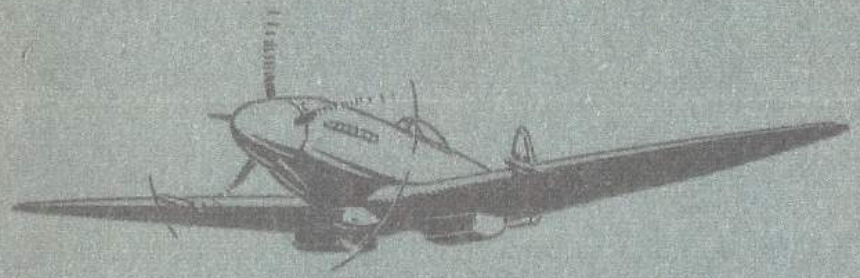
A.P. 1565Y.—P.N.

PILOT'S NOTES

FOR

SPITFIRE 18



PREPARED BY DIRECTION OF THE MINISTER OF SUPPLY

A. C. Roland.

PROMULGATED BY ORDER OF THE AIR COUNCIL

J. H. Barnes.

AMENDMENTS

Amendment lists will be issued as necessary and will be gummed for affixing to the inside back cover of these notes.

Each amendment list will, where applicable, be accompanied by gummed slips for sticking in the appropriate places in the text.

Incorporation of an amendment list must be certified by inserting date of incorporation and initials below.

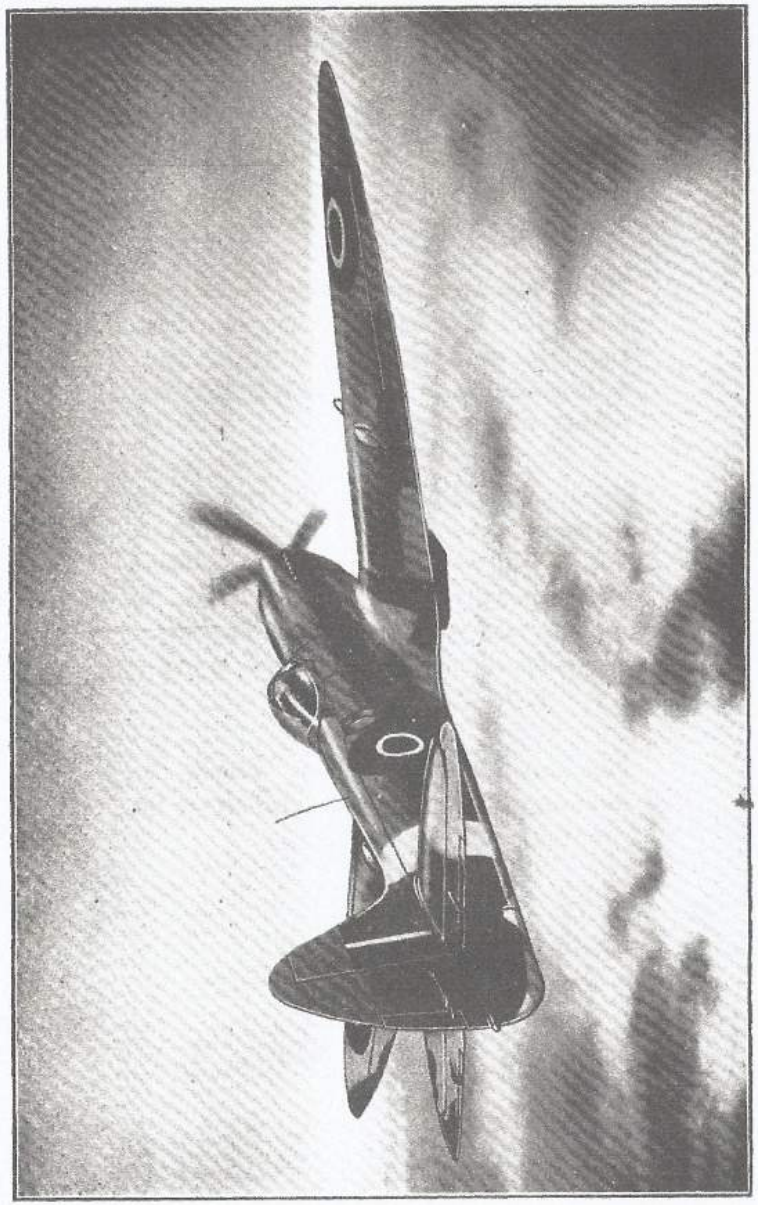
A.L. NO.	INITIALS	DATE	A.L. NO.	INITIALS	DATE
1			7		
2			8		
3			9		
4			10		
5			11		
6			12		

NOTES TO USERS

THESE Notes are complementary to A.P. 2095 Pilot's Notes General, and assume a thorough knowledge of its contents. All pilots should be in possession of a copy of A.P. 2095 (see A.M.O. A718/48).

