OPERATING DATA

LIGHTNING F. MK. 3

AND T. MK. 5

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LIGHTNING F Mk3 & T Mk5

OPERATING DATA MANUAL

BY COMMAND OF THE DEFENCE COUNCIL

Ministry of Defence

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NOTE TO USERS

This information is subject to the Limitations and Restrictions on aircraft and engine speeds and on all-up-weight given in the Aircrew Manual and must be used in conjunction with these.

IMPORTANT

Comments, queries and any questions on the information contained in this Publication should be addressed directly to:

The Officer Commanding,
Royal Air Force Handling Squadron,
Boscombe Down,
Salisbury,
Wiltshire,
SP4 OJF.

AMENDMENT RECORD SHEET

To record the incorporation of an Amendment List in this publication, sign against appropriate A.L.No. and insert the date of incorporation.

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NOTE TO USERS

This information is subject to the limitations and restrictions on aircraft and engine speeds and on all-up-weight given in Pilot's Notes and must be used in conjunction with these.

Comments and suggestions should be forwarded to T.F.2 *(R.A.F.)*, Ministry of Defence *(Air)*, London.

INTRODUCTION

1. The performance information presented in this book was originally produced for the Lightning F Mk 3 and T Mk. 5 aircraft with Avon Mk 301 engines, but it may also be used for aircraft fitted with Avon Mk 302 engines. Data for T Mk. 5 aircraft are printed on coloured leaves and, where applicable, are included at the end of each Part. Unless reproduced specifically for T Mk 5, data given on the white leaves should be used for both Marks of aircraft.

2. The data are given primarily for two configurations, ie, aircraft with 250–gallon ventral tank and aircraft with 250–gallon ventral tank and two Red Top missiles, and are distinguishable by the aircraft outline drawing. Where configuration has little effect both outlines are included. Performance with Firestreak is similar to that with Red Top and Firestreak data are not, therefore, included. The effect of the flight refuelling probe may be taken as one quarter of the difference due to two missiles.

3. Unless otherwise stated all information is based on the International Standard Atmosphere (ICAN or ICAO). In data for non-standard temperature, height refers to altimeter or pressure height, not geometrical height. Fuel is assumed to be AVTAG at a specific gravity of 0.78 (in practice the specific gravity of this fuel may vary between 0.751 and 0.802 at 15°C). The data are based on flight test evidence.

LEADING PARTICULARS

The following weight data is based on actual aircraft weight, obtained after weighing the heaviest aircraft at RAF Binbrook. in Dec 1976.

	F Mk. 3	T Mk. 5
Basic Weight	26.577 lb.	26,977 lb.
Ventral Tank	354 lb.	354 lb.
*Role Equipment	1,257 lb.	1,257 lb.
Probe	217 lb.	217 lb.
Pilot(s) and Equipment	208 lb.	416 lb.
Zero Fuel Weight	28,613 lb.	29,221 lb.
Max. All up weight (Fuel at 7.9 lb/gal (Avtur)	36,244 lb.	36,869 lb.

*Role Equipment comprises 2 Red Tops plus Red Top Pack.

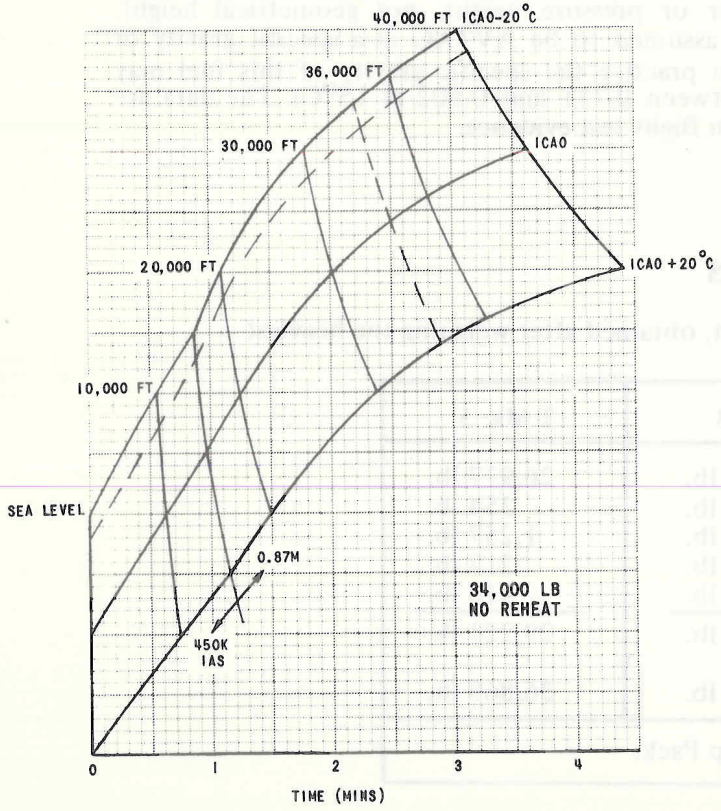
DEFINITIONS

θ = attitude given by artificial horizon

t = relative temperature

$$= \frac{\text{OAT in degrees absolute}}{288}$$

where OAT = outside air temperature



PRESENTATION OF GRAPHS

The figures have been made as self-explanatory as possible; notes and examples are provided where necessary.

CARPET GRAPHS

In some cases the graphical data have been presented in the form of 'carpets' to separate the individual curves and to assist interpolation to intermediate values of the variables.

The advantages of this form of presentation will be clear from the example included taken from Fig. 3.2 in the Climb section.

In the example, the horizontal *(time)* scale is 1 large square to 1 minute and the vertical *(height)* scale is 1 large square to 10,000 ft. To form the 'carpet' graph the curve for a temperature of ICAO + 20°C has been lowered 1 large square and that for ICAO -20°C has been raised 1 large square. Then points corresponding to the same height on adjacent curves are staggered at vertical intervals of 1 large square. Curves for varying temperature at constant height *(with a temperature scale of 1 large square to 20°C)* are then drawn as shown. We now have two intersecting families of curves - one family showing the effect of height at various temperatures, the other showing the effect of temperature at various heights - forming a 'carpet' from which the performance at any temperature and height can be obtained. For example, the time to climb to 34,000 ft, without reheat, in an atmosphere of ICAO -16°C would be obtained as follows:-

A curve is drawn through the points corresponding to 34,000 ft on the three curves for ICAO + 20°C, ICAO and ICAO -20°C. A second curve is then drawn through the point corresponding to ICAO -16°C on each of the curves for constant height. The point where these two curves intersect gives the required conditions; it will be seen that it takes 2.25 minutes to climb to 34,000 ft.