

EFFECT OF CUT-OUT ON LIFT-CURVE SLOPE

1. NOTATION AND UNITS

		<i>SI</i>	<i>British</i>
a	lift-curve slope of wing or tailplane, corrected for aspect ratio and taper ratio	rad^{-1}	rad^{-1}
a_c	lift-curve slope of wing or tailplane, allowing for cut-out	rad^{-1}	rad^{-1}
b	span of wing or tailplane	m	ft
b_c	mean span of cut-out (see upper sketch in Figure 1)	m	ft
c	geometric mean chord, S/b	m	ft
c_c	chord of cut-out (see upper sketch in Figure 1)	m	ft
S	gross area of wing or tailplane, including cut-out	m^2	ft^2

2. NOTES

The ratio a_c/a is plotted in Figure 1 against b_c/b for various values of c_c/c . The values of a_c have been obtained by theory for a wing with a rectangular central cut-out. They may, however, be applied to a tailplane such as that shown in the upper sketch in Figure 1; in calculating the area S the part covered by the body is to be included, the leading and trailing edges being continued to the plane of symmetry. If the tailplane is mounted on the body, with only a small gap between body and elevator, as shown in the lower sketch in Figure 1, the lift-curve slope is but little influenced by the interruption of the tailplane due to the body and the effect of the cut-out can for practical purposes be ignored.

3. DERIVATION

1. OKOMOTO, T. The characteristics of the aerofoil with discontinuities along the span, with special reference to the effects of cut-out. Tokyo Aeronautical Research Institute Rep. 208, 1941.
2. NAYLOR, C.H.
LYONS, D.J. An analysis of the lifting characteristics of aerofoils and controls, with special reference to methods of estimation for design use. RAE Rep. Aero 1840, 1943.

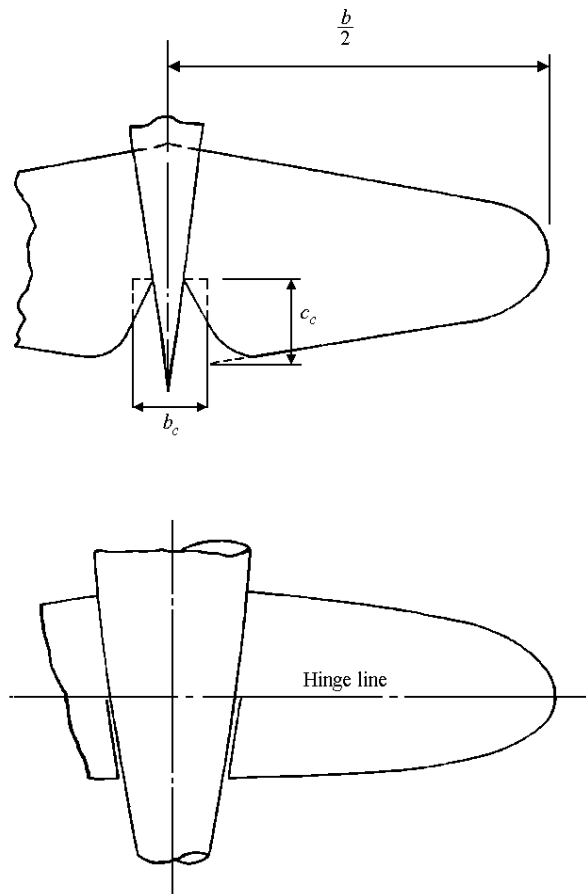
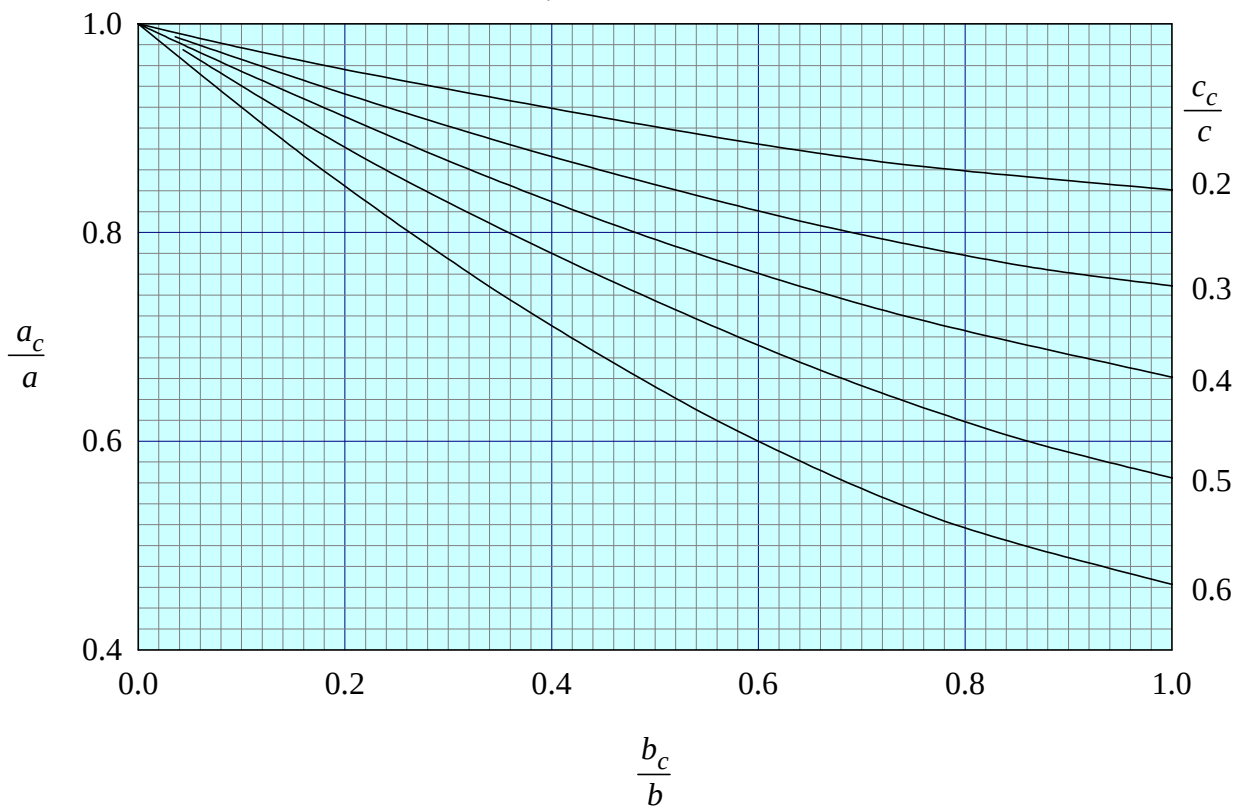


FIGURE 1