# A scratch-built stall warning system for N12AY

N12AY has pleasing stall characteristics but when flown by an inattentive pilot with poor airspeed crosscheck in the pattern or when low speed maneuvering and distracted by traffic or attempting aggressive near aerobatic maneuvering, will fly deeply into a stall as the warning is poor and their first indication is the plane begins to roll un-commanded.

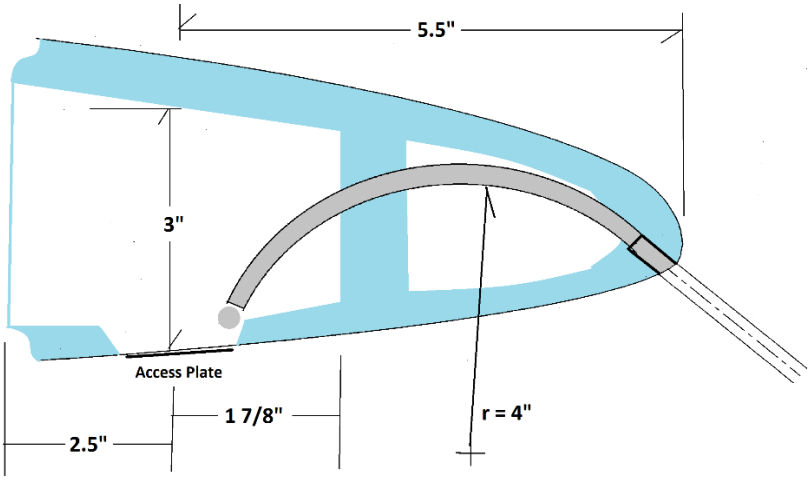
Europa Aircraft devised two methods to alert pilots to an approaching stall. Stall strips per the Pilots Operations Handbook (POH) were added but can be difficult for the novice pilot to understand how to fit them for optimum size and warning. Often times I have seen inexperienced pilots flying N12AY completely miss the pre-stall warning while maneuvering. With instruction the became more attentive to the feel of the aircraft. An audible and visual stall warning system was devised but it too was difficult to install in a built aircraft and somewhat difficult to adjust for proper pre-stall warning.

I have taken nearly 5 hours to adjust and fine tune the stall strips. In my opinion a 7mm strip with sharp edges performed better. The sharp edge on the outboard edge forms a vortex and prevents the heavy landing or complete stall of the wing especially with full flaps.

The audible stall warning system devised by Europa is a tube installed very steeply in the leading edge of the wing just below the leading-edge radius. This area will provide suction of between 1 and 2 inches of water column which is a very low pressure and most switches are difficult to adjust at these low pressure settings.