Additional copies may be obtained by the station publications officer by application on R.A.F. Form 294A, in duplicate, to Command Headquarters for onward transmission to A.P.F.S. (see A.P. 113). The number of this publication must be quoted in full—A.P. 1565Y—P.N.

Comments and suggestions should be forwarded through the usual channels to the Air Ministry (T.F.2).



SPITFIRE 18

SPITFIRE 18

LIST OF CONTENTS

SPITFIRE 18

PILOT'S CHECK LIST

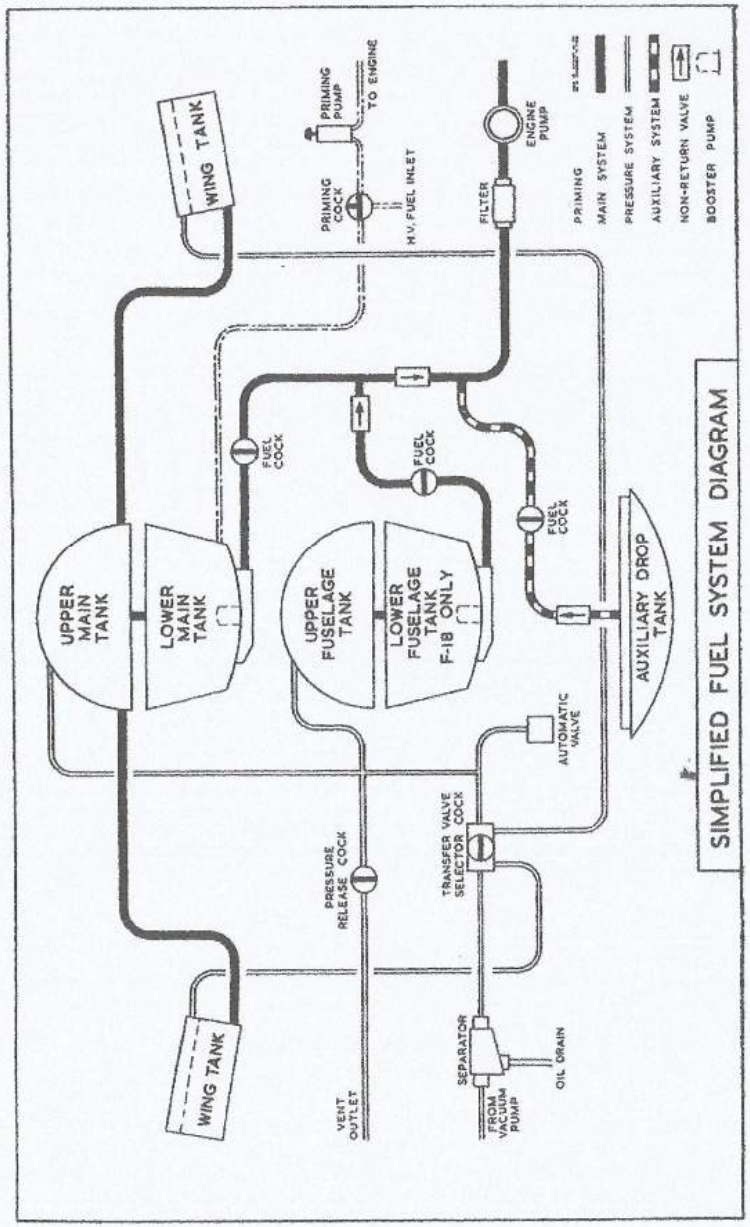
(Excluding items of Operational Equipment)

	ITEM	CHECK
1.	Weight and balance.	Within permissible limits.
	External checks.	
	N.B.—Start at the cockpit entrance on the port side and work clockwise round the aircraft.	
2.	Port mainplane.	Condition of upper surface. Panels secure. Undercarriage rod protruding.
3.	Port flap.	Condition and position.
4.	Port aileron.	Condition. External control lock removed.
5.	Port navigation light.	Condition.
6.	Pressure-head.	Cover removed.
7.	Port mainplane.	Condition of under surface and leading edge. Panels secure. Condition of identification light.
8.	Port undercarriage.	Condition of fairing. Extension of oleo leg. Brake lead secure. Tyre for cuts and creep. Valve free. Chock in position.
9.	Port radiator.	Condition. Condition of radiator shutter. Absence of coolant leaks.
10.	Centre plane.	Condition of under surface. Panels secure.
11.	Engine.	Condition of propeller and spinner. Cowlings secure. Condition of air intake. Absence of oil and coolant leaks.
12.	Starboard radiator.	Condition. Condition of radiator shutter. Absence of oil and coolant leaks.
13.	Starboard undercarriage.	Condition of fairing. Extension of oleo leg. Brake lead secure. Tyre for cuts and creep. Valve free. Chock in position.
14.	Starboard mainplane.	Condition of under surface and leading edge. Panels secure. External aerial secure. Condition of identification light.

