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Title

AERODYNAMIC CHARACTERISTICS OF ELLIPTIC BODIES AT M = 2.0 AND 3.0

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Abstract

Aerodynamic data is generated on a number of circular and elliptic bodies at Mach numbers of 2.0 and 3.0 at unit Reynolds number of 27 and 32 million per meter respectively. The incidence range covered was from -2.0 to 10 degree. The bodies tested had ellipticity ratios of 1.0, 1.5, 2.0, 3.0 nose fineness ratios of 1.0, 2.0, 3.0 and aft body ratios of 5.0, 6.0 and 7.0. Results show considerable effect of ellipticity on the normal force, pitching moment and drag coefficients. For a body of constant ellipticity ratio, increase in nose fineness ratio shows an increase in the lift coefficient and decrease in the drag coefficient, while the increase in aft body fineness ratio beyond 6.0 shows a decrease in the drag coefficient at higher incidence. Increase in Mach number showed a reduction in lift/drag ratio at higher incidences. Experimental data obtained compared well with the theoretical data estimated using ESDU data sheets.