

AP 101B-1003,  
5 & 6-15A

0013

**LIGHTNING**  
**F Mk 3,**  
**T Mk 5**  
**& F Mk 6**

**AIRCREW**  
**MANUAL**

**BOOK 1 -**  
**AIRCRAFT**

**RESTRICTED**

# LIGHTNING

## F Mk 3, T Mk 5 and F Mk 6

### AIRCREW MANUAL

#### BOOK 1—AIRCRAFT

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BY COMMAND OF THE DEFENCE COUNCIL

*Mike Whitmore.*

Prepared by the Procurement Executive, Ministry of Defence

## NOTES TO USERS

1. This Manual is complementary to the Lightning F3, T5, F6 — Aircrew Manual Weapon System (AP 101B-1003, 5 & 6-15B) and to the Lightning F3, T5, F6 Flight Reference Cards (AP 101B-1003, 5 & 6-14).

2. The Manual is divided by marker cards as follows:

- Preliminary Matter
- Part 1 — Description and Management of Systems
- Part 2 — Limitations
- Part 3 — Handling
- Part 4 — Emergencies and Malfunctions
- Part 5 — Illustrations

Each Part is divided into Chapters as listed on its marker card. Each sheet is identified by a Part, Chapter, Page reference at the foot of the page. Thus a page bearing the reference 1—3 Page 3 is Page 3 of Part 1, Chapter 3.

3. All Parts of this Manual relate to the Lightning F Mk 3, T Mk 5 and F Mk 6, any differences being identified as necessary in the text.

4. The limitations given in Part 2 are mandatory. Instructions in other Parts containing the words 'is to' or 'are to' are also mandatory.

5. The Manual and the associated Flight Reference Cards aim to provide the best operating instructions and advice currently available. Although they provide guidance for most eventualities, they are not substitutes for sound judgement and good airmanship; moreover, they assume adequate knowledge of the pertinent volumes of AP 3456 series. Furthermore, circumstances might require aircrew to depart from or to modify the prescribed procedures and drills. Consequently, the Manual and Flight Reference Cards should not be regarded as documents which are to be adhered to inflexibly at all times — other than as explained in para 4.

6. Amendment Lists will be issued as necessary and each amendment list instruction sheet will state the main purpose of the amendment and will include a list of modifications covered. The List of Pages will also be updated with each amendment. New or amended matter of importance will be indicated by symbols positioned in the text thus: ◀.....▶ or thus ◀.....▶ to show the extent of new or amended text and thus ▶◀ or thus ◀◀ to show where text has been deleted. The number of the Amendment List by which a sheet was initially issued or re-issued will appear at the bottom of the odd-numbered pages and any symbols on either page forming a sheet will, therefore, refer to that Amendment List. However, when a new Chapter is issued with an Amendment List, or an existing Chapter is completely revised, this fact will be noted within the heading of the Chapter and the symbols will not appear.

7. The following conventions are observed throughout the Manual:

- a. The actual markings on controls are indicated in the text by capital letters.
- b. Unless otherwise stated, all speeds, temperatures, altitudes and accelerations quoted are indicated values.
- c. **WARNINGS** are inserted only when the serious consequences of not following a certain procedure might otherwise be overlooked.
- d. Information requiring emphasis is printed in italics.
- e. Notes are inserted to clarify the reason for a procedure or to give information which, while not essential to the understanding of the subject, is useful to the reader.

8. Modification numbers are only referred to in the text to differentiate between pre- and post-mod states. For ease of reference, a list of modifications mentioned in the text is included in the preliminary pages of the Manual, with a cross-reference to the location in the text of the modification details.