	ITEM	CHECK
15.	Starboard navigation light.	Condition.
16.	Starboard aileron.	Condition. Exteraal control lock removed.
17.	Starboard flap.	Condition and position.
18.	Starboard mainplane	Condition. Panels secure. Undercarriage rod protruding.
19.	Starboard fuselage.	Condition. Panels secure. External aerial secure. Condition of under surface. Condition of identification light.
20.	Fin.	Condition. Condition of leading edge.
21.	Starboard tailplane.	Condition of upper and lower surfaces.
22.	Starboard elevator.	Condition. Trimmer. External control lock removed.
23.	Rudder.	Condition. Trimmer. External control lock removed. Condition of tail light.
24.	Port elevator.	Condition. Trimmer. External control lock removed.
25.	Port tailplane.	Condition of upper and lower surfaces. Condition of leading edge.
26.	Tailwheel.	Condition of doors. Tyre for cuts and creep. Valve free.
27.	Port fuselage.	Condition. Panels secure. Ground electrical socket dummy plug removed.
28.	Upper fuselage.	Panels and fuel covers secure.
	Internal checks.	
29.	Internal control locks.	Removed and stowed.
30.	Canopy.	Security and operation. Canopy open.
31.	Undercarriage selector.	Locked down. Indicator reading.
32.	Pilot's seat.	Adjust for height.
33.	Rudder pedals.	Adjust for length.
34.	Flying controls.	Gun firing button safe. Full and correct movement.
	Cockpit checks.	
	N.B.—Switch on the electrical master switch and work from left to right.	
35.	Cockpit door.	Door on latch.
36.	Crowbar.	In position.
37.	Trimmer controls.	Full and correct movement.
38.	Navigation lights.	As required.
39.	Cine-camera switch.	Off.
40.	Pressure-head heater.	Off.
41.	Booster pump.	Off.
42.	Generator warning light.	On.
43.	R.p.m. over-ride lever.	Maximum r.p.m. position.
44.	Throttle.	1½ inches open. Adjust friction.

ITEM		CHECK
45.	Fuel cut-off control.	Cut-off.
46.	Fuel transfer cock.	Normal.
47.	Rear tank fuel cock.	Off.
48.	Ignition switches.	Off.
49.	Pneumatic pressure.	Supply. Delivery to each wheel brake.
50.	Tailwheel light.	On.
51.	Undercarriage indicator.	Green DOWN on. Night flying blind.
52.	Oxygen.	Delivery.
53.	Flap selector.	Up.
54.	Cockpit lighting.	As required.
55.	Magnetic compass.	Serviceability.
56.	Main fuel cock.	On.
57.	Altimeter.	Set.
58.	Direction indicator.	Caged.
59.	Supercharger gear switch.	Auto. Red light out.
60.	Boost gauge.	Static reading.
61.	Fuel pressure warning light.	ON.
62.	Fuel gauges.	Contents.
63.	Fuel low level warning light.	Out.
64.	Identification lights.	As required.
65.	Priming pump.	Off.
66.	Priming selector.	All off.
67.	Drop tank fuel cock.	Off. Jettison lever down.
68.	Carburettor air intake switch.	Clean air.
69.	Windscreen de-icer.	Operation. Cock off.
70.	Undercarriage emergency lever.	Vertical position.
71.	Fuel pressurising cock.	As required.
72.	Pilot's harness.	Adjust, test lock.
73.	Brakes.	ON.
	Start and warm up the engine (see para. 40).	
74.	Generator warning light.	Out.
75.	Fuel pressure warning light.	Out.
76.	Pneumatic pressure.	Supply increasing.
77.	Flaps.	Lower and raise.
78.	Direction indicator.	Set with magnetic compass. Uncage.
79.	Radio.	Test VHF and other radio aids. Check altimeter setting with control.
80.	Radiator flaps.	Depress pushbutton. Flaps open. Release pushbutton.
	Run up and test the engine (see para. 41).	
81.	Chocks.	Clear.

