Craftsman's Corner

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WHILE BROWSING THROUGH some of the 550 odd EAA Chapter newsletters, we came upon a rather unique tip in the Santa Rosa, CA Chapter 124 publication. The method of construction seems relatively easy and inexpensive. This gizzy would be known as an "angle of attack indicator" and could possibly save a body from running out of air should the indicator reading advise that the climb angle is too great. The responsible person for the following bit of genius is Lyle S. Power, Jr., M.D., EAA 38012, 117 El Camino Corto, Walnut Creek, CA 94596. Read on friends and let's see what Lyle has to say about his "Angle of Attack Indicator For the Common Man" . . . We tell "how-goes-it" by our airspeed during takeoff, climb, banking, slow flight and approach. This is WRONG!

Airspeed indication is only a pressure measurement, has a lag, and stall airspeed varies with load, bank angle, flaps, etc. Also, best rate of climb speed varies with temperature and altitude.

So what? Angle of attack **does not vary** regardless of load, bank angle, temperature or altitude. It is what we all should be watching during takeoff, climb, banks, approach and landing. Here's how to build your own angle of attack indicator for about $35.00: Cut a strip of thin aluminum sheet metal 3" long and insert it into the end of the ⅜" aluminum tube so it divides the tube into 2 chambers. Pour "hot" Devcon 5-minute epoxy into one chamber so it seals the edges of the sheet strip to the inside of the tube, the whole 3" length. Drill out excess epoxy if necessary. Then drill 1/16" holes in the tube in 2 straight rows, 90 degrees apart and spaced every ½", so that one row of holes enters one chamber and the other row enters the other chamber.

Clear out the chips, etc. from the chambers then seal one end with a piece of sheet metal and epoxy. Next, cut 2 pieces of 3/16" tubing, (nylon, copper or aluminum) and epoxy these into the other end of the tube, one into each chamber. Test for leaks by blowing in each tube while stopping up its row of holes.

Epoxy a mounting flange to one end of the ⅜" tube, the end where the 3/16" tubes exit the chambers.

Mount the ⅜" tube so it is out of the propeller stream and projects sideways off of a pitot or strut. On the VariEze it works well projecting sideways off of the fuselage just in front of the canard. The upper row of 1/16" holes should face 20 degrees above the horizontal and the lower row 20 degrees forward of straight down. Connect the tube from the upper chamber to the pitot inlet and the lower chamber's tube to the static inlet of a 0-200 mph airspeed indicator.

At stall the indicator should indicate approximately zero scale, and at top speed it will show ¾ to full-scale readings. Individual adjustments and calibration is necessary for your particular aircraft.

Disassemble the face of the airspeed indicator, and paint the face black. Paint or decal numbers 1-10 around the scale. Reassemble.

Try mounting the indicator up near or on top of your panel so you can read the needle in your paracentral vision while looking out the windshield. Calibrate your readings for stall, best angle and best rate of climb, cruise climb, etc.

(You'll soon ignore your airspeed except on cross-country flights, and will shoot landings, takeoffs, and aerobatics with precision and confidence. Believe me this thing works great! — Editor, Chapter 124 Newsletter)