### IMPORTANT

Comments and suggestions should be forwarded to the Officer Commanding, Royal Air Force Handling Squadron, Boscombe Down, Salisbury SP4 0JF

### AMENDMENT RECORD SHEET

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

AL No.	AMENDED BY	DATE
1	<i>[Signature]</i>	<i>12 May</i>
2	<i>[Signature]</i>	<i>25 Nov</i>
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## MODIFICATION NUMBERS MENTIONED IN THE TEXT

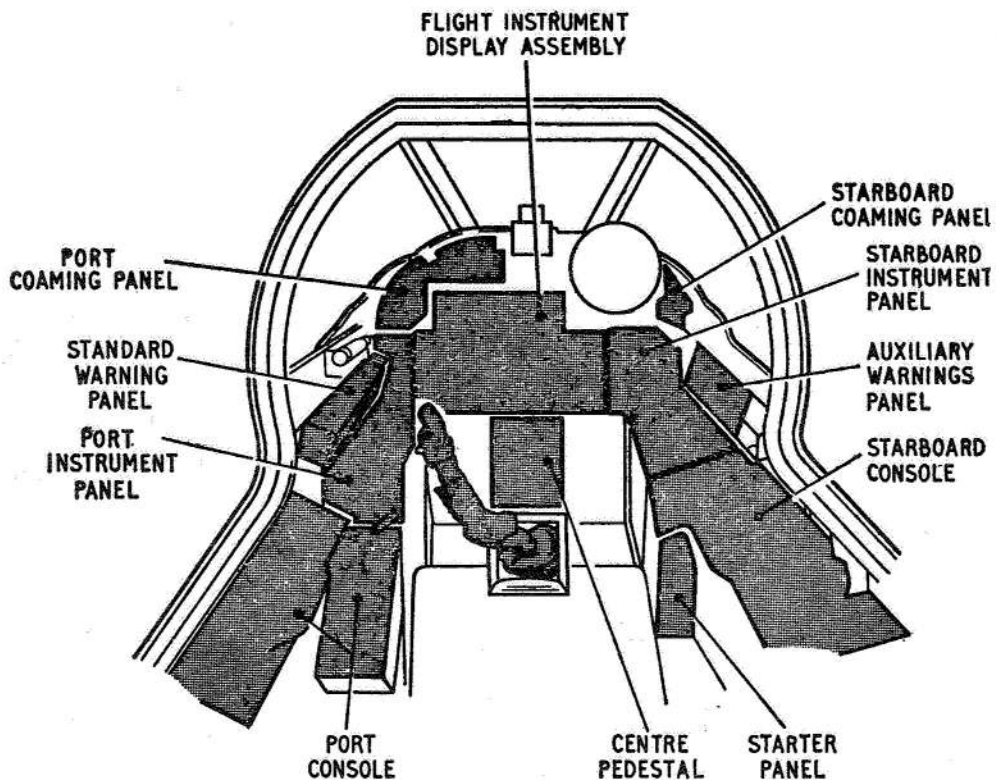
<i>Mod No</i>		<i>Brief Description</i>	<i>Location of Details</i>		
			<i>Part</i>	<i>Chap</i>	<i>Para</i>
2459	...	Deletes fuel recuperators ... ..	1	2	9
4212	...	Introduces triple pressure gauge (F Mk 6) ... ..	1	6	25
◀4682	...	Introduces Mk 6 brake units (F Mk 3, T Mk 5) ... ..	3	2	16▶
4846	...	Introduces radar altimeter (F Mk 3, F Mk 6) ... ..	1	7	45
SEM/031/STC		Introduces dimmer switch for the rad alt warning light (in control knob) and repositions remote low height warning light ... ..	1	7	47