ITEM		CHECK
82.	Taxying.	As soon as possible test brakes. Direction indicator for accuracy. Artificial horizon for accuracy. Temperatures and pressures. Pressure-head heater on if required. Check brake pressures.
	Checks for take-off.	
83.	Trim Elevator. Rudder.	 Neutral. Full left (back).
84.	Throttle friction.	Tighten.
85.	R.p.m. override lever.	Maximum r.p.m. position.
86.	Fuel.	Contents. Main tank cock on. Transfer cock normal. Drop tank cock off. Rear fuselage tank cock off. Main booster pump on.
87.	Flaps.	Up.
88.	Supercharger.	Auto. Red light out.
89.	Carburettor air intake.	Clean air.
90.	Engine.	Clear if necessary.
91.	Harness.	Locked.
	Checks in flight as necessary.	
	Checks before landing.	
	Reduce speed to 140 knots.	
92.	Harness.	Locked.
93.	Brakes.	Off. Check pressures.
94.	Fuel.	Main tank cock on. Main booster pump on.
95.	Carburettor air intake.	Clean air.
96.	Supercharger.	Red light out.
97.	Undercarriage.	Down and locked. Tailwheel light. on.
98.	R.p.m. override lever.	2,600 r.p.m.
99.	Flaps.	Down.
	After landing—Clear runway.	
100.	Pneumatic pressure.	Supply sufficient for taxying.
101.	Flaps.	Up.
102.	Booster pump.	Off.
103.	Pressure-head heater.	As required.
	On reaching dispersal. Stop the engine in accordance with para. 54.	
104.	Main fuel cock.	Off.
105.	Ignition switches.	Off.
106.	Electrical services.	All off.
107.	Master switch.	Off.
108.	Direction indicator.	Caged.
109.	Chocks.	In position.
110.	Brakes.	Off.
111.	Internal control locks.	On.
112.	Pressure-head.	Cover on.



PART I
DESCRIPTIVE

NOTE.—Throughout this publication the following conventions apply :—

(a) Words in capital letters indicate the actual markings on the controls concerned.

(b) The numbers quoted in brackets after items in the text refer to the illustrations in Part V.

(c) Unless otherwise stated all speeds quoted are indicated airspeeds.

INTRODUCTION

1. (i) The Spitfire F Mk. 18 is powered by a Griffon 65 or 67 engine which drives a five-bladed Rotol hydraulic propeller. The aircraft is armed with two .5 inch and two 20 mm. guns, and a cine-camera is fitted.
It is fully tropicalised and can carry a variety of external stores, including R.P.

(ii) Except for the installation of two vertical and an oblique camera in the rear fuselage, the FR Mk. 18 aircraft is similar.

FUEL OIL AND COOLANT SYSTEMS

2. **Fuel tanks**

(i) Fuel is carried in six permanent tanks (five in the case of FR Mk. 18 aircraft) ; two main tanks mounted one above the other in the fuselage, forward of the cockpit, one in each wing and two, mounted one above the other, in the rear fuselage behind the cockpit (in the case of FR Mk. 18 aircraft the lower of these tanks is replaced by an F.24 oblique camera). The bottom main tank, the wing tanks, and the rear fuselage tanks are self-sealing.

(ii) Fuel from the top main tank feeds into the bottom main tank, while fuel in the wing tanks is transferred to the top main tank by air pressure from the exhaust side of

the vacuum pump. Fuel in the rear fuselage tanks (the top one of which feeds into the bottom one, if carried) feeds through a separate pipeline direct to the engine-driven pump and does not replenish the main tanks.

(iii) To meet the possibility of engine cutting due to fuel boiling in warm weather at high altitude the main and rear fuselage tanks are pressurised. The transfer selector cock (39) should be in the NORMAL VENTING or PRESSURISING position and the fuel tank pressure release cock (63) in the ON position; the tanks are then pressurised at all heights above that to which the automatic pressurising valve is set—usually 15,000 feet. Pressurising, however, impairs the self-sealing properties of the tanks and should, therefore, be turned off if a tank is holed.

(iv) A Bendix-Stromberg pressure injection carburettor is fitted. The vapour return line from it is connected to the top main tank.

(v) A "blister" type drop tank of 30, 45 or 90 gallons capacity or a "torpedo" type drop tank of 50 gallons capacity may be carried beneath the fuselage. Fuel is drawn from them by the engine-driven pump.

(vi) The capacities of the permanent tanks are :—

Top main tank	36 gallons
Bottom main tank	49 gallons
2 wing tanks (each 13 gallons)	26 gallons
Top rear fuselage tank	31 gallons
Bottom rear fuselage tank (F Mk. 18 only)	31 gallons
Total all tanks (F Mk. 18)	173 gallons
Total all tanks (FR Mk. 18)	142 gallons

3. Fuel cocks

(i) The cock control (21) for the main tanks is a lever mounted below the engine starter pushbutton ; the cock control (42) for the rear fuselage tanks is on the cockpit floor, below the throttle quadrant.

(ii) The transfer selector cock (39), for admitting air pressure to either wing tank, is below and slightly forward of the throttle quadrant. It is important that this cock be in the

NORMAL VENTING or PRESSURISING position unless fuel is being transferred from the wing tanks.

(iii) The cock control lever (68) and jettison lever (66) for the auxiliary drop tank are mounted together on the cockpit starboard side, below the undercarriage selector lever. The jettison lever is pulled up to jettison the drop tank, but it cannot be operated until the cock control lever is moved forward to the OFF position.