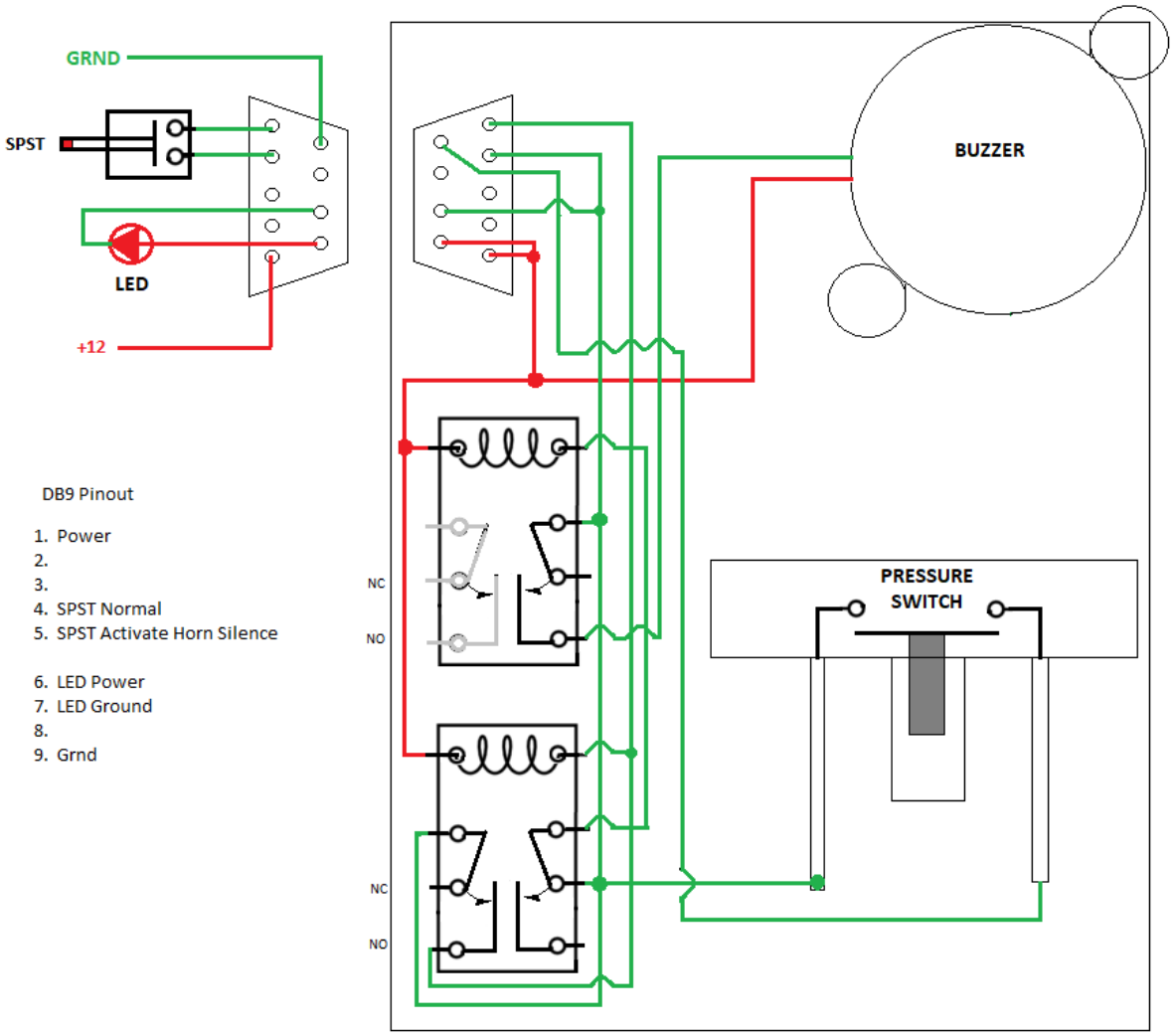
Stall Strips:
I prefer a 7 inch strip of 6-9 inches length placed centered about 24 inches per the POH. Adjust the height of the strip to get the desired pre-stall warning and landing flare behavior. The angle should be 70-110 degrees.

Stall Warning Light and Horn:
The placement of the stall warning tube per the manual is acceptable and should not be significantly deviated from. In N12AY the tube installation was fitted where the original leading edge pitot tube was installed:



The circuit to sound the horn is modified per the instruction sheet made for this test.