## INTRODUCTION

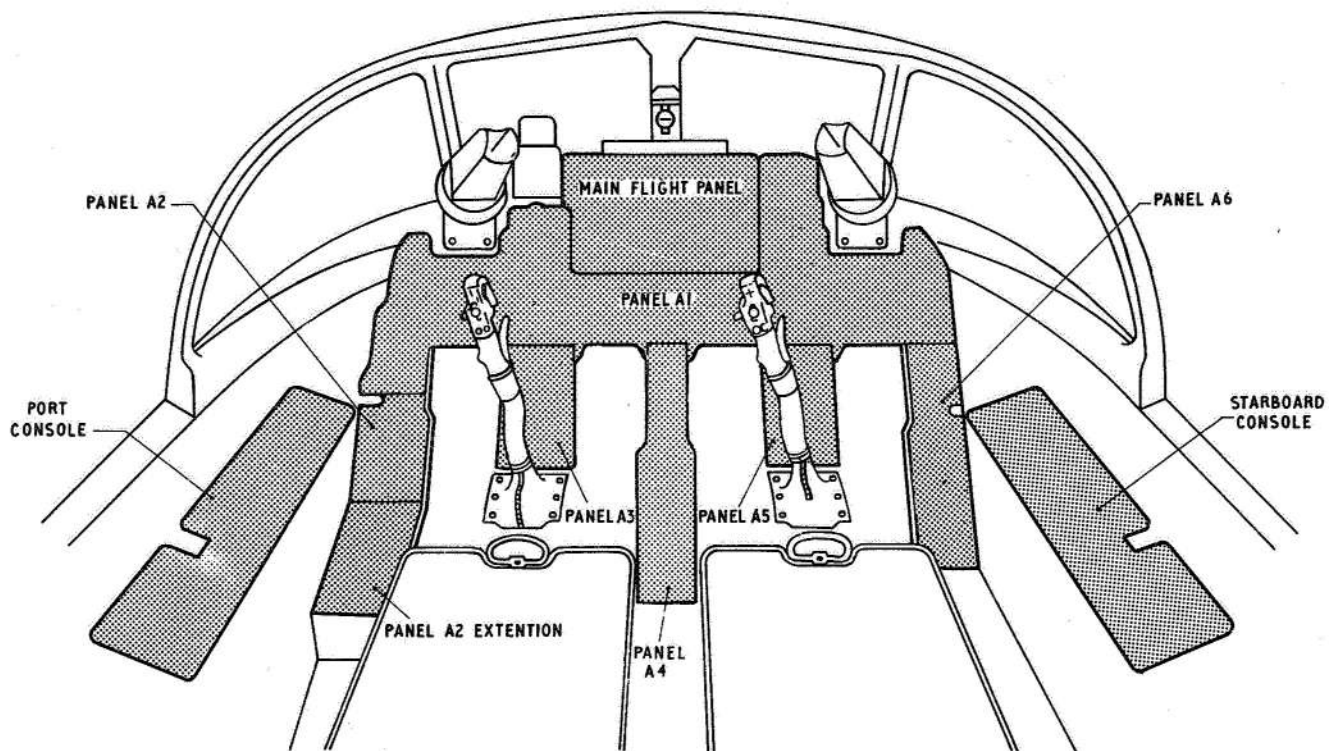
1. The Lightning F Mk 3 and F Mk 6 are single-seat, twin-engined, supersonic interceptor fighters, having highly swept, cambered-leading-edge, mid-mounted mainplanes and slab tailplane. The Lightning T Mk 5 is the 2-seat supersonic trainer version. In all three marks the ailerons, rudder and tailplane are fully power operated, and incorporate artificial feel for each control; hydraulic supplies to these controls are duplicated. Hydraulically operated undercarriage, airbrakes and trailing edge flaps are fitted. A braking parachute is housed in a compartment on the underside of the rear fuselage.
2. The power units are Avon Mk 302 axial-flow gas turbines developing approximately 12,600 lb static thrust at sea level (16,300 lb with maximum reheat). The engines are mounted in the fuselage, No 2 to the rear of and above No 1.
3. Internal fuel is carried in integral wing tanks and in the flaps. Externally the F Mk 3 and T Mk 5 are fitted with jettisonable ventral tanks; the F Mk 6 ventral tank cannot be jettisoned. However, the F Mk 6 may, in addition, be fitted with overwing tanks. Provision is made for air-to-air refuelling.
4. Electrical power is derived from a generator and an alternator, both driven by an air turbine unit powered by air tapped from the engine compressors. A standby generator is fitted for emergency use; service and emergency batteries are provided.
5. The weapon system of the aircraft consists of an AI 23 radar and fire control system, a Light Fighter Sight and Red Top or Firestreak air-to-air homing missiles. In the F Mk 6 an Aden gun pack may be fitted in the forward part of the ventral tank. Cameras and AI recorders are also fitted. Full details of the weapon system are given in AP 101B-1003, 5 & 6-15B.
6. An integrated flight instrument and control system (IFIS) supplies speed, height, attitude and direction information to the flight instruments and provides auto-stabilisation, programmed climb, attitude hold, height and heading locks, and ILS coupling.
7. Cockpits are pressurised and equipped with ejection seats. The clamshell canopy is hydraulically operated and electrically controlled and can be jettisoned by a canopy jettison handle or, on ejection, by either of the ejection seat firing handles (on either seat in the T Mk 5). An external canopy jettison handle is provided.
8. In the F Mk 3 and F Mk 6, entry to the cockpit is gained from the left side of the aircraft by a ladder which is part of the ground equipment. In the T Mk 5, two similar ladders are provided and access to the cockpit is gained from the left and right sides. In all cases the canopy is opened from the outside by means of a handle and switch located behind a panel on the left side of the fuselage spine.
9. All emergency warning lights are grouped together on a standard warning panel (SWP) and on an auxiliary warning panel (AWP).
10. The various panels on which the controls and indicators are located are shown in Fig 1 (F Mk 3 and F Mk 6) and Fig 2 (T Mk 5).
11. A detailed list of associated publications is given in the Aircraft Servicing Manuals.
12. The principal dimensions of all three marks of aircraft are:
 