4. Fuel booster pump

Two electric fuel booster pumps are fitted, one in the bottom main tank and the other in the bottom rear fuselage tank. On FR Mk. 18 aircraft the single rear fuselage tank is fitted with a similar booster pump.

The pumps are controlled by a three-position switch (48) mounted on the electrical panel on the cockpit port wall. In the outboard position the switch operates the pump in the bottom main tank and in the inboard position it operates the pump in the rear fuselage tank. The rear fuselage tank pump should not be switched on while the main tanks are full as fuel will be pumped into the latter and may overflow through the vent, if the main tank cock is ON. The fuel cut-off lever should be kept in the fully aft position when either of these pumps is on and the engine is not running ; otherwise, fuel will be injected into the supercharger at high pressure and there will be, in consequence, a serious risk of fire.

5. Fuel contents gauges and warning light

(i) The contents gauge (18) for the main fuel tanks is mounted on the right-hand side of the instrument panel. It has two dials which give readings for the combined contents of the top and bottom tanks. A red mark indicates the level of fuel at which transfer from the wing tanks should be commenced.

(ii) A gauge indicating the contents of the bottom rear fuselage tank is mounted just to the left of the main tanks contents gauge. There are no gauges for the wing tanks, the top rear fuselage tank, or the auxiliary drop tank.

(iii) Unless deleted the warning light (13) on the right-hand side of the instrument panel, just above the oil pressure gauge, comes on at any time when the fuel pressure at the

carburettor falls appreciably below normal.

(iv) The contents gauges and warning light are switched on and off by the electrical master switch (26).

(v) A low fuel level warning light (17) is fitted to the right of the fuel contents gauges ; it comes on when fuel for only 30 minutes at economical cruising power remains in the main tanks.

6. **Oil system**

(i) Oil is supplied from a tank of 9 gallons oil capacity and 3 gallons air space, mounted between the top main fuel tank and the fireproof bulkhead. The oil passes through a filter before entering the engine. A cooler is fitted inside the fairing of the starboard wing radiator and oil pressure and temperature gauges (at 16) are mounted on the right-hand side of the instrument panel.

(ii) An oil dilution system is fitted. It is controlled by a shielded pushbutton (44) on the electrical panel.

7. **Coolant system**

The system is thermostatically controlled, the underwing radiators being by-passed until the coolant reaches a temperature of 75°C. The header tank is mounted above the reduction gear casing and is fitted with a relief valve. The radiator flaps are fully automatic and are designed to open at a coolant temperature of 115°C. A pushbutton (45) on the electrical panel is fitted for ground testing, and there is a coolant temperature gauge on the right-hand side of the instrument panel.

MAIN SERVICES

8. **Hydraulic system**

Hydraulic fluid is contained in a reservoir on the fireproof bulkhead and passes through a filter to an engine-driven pump for operation of the undercarriage and tailwheel.

9. **Electrical system**

A 12-volt generator charges a battery which supplies the whole of the electrical system. Unless deleted a red light

on the electrical panel, marked GEN. FAILURE, is illuminated when the generator is not charging the battery.

If the electrical system fails, the supercharger will remain in (or return to) low gear and the radiator flaps will remain closed.

A master switch (26) controlling the circuits for the electrically operated gauges and indicators is mounted to the right of the ignition switches and these cannot be switched on unless the master switch is on. The master switch should be off at all times when the engine is not running, except when testing the instruments on the aircraft battery. All electrical services, including gauges and indicators if the master switch is on, can be tested by means of a ground battery plugged into the external ELECTRICAL and RADIO socket. With this plugged in or with the socket held in the open position with the dummy plug provided, the aircraft battery is automatically isolated.

10. **Pneumatic system**

An engine-driven air compressor feeds two storage cylinders for the operation of the

brakes
flaps
machine guns
radiator shutters and
supercharger gear change ram.

The cylinders each hold air at a pressure of 300 lb./sq. in. If the pneumatic system fails, the supercharger will remain in (or return to) low gear, but the position of the radiator flaps will depend on the nature of the failure. The brakes (see para. 58), flaps, and gun firing mechanism will also be inoperative.

AIRCRAFT CONTROLS

11. **Flying controls**

(i) The control column is of the spade-grip pattern and incorporates the brakes lever, gun firing control (9) and independent cine-camera button (11).

(ii) The rudder pedals have two positions for the feet and

are adjustable for reach by rotating the star wheels (43) on the sliding tubes.

12. **Flying controls locking gear**

Two struts are stowed on the cockpit starboard wall. The longer strut and the arm attached to it lock the control column to the seat and to the starboard datum longeron ; the shorter strut attached to the other strut by a cable, locks the rudder pedals. The controls should be locked with the seat in its highest position.

13. **Trimming tabs controls**

(i) The elevator trimming tabs are controlled by a handwheel (28) on the port side of the cockpit and their setting is shown on an indicator (24) on the bottom left-hand side of the instrument panel.