## Installed Stall Warning Wiring

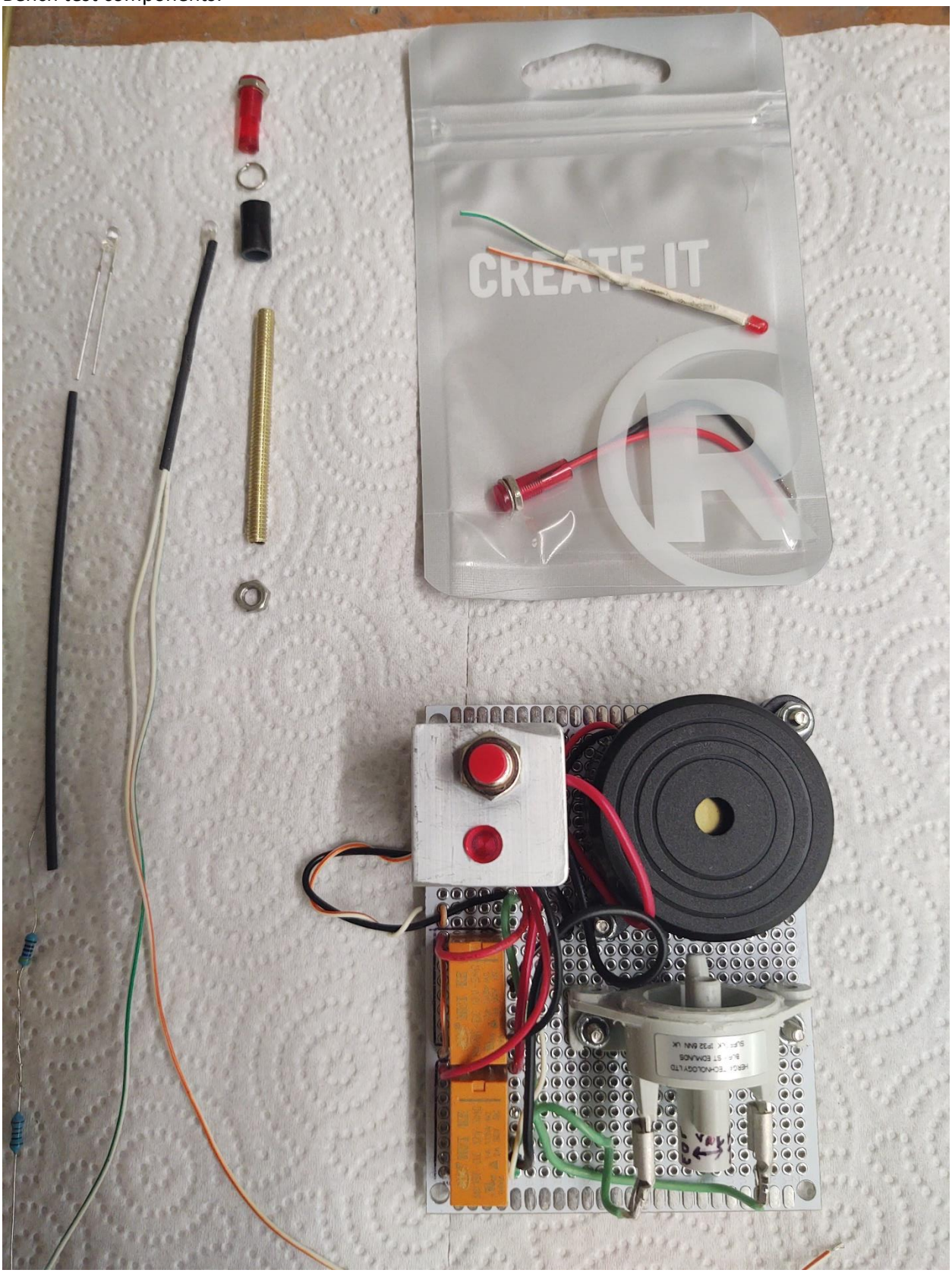



DB9 Pinout

1. Power
2.
3.
4. SPST Normal
5. SPST Activate Horn Silence

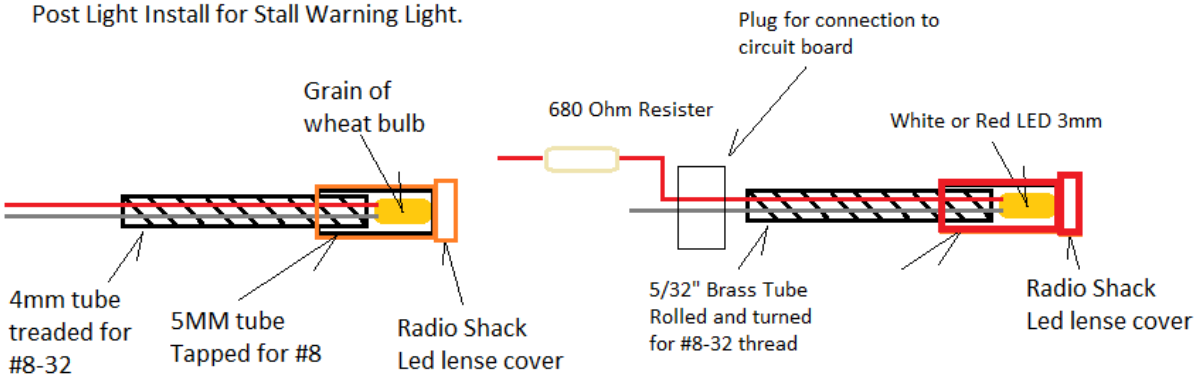
6. LED Power
7. LED Ground
8.
9. Grnd

Bench test components:



The post light was a bit of craftsmanship which worked out well:
The push button was installed in a blank but eventually will be installed near the warning light.


Post Light Install for Stall Warning Light.




This warning light simply slides into standard instrument hole and holds the warning light on the airspeed indicator. Obviously only for a round dial airspeed indicator.