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Aerodynamic centre of wing-fuselage-nacelle combinations: effect of rear-fuselage pylon-mounted nacelles

**Associated software: ESDUpac A1309
See ESDU 13009**



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THE PREPARATION OF THIS DATA ITEM

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AERODYNAMIC CENTRE OF WING-FUSELAGE-NACELLE COMBINATIONS: EFFECT OF REAR-FUSELAGE PYLON-MOUNTED NACELLES

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AERODYNAMIC CENTRE OF WING-FUSELAGE-NACELLE COMBINATIONS: EFFECT OF REAR-FUSELAGE PYLON-MOUNTED NACELLES

1. NOTATION AND UNITS (see Sketch 1.1)

		<i>SI</i>	<i>British</i>
A	aspect ratio of equivalent-wing planform*		
a	lift-curve slope of equivalent-wing planform*	radian ⁻¹	radian ⁻¹
a_n	lift-curve slope of nacelle in isolation, based on area wl	radian ⁻¹	radian ⁻¹
c_0	centre-line chord of equivalent-wing planform*	m	ft
$\bar{c}$	aerodynamic mean chord of equivalent-wing planform*	m	ft
c_r	root chord of equivalent-wing planform*	m	ft
c_{ref}	general reference chord for stability calculations	m	ft
H	downwash parameter (see Equation (2.3))	radian	radian
K	ratio of lift on nacelle-pylon-fuselage combination to lift on nacelle and pylon in isolation		
l	length of nacelle forward-cowl or overall length of single-cowl nacelle, see Figure 1	m	ft
M	Mach number		
m	fuselage length forward of leading edge of root chord of equivalent wing planform*	m	ft
n	fuselage length aft of trailing edge of root chord of equivalent-wing planform*	m	ft
r	distance of nacelle inlet aft of wing-fuselage aerodynamic centre	m	ft
r_{te}	distance of nacelle inlet aft of wing trailing-edge, measured from centre of nacelle inlet, see Sketch 1.1	m	ft
r'	distance of nacelle inlet aft of quarter-chord point of centre-line chord of equivalent-wing planform*	m	ft
r''	chordwise distance of nacelle lip (or inlet) from leading edge of aerodynamic mean chord of equivalent wing planform, measured positive aft, see Sketch 1.1	m	ft

For footnote refer to end of Notation.

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