

EH 2.0/12 and EH 3.0/12

In the November 1990 issue of RC Soaring Digest we described three airfoils designed by John Yost - the EH 1.0/9.0, 1.5/9.0, and 2.0/10.0. The EH 2.0/12.0 and 3.0/12.0 described this month are new additions to this series.

The first number within the EH designation denotes the percent camber, the second the percent thickness. All of the EH airfoils have very low pitching moments, essentially zero, and are ideal for swept flying wings with quarter chord sweep angles of about 20 degrees. None of the EH sections should be used on planks, as that planform requires airfoils with a substantially positive pitching moment.

These new EH sections, with their 12% thickness, can be used as root sections where a greater spar depth is needed. Some designers may consider using a thicker, higher cambered airfoil at the root and a less cambered thinner airfoil at the tip in an effort to improve efficiency. The EH 3.0/12.0 can be used where higher lift coefficients are needed. Use Table 1 as a general guide when choosing an appropriate airfoil.

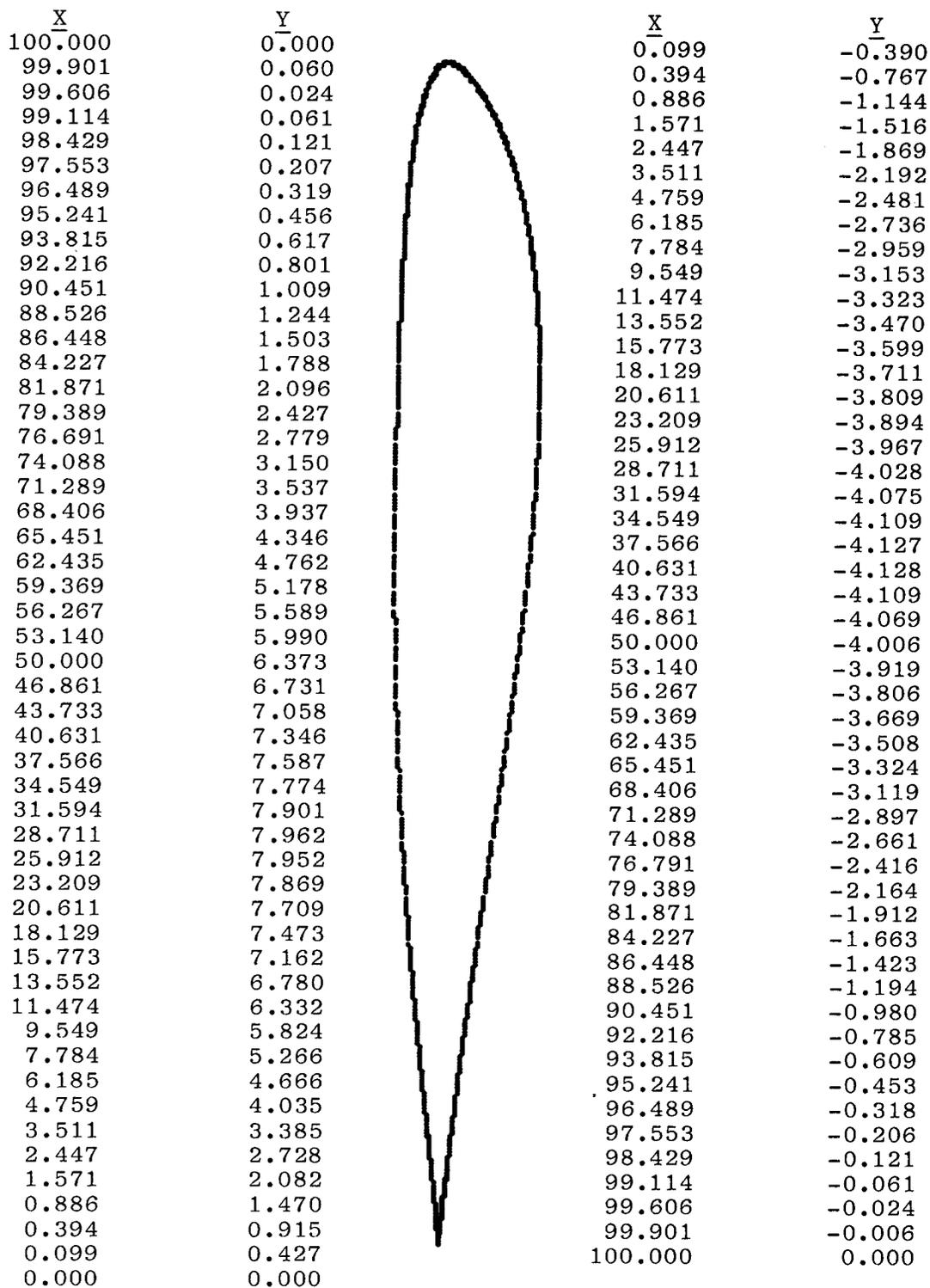
Since the camber line of reflexed sections is of an "S" shape, there is a very sharp curve on the lower surface of the section near the trailing edge. Even at higher angles of attack, there is the possibility of separated flow over this area. The solution is to turbulate the airflow just before the transition point. This lower surface turbulator should be placed at about 65% chord. It is particularly important to place a turbulator in front of any control surface which deflects upwards. As with normally cambered airfoils, the performance of reflexed airfoils can be improved when operating at relatively low Reynolds numbers by installing a turbulator at about 15% on the upper surface.

We would appreciate hearing of your experiences with these new sections.

Table 1

SECTION	USE	Cmo	$\alpha_{L=0}$
EH 1.0/9.0	F3B	0.00088	-0.37
EH 1.5/9.0	F3E and thermal duration	0.00073	-0.55
EH 2.0/10.0	thermal duration	0.00165	-0.74
EH 2.0/12.0	thermal duration and scale	0.00165*	-0.74*
EH 3.0/12.0	thermal duration and scale	0.00165*	-1.10*

* Approximate values from published polars.

EH 2.0/12.0

EH 3.0/12.0