(ii) A smaller handwheel (27) aft of the elevator trimming tab control operates the rudder trimming tab. No indicator is provided but clockwise rotation of the control tends to yaw the aircraft to starboard.

14. **Undercarriage selector lever**

The undercarriage selector (64) moves in a gated quadrant on the starboard side of the cockpit. To raise the undercarriage, the lever must be moved downwards to disengage it from the slot, inwards through the gate, and then forward to the full extent of the quadrant. The lever should spring outwards through the upper gate and when the undercarriage is locked up it will automatically spring back into the upper slot.

To lower the undercarriage, the lever must be held forward for about two seconds, pulled through the upper gate and then back in one movement to the full extent of the quadrant. The lever should spring outwards through the lower gate and when the undercarriage is locked down it will automatically spring into the lower slot.

When operated in either direction the lever must be permitted to spring outboard when it reaches the end of its travel ; this ensures that it can spring into the appropriate slot when the undercarriage is locked up or down. The lever must not be forced into either slot by hand. An indicator in the quadrant shows DOWN, IDLE or UP, depending on the position of the hydraulic valve. UP or

DOWN should show only during the corresponding operation of the undercarriage, and IDLE when the lever is in either slot. If mishandled or out of adjustment it is nevertheless possible for the lever to be on the wrong side of the gate, and yet for the indicator to show IDLE. It is important to check, therefore, that the lever is correctly positioned in the slot. If, when the engine is not running, the indicator shows DOWN, it should return to IDLE when the engine is started ; if it does not, probable failure of the hydraulic pump is indicated.

For emergency lowering of the undercarriage see para. 57.

15. **Undercarriage position indicators**

(i) The electrically operated visual indicator (2) has two semi-transparent windows on which the words UP (on a red background) and DOWN (on a green background) are lettered ; the words are illuminated according to the position of the undercarriage.

There is also a tailwheel indicator light.

(ii) Mechanical indicators are fitted ; these consist of small rods which protrude from the upper surface of the wings when the wheels are down.

16. **Flaps control**

The split flaps have two positions only, up and fully down. They are controlled by a finger lever (7) fitted on the top left-hand side of the instrument panel.

17. **Wheel brakes**

The brakes lever is fitted on the control column spade grip and a catch for retaining it in the on position for parking is fitted below the lever pivot. A triple pressure gauge (25), showing the air pressures in the pneumatic system and at each brake, is mounted on the left-hand side of the instrument panel.

ENGINE CONTROLS

18. **Throttle control**

The throttle quadrant is gated at the take-off position. Mixture control is fully automatic and there is no pilot's control lever. The short lever (38) on the inboard side of

the quadrant is a friction adjuster for the throttle and r.p.m. override control levers; forward movement increases the friction damping.

19. **R.p.m. control**

The r.p.m. control is interconnected with the throttle control. The interconnection is effected by a lever (37) similar to the normal r.p.m. lever, known as the override lever. When this is pulled back to the stop in the quadrant (the AUTOMATIC position) the r.p.m. are controlled by the positioning of the throttle lever (36). When pushed fully forward to the MAX. REVS. position it overrides the interconnection device and r.p.m. are then governed at approximately 2,750. The override lever can be used in the same way as the conventional r.p.m. control lever to enable the pilot to select higher, but not lower, r.p.m. than those given by the interconnection.

It must be remembered that the interconnection is effected only when the override lever is pulled back to the stop in the quadrant; indiscriminate use of the lever in any position forward of this stop will increase fuel consumption considerably.

At low altitudes the corresponding r.p.m. for a given boost with the override lever set at AUTOMATIC are as follows:—

Boost (lb./sq. in.)	R.p.m.
+ 3 and below	1,800 to 1,850
+ 7 (cruising)	2,250 to 2,400
+12 (at the gate)	2,725 to 2,775
+18 (fully open)	2,725 to 2,775

20. **Supercharger controls**

The two-speed two-stage supercharger is controlled by a switch (14) marked MS and AUTO. NORMAL POSITION, mounted on the right-hand side of the instrument panel. When this switch is set to MS the supercharger remains in low gear at all altitudes; when it is set to the AUTO. NORMAL POSITION an electro-pneumatic ram, which is controlled by an aneroid, automatically engages high gear at about 13,000 ft. when the aircraft is climbing and re-engages low gear at about 12,000 ft. when the aircraft is descending. There is a pushbutton (46) on the electrical panel for ground testing the gear

change and a red light on the instrument panel, next to the supercharger switch, comes on whenever high gear is engaged, either on the ground or in flight.

21. **Radiator shutters control**

The radiator shutters are fully automatic and there is no manual control. A pushbutton (45) for ground testing the operation of the shutters is fitted on the electrical panel.