Length overall	...	...	55ft 3in
Height overall	...	...	19ft 7in
Wing span	...	...	34ft 10in
Tailplane span	...	...	14ft 6in
Canopy height	...	...	11ft 6in

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Prelims Fig 1 — Cockpit Panels F Mk 3 and F Mk 6



Prelims Fig 2 — Cockpit Panels T Mk 5

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## LIST OF ABBREVIATIONS

<i>Abbreviation</i>	<i>Explanation</i>	<i>Abbreviation</i>	<i>Explanation</i>
AAL	Aircraft approach limitations	kHz	Kilohertz
AAR	Air-to-air refuelling	kt	Knots
AC	Alternating current	kVA	Kilovolt amps
ADF	Automatic direction finding	lb	Pound(s)
AI	Airborne interceptor radar	LCN	Load classification number
AMCU	Air motor control unit	LFS	Light fighter sight
ANM	Air nautical miles	LOX	Liquid oxygen
AP	Autopilot, Air Publication	M	Mach, mega
ASAP	As soon as possible	Max	Maximum
ASU	Altitude sensing unit	MHz	Megahertz
AUW	All up weight	MI	Magnetic indicator
AVS	Air ventilated suit	min	Minimum
AWP	Auxiliary warning panel	mins	Minutes
BAC	Bank angle control	MRG	Master reference gyro
C	Celsius (centigrade)	ODM	Operational Data Manual
CG	Centre of gravity	O/W,o'wing	Overwing
CPU	Control and protection unit	P	Port
DC	Direct current	PFCU	Powered flying control unit
DG	Directional gyro	QDM	Magnetic track
DI	Direction indicator	QFE	Airfield pressure setting
DL	Data link	QRF	Quick release fitting
EOA	Engine out allowance	RCDI	Rate of climb and descent indicator
FCC	Flight control computer	RHAG	Rotary hydraulic arrester gear
FCS	Flight control system	S	Starboard
FD	Flight director	S/B, SBY	Standby
ft	Feet, foot	sec	Second(s)
g	Normal acceleration due to gravity	SFC	Specific fuel consumption
GC	Groundcrew	TDFU	Time delay firing unit
HDG,HDNG	Heading	TO, T/O	Take-off
HDU	Hose and drum unit	TTC	Top temperature control
HE	High explosive	UC	Undercarriage
Hz	Hertz (cycles per second)	V	Volts
IFF	Identification friend and foe	VCH	Visual comittal height
IFIS	Integrated flight instrument system	VP	Violet Picture
I/P	Identification of position	VSC	Vertical speed control
JPT	Jet pipe temperature		

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