

Part I

Chapter 13—Fire Warning and Protection Systems

List of Contents

	<i>Para.</i>		<i>Para.</i>
General	1	Plenum chamber fire protection system	4
Engine fire protection system	2	Inertia switches	5
Fuel tanks fire protection system	3	Hand fire extinguishers	6

1 General

Visual warning of fire in the engine bays, fuselage plenum chamber and fuel tanks is given by six warning lights and four combined extinguisher pushbutton/warning lights, all on panel AW. Nine independent extinguishing installations are fitted comprising a total of twenty electrically-discharged methyl-bromide extinguishers, which are discharged simultaneously by the action of inertia switches if a crash landing is made (see para. 5). They are located as follows:

Wing tank group, port	One
Wing tank group, starboard	One
Fuselage tank group, front	Two
Fuselage tank group, rear	Two
Plenum chamber	Two
Engines, zones 1 forward of firewall	Four
Engines, zones 2, annular space between jet pipe and surrounding shroud	Four
Engines, zones 3, rear of firewall	Four

2 Engine fire protection system

(a) Each engine bay is divided into three zones. Twenty-three resetting fire detectors are fitted in each engine bay and one fire extinguisher is in each engine zone.

(b) An abnormal temperature rise affecting any fire detector causes its associated warning light to come on. When the pushbutton is pressed the extinguishers in zones 2 and 3 are discharged first, and the HP and LP cocks for that engine are turned off. In addition the generator cooling air supply is cut off and finally the extinguisher in No. 1 zone is discharged. When the cooling air supply is cut off an ALT. COOLING CLOSE warning light on the AEO's side panel comes on.

(c) If the fire is extinguished, the warning light goes out as the flame switches cool.

(d) Master control units

(i) Two master control units are provided, one for the port engines and one for the starboard engines. When energised by a detector circuit they cause the illumination of the associated

warning lights. A pulse circuit, which makes a ticking noise when operating, is incorporated in each control unit and regularly interrupts the supply to each control unit relay thus preventing false fire warning due to vibration of the relay contacts.

(ii) Three guarded (post-Mod. 2545) test switches on panel BF may be used to test the port and starboard detector circuits and to light the warning lamps.

(e) Circuit breakers for the extinguisher circuits are on panel AJ.

3 Fuel tanks fire protection system

(a) Five separate continuous fire-wire detector installations are fitted, one for each wing tank installation, one for the rear fuselage fuel tanks, one for the tanks over the bomb-bay and, one for the front fuselage tanks. A warning light for each system is provided on panel AW.

(b) Four extinguishing systems are provided, one for each set of wing tanks and one for the rear and front fuselage fuel tanks. There is no extinguishing system for the tanks above the bomb-bay.

(c) Each mainplane system has one extinguisher bottle and each fuselage system has two bottles.

(d) If the operating temperature (180°C — 250°C) of any sensing element is reached the associated warning light comes on and the extinguisher(s) is discharged automatically. When the temperature reverts to normal the circuit is de-energised and the warning light goes out.

4 Plenum chamber fire protection system

(a) A fire-wire detector installation is fitted in the plenum chamber. A warning light for the system is on panel AW.

(b) If the warning light comes on two extinguisher bottles discharge their contents automatically. When the temperature in the chamber returns to normal, the warning light goes out.

5 Inertia switches

(a) Four inertia switches are fitted, two port and two starboard, which automatically bring the fire extinguisher installations into operation if the aircraft decelerates at a rate exceeding 3G. A warning light for each inertia switch is located on the AEO's side panel BB and comes on when its inertia switch is tripped. Circuit breakers are fitted adjacent.

(b) Operation of any one inertia switch does not affect any extinguisher circuit. Both switches on one side must operate before the extinguisher circuits are energised.

(c) The port inertia switches cause the following extinguisher systems to discharge:

Port mainplane extinguisher

Zone 2 and 3 extinguisher for Nos. 1 and 2 engines (thereby closing HP and LP cocks and cooling air supply to the generators)

Zone 1 extinguishers for Nos. 1 and 2 engines

(d) The starboard inertia switches cause the following extinguisher systems to discharge.