22. **Fuel cut-off control**

The fuel cut-off control (34), which is used when starting and stopping the engine, is mounted outboard of the throttle lever. It is spring-loaded and is set forward to allow the injector type carburettor to deliver fuel to the engine. The fuel supply is cut off when the lever is pulled back and engaged in the gate.

23. **Cylinder priming pump and cock**

A type K.40 pump (52) for priming the engine is mounted immediately forward of the undercarriage selector lever. The priming selector cock (53) just forward of the pump, is marked MAIN, GROUND and ALL OFF. The first position is used for priming with normal fuel from the main fuel tanks, and the GROUND position for priming with high volatility fuel from an outside source in cold weather. In flight the cock must be in the ALL OFF position.

24. **Ignition switches**

The ignition switches (1) on the left-hand side of the instrument panel cannot be moved to the ON position until the electrical master switch is switched ON.

25. **Cartridge starter re-indexing control and pushbutton**

The Coffman starter breech re-indexing control (19) is a pull-grip toggle below the starboard side of the instrument panel. The magazine for the starter holds five cartridges which are fired by the engine starter pushbutton (20). This also operates the booster coil. No provision is made for starting the engine by hand.

26. **Carburettor air-intake filter control**

The filter control switch (67) marked CLEAN AIR—NORMAL is mounted on the undercarriage selector box.

OPERATIONAL EQUIPMENT AND CONTROLS

27. **Guns**

The .5 inch and 20 mm. guns are fired pneumatically by means of a selective pushbutton (9) on the control column spade-grip ; pressing the top of this pushbutton fires only the .5 inch, pressing the bottom fires only the 20 mm. guns, but pressing the centre of it fires the .5 inch and 20 mm. guns together.
The pushbutton is locked in the SAFE position by a catch at the bottom of its casing. When the catch is pushed up to FIRE, a small stud can be felt projecting through the top of the casing.

28. **Gyro gunsight controls**

The ranging control for the gyro gunsight is incorporated in the top of the throttle lever, and the selector (58) and ON—OFF (57) switches are on the cockpit starboard wall, above the undercarriage selector lever. The R.P.—GUNS selector (6) is on the port side below the R.P. selector (5) and PAIRS—SALVO switches (35). A pushbutton for caging the gyro of the gunsight is mounted on the control column spade-grip.

29. **Cameras**

(i) A G.45 cine camera is mounted in the starboard wing root and is pneumatically operated by the gun firing pushbutton or independently of the guns by a separate pushbutton (11) on the control column spade-grip. There is a master switch (49) on the electrical panel which must be ON before the cine camera will operate.

(ii) On FR Mk. 18 aircraft two vertical and one oblique camera are installed in the rear fuselage.
The type 35 control for these cameras is mounted high up on the cockpit starboard wall. The oblique camera is brought into operation by means of a pushbutton on the throttle lever. It is stopped by pressing the PRESS TO STOP button on the control unit.

30. **Bomb release controls**

The bomb distributor, fusing and selector switches (31) are mounted together on the port side of the cockpit, just forward of the door. The bomb release pushbutton is incorporated in the top of the throttle lever. For emergency drop tanks and bomb release controls (see para. 62).

OTHER CONTROLS

31. **Cockpit door**

The cockpit door is fitted with a two-position catch controlled by a lever (30) which allows it to be partly opened, thus preventing the sliding canopy from coming forward in the event of a crash or forced landing.
It will be found that the catch operates more easily when the aircraft is airborne than when it is on the ground.

32. **Sliding canopy**

(i) The " tear drop " canopy is opened and closed by a crank handle (56) mounted on the cockpit starboard wall, above the undercarriage selector lever.
The handle must be pulled inwards before it can be rotated. The canopy may be locked in any intermediate position by releasing the crank handle which then engages with the locking ratchet.

(ii) From outside the cockpit the canopy may be opened and closed by hand provided the pushbutton below the starboard hood rail is held depressed.

(iii) The canopy may be jettisoned in emergency (see para. 60).

33. **Windscreen de-icing**

A tank containing de-icing fluid is mounted on the lower starboard side of the cockpit. There is a cock (65) above the tank and a pump (62) and needle valve further aft to control the rate of flow of the fluid. This is pumped to a spray at the base of the windscreen over which it is blown by the slipstream.
After use the plunger must be locked down by the catch and the cock then returned to the OFF position.

34. **Navigation and identification lights**

(i) The switch (51) controlling the navigation lights is on the electrical panel.

(ii) The downward identification lights are controlled by a signalling switchbox (55) on the cockpit starboard wall, above the priming pump. Amber, red or green lights may be selected by a three-position switch (54) below the switchbox.

35. **Cockpit lighting**

Two floodlights are fitted, one on each side of the cockpit. The starboard light can be moved vertically and the port light can be moved in all directions. Both are shielded to prevent glare and are controlled by dimmer switches (22) mounted on the bottom of the instrument panel.

