PSV2 components will be suspended from the pitot tube rather than falling to the ground. After ensuring the pitot tube is cool, retrieve ejected pitot cover components from the pitot tube by sliding the retaining ring forward off the pitot tube as illustrated in PitotShield V2™ Detaining Bridle Instructions. **DO NOT REMOVE THE BRIDLE BY PULLING ON THE PSV2 BODY OR RBF STREAMER. DOING SO CAN RESULT IN FAILURE OF THE BRIDLE.** Inspect the pitot tube for damage and manage appropriately.

**3. INSPECT AND CLEAN EJECTED PITOT COVER**

Handle the PSV2 components with care as there will be some residual glass granules within the body that could cause minor cuts to fingers. Inspect the entire pitot cover. There will be a small amount (about three drops) of a harmless orange liquid liberated within the pitot cover body. Ensure that the Thermal Actuator Retainer is in place in the back of the left body half (see Figure 1 above). If it is not in place, it has dislodged and can be located on the ground. Remove the Thermal Actuator Retainer from the retainer ring and keep for re-use or use a spare from the Delta Re-Charge Kit. Rinse the entire pitot cover body halves with water. Towel dry or allow to air-dry. Inspect the exterior and interior of the body halves for damage. Look for tears or thermal degradation of the silicone isolation barrier discs and Detaining Bridle if applicable, ie. cracking, surface powdering or abrasion at edges of contact with the pitot tube surface). A thermal release under typical conditions will not damage the PSV2\*. Do not re-use the PSV2 if any damage is noted.

#### 4. Rebuild the PSV2

- a. Collect the PSV2 components and the Thermal Actuator Retainer. Retrieve a Thermal Actuator bulb from the Delta Recharge Kit (Figure 4). Engage the three lower hinge hooks as shown in figure 5. Bring the two halves together until opposed as in Figure 6, with the lower hooks engaged. Ensure that the RBF attachment and the Retainer Ring chords are not impinged between the pitot cover halves. Hold the PSV2 in one hand in such a way that that both halves will be held together, nose cone pointed straight down.
- b. With the nose cone of the PSV2 pointed straight down, insert the glass bulb Thermal Actuator **WITH THE POINTED END STRAIGHT DOWN** until it is entirely below the rear body surface into the channel (Fig 7).
- c. Place the Actuator Retainer aligned STRAIGHT into the channel (Fig. 8). Note that the Retainer must be aligned straight into the channel. It will slide relatively easily with a gentle push and rotation until 1/2" to 3/8" is exposed, then a hard stop is felt (Fig. 9). If a hard stop is felt prior to this, back the retainer out and re-insert while confirming that it is aligned STRAIGHT into the channel. Push gently until 1/2" to 3/8" is exposed and a hard stop is felt. At this point, firm pressure can be applied, perhaps with the butt end of a screwdriver handle or similar shape tool, to fully insert the Actuator Retainer until its flange is flush with the back surfaces of the body halves (fig 10). At this point the Thermal Actuator is properly seated, the two halves have been drawn together, the pitot cover is securely assembled and ready for return to service.

\*Note: Time for pitot tubes to reach maximum surface temperatures vary. Some pitot tubes may become hot enough to cause degradation of the Silicone Isolation Barriers (fig 1) and/or Detaining Bridle. It is normal for the contact surfaces of the silicone to become darkened and grey with normal use and is not indicative of any degradation. Heat degradation is characterized by very fine stress cracks and granularity or abrasion at the edges of contact with the pitot tube surface. Thermal degradation can show up after one or more thermal ejections. If heat stress is present, tears can develop and/or expand after repeated placement/removal cycles and the PSV2 may not function properly. Thus, thermal degradation requires replacement or rebuilding of the PSV2. Note in the PitotShield V2 Owner's Instruction Manual in Section 10-Limitations, in case of a thermal activation of the PSV2 in conditions of extreme cold and/or icing, the pitot cover may not release in a timely manner and can become internally damaged from the extreme heat. In this case, and like any conventional pitot tube cover that has not been removed before aircraft operation, the aircraft may be rendered unairworthy and the PitotShield V2™ cannot be re-used.

