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Performance analysis for aircraft with turbo-jets. “Non-dimensional” graphical method. Rate of climb

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THE PREPARATION OF THIS DATA ITEM

The work of the Engineering Sciences Data Unit on this series is monitored and guided by Technical Committees of the Royal Aeronautical Society. The Committee responsible for this particular Data Item was the Performance Committee, which first met in 1946, and has the following constitution:

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The members of staff of the Royal Aeronautical Society associated with the Performance Committee were Miss E.C. Pike and the Technical Secretary of the Society, Dr D.M.A. Leggett.

PERFORMANCE ANALYSIS FOR AIRCRAFT WITH TURBO-JETS.
“NON-DIMENSIONAL” GRAPHICAL METHOD.
RATE OF CLIMB

1. NOTATION AND UNITS

		British	SI
g	acceleration due to gravity	ft/s ²	m/s ²
m	aircraft mass	slug	kg
N	engine speed	rev/s	rev/s
p	pressure	lbf/ft ²	N/m ²
T	temperature	°C	°C
V	true airspeed	ft/s, knot	m/s, knot
V_e	equivalent airspeed, $V\sqrt{\sigma}$	ft/s, knot	m/s, knot
v_c	true rate of climb	ft/s	m/s
v_{cp}	rate of change of pressure height	ft/s	m/s
W	aircraft weight, mg	lbf	N
δ	relative pressure, p/p_0	—	—
θ	relative temperature, T/T_0	—	—
ρ	density	slug/ft ³	kg/m ³
σ	relative density, ρ/ρ_0	—	—

Subscripts

a	denotes ambient or test conditions
s	denotes value in International Standard Atmosphere
0	denotes value at sea level in International Standard Atmosphere (Item No. 68046, Reference 1, gives numerical values)