Starboard mainplane extinguisher

Zone 2 and 3 extinguishers for Nos. 3 and 4 engines

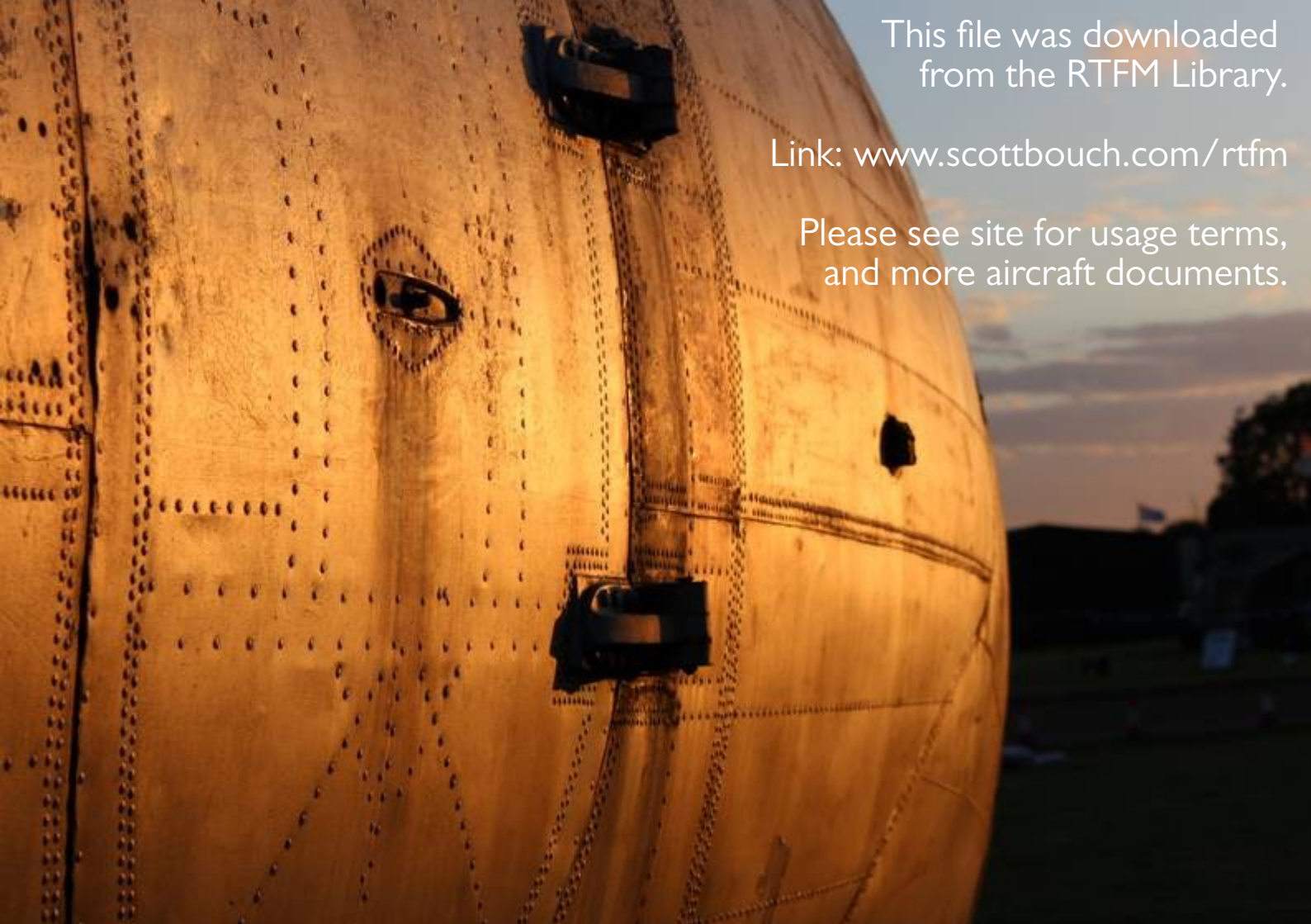
Zone 1 extinguisher for Nos. 3 and 4 engines

Fuselage fuel tanks extinguishers

Plenum chamber extinguishers

6 Hand fire-extinguishers

Three hand fire-extinguishers ($\frac{2}{3}$ distilled water $\frac{1}{3}$ glycol) are provided in the cockpit. Mod. 3125 replaces these with ones filled with bromochlorodifluoromethane. These are more suitable for use against all classes of fire.



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