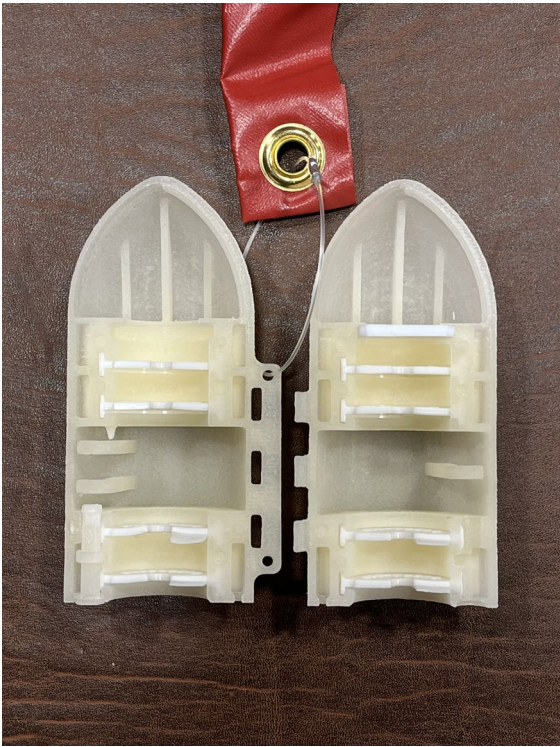


Fig. 3

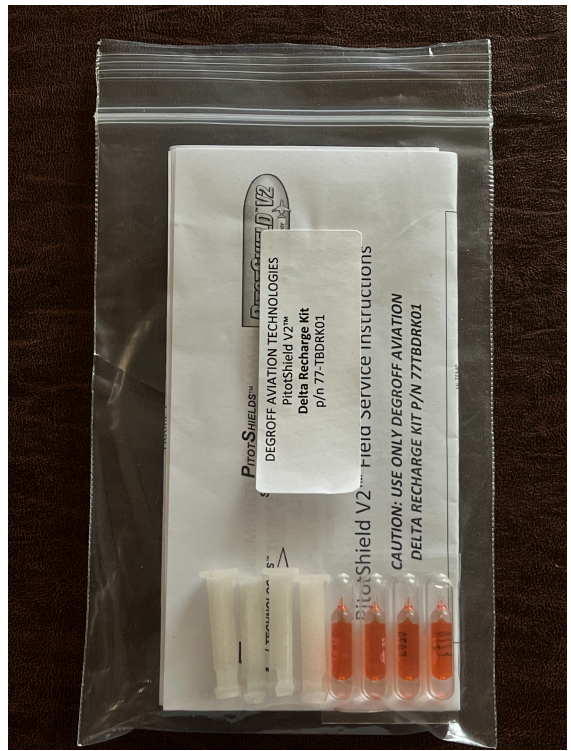


Fig. 4

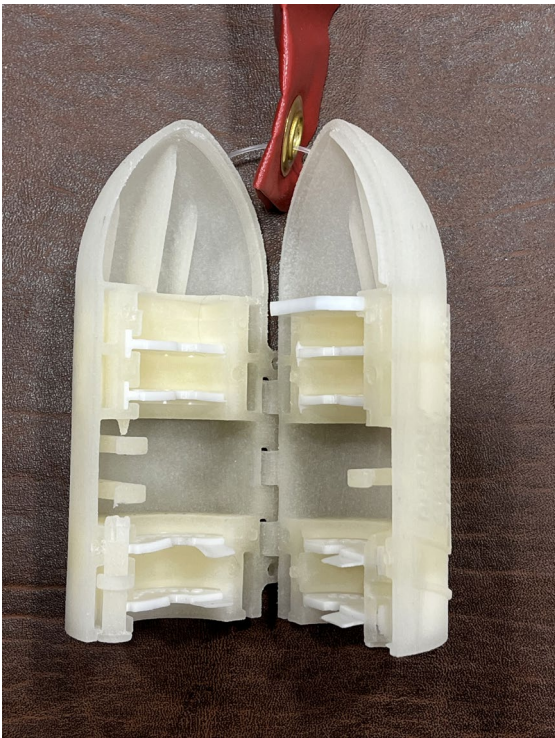


Fig. 5



Fig. 6

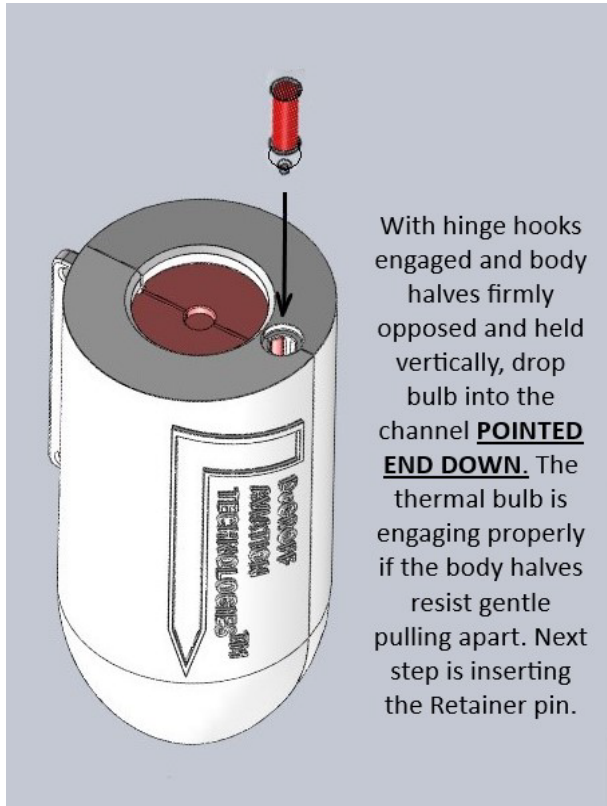


Fig. 7

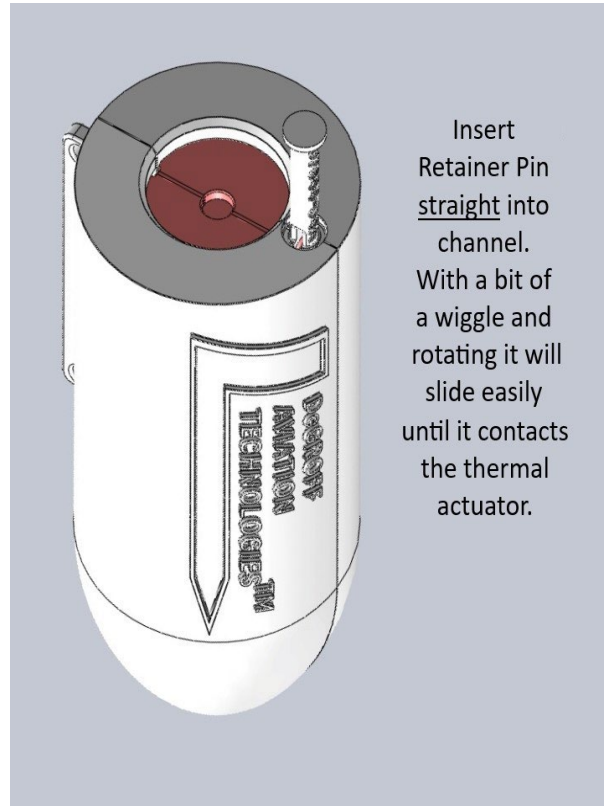


Fig. 8

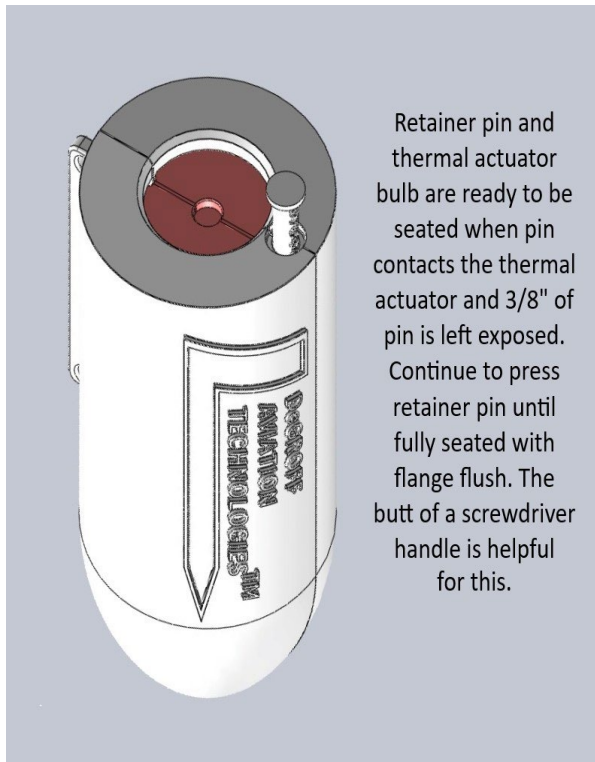


Fig. 9

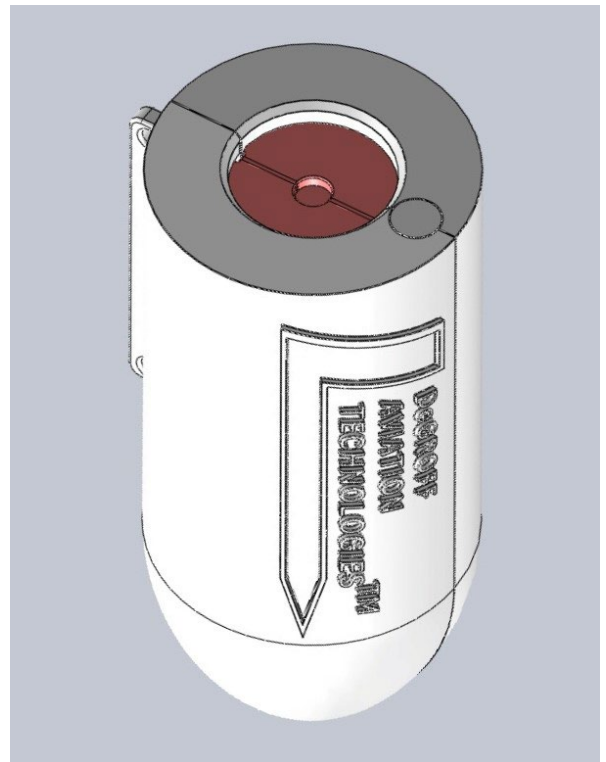


Fig. 10

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