36. **Cockpit ventilation**

A small thumb lever at the top right-hand side of the instrument panel opens and closes the scoop which admits cold air to the cockpit.

37. **Oxygen system**

A Mk. 11C oxygen regulator (3) on the left-hand side of the instrument panel controls the flow of oxygen to the economiser.

38. **Special equipment on FR Mk. 18 aircraft**

(i) A signal discharger is fitted in the rear fuselage. The controls are on the port side of the cockpit.

(ii) Desert equipment can be carried in stowages reached through access doors in the upper surface of each wing.

PART II
HANDLING

39. **Management of the fuel system**

(i) Use of the booster pumps.

(a) The appropriate booster pump should be on for take-off, landing, when flying at high altitude or at any time should the fuel pressure warning light come on.

(b) The rear fuselage tanks booster pump should be switched on at all times when changing to or using fuel from these tanks.

ORDER OF USE OF TANKS

(ii) Main fuel system only

(a) Start the engine, warm up, taxy and take-off on the main tanks.

(b) When the level of the fuel in the main tanks drops to the red mark on the gauge, transfer fuel from one of the wing tanks. Return the transfer selector cock to NORMAL after five minutes, then transfer the fuel from the other wing tank and return the selector to NORMAL after a further five minutes.

(c) When all the fuel has been transferred, the selector cock should be left in the NORMAL position, otherwise, pressurising of the main tanks will not be effective.

(iii) When rear fuselage tanks are used

(a) Proceed as in (ii) (a) and as soon as practicable after take-off, select the rear tanks and turn off the main tanks cock.

(b) When two to three gallons remain in the rear tank, turn on the main tank cock and turn off the rear cock. For extreme range, turn on the main cock leaving the rear cock and booster pump on until the rear tank empties. This happens quickly and to prevent damage to the rear booster pump by running dry, it must be switched off as soon as the rear tank is empty. Then

turn off the rear tank cock and proceed as in (ii) (b) and (c) above.

(iv) When fitted with a drop tank

(a) If the rear fuselage tanks are not in use, the drop tank should be selected after take-off. If the rear fuselage tanks are full, their contents should be used before the drop tank.

(b) When flying at a low altitude, it is recommended that the changeover to the main tanks is made before the drop tank is completely empty, working on a time basis. At altitude, it is safe to drain the drop tank completely. When the fuel pressure warning light comes on or the engine cuts, proceed as follows :—

(i) Close the throttle.

(ii) Turn off the drop tank cock, turn on the main tank cock and switch on the booster pump.

(iii) Idle the engine until it runs smoothly then open up slowly.

(c) If it is necessary to jettison the drop tank before it is empty, switch on the main tanks booster pump and turn on the main tanks cock before turning the drop tank cock off.

(d) Always ensure that the drop tank cock is in the fully off position after the tank has been emptied and before and after it is jettisoned ; otherwise, air may be drawn into the main fuel system.

40. **Starting and warming up the engine.**

(i) After carrying out the external, internal and cockpit checks detailed in the Pilot's Check List, confirm :—

Main fuel cock... ...	ON
Wing transfer selector cock	NORMAL
Rear fuselage tank cock	OFF
Drop tank cock ...	OFF
Throttle	1½ inches open
R.p.m. override lever	Max. r.p.m. position.
Fuel cut-off control...	Fully aft
Priming selector cock	MAIN (GROUND for H.V. fuel)
Carburettor air-intake filter switch	CLEAN AIR

(ii) With the fuel cut-off control fully aft, switch on the main tank booster pump for 30 seconds to prime the system. Switch off the booster pump and after a few seconds, set the fuel cut-off control fully forward.

(iii) Index the cartridge starter breech.

(iv) Operate the priming pump until the fuel reaches the priming nozzles ; this may be judged by a sudden increase in resistance. High volatility fuel should be used for priming at air temperatures below freezing.

(v) Switch on the ignition. Prime with the following number of strokes if the engine is cold :—

Air temp. °C.	+30	+20	+10	0	−10	−20
Normal fuel	½	1	2	3	—	—
H.V. fuel	—	—	—	1	2	3

If engine is warm after recent running it will not require priming.

(vi) Leave the priming pump plunger out and press the engine starter pushbutton. Keep the button pressed until the engine is running steadily, as it also operates the booster coil. It may be necessary to continue priming gently until the engine picks up on the carburettor.

(vii) Screw down the priming pump and turn off the priming selector cock.

(viii) Open up slowly to 1,200 r.p.m. and warm up at this speed.

(ix) If the engine fails to start on the first cartridge, subsequent priming action will depend on whether the engine was initially over or under primed. Normally no further priming should be given except for half a stroke as each subsequent cartridge is fired, or less if the air temperature is high.

(x) While warming up at 1,200 r.p.m. carry out the checks detailed in the Pilot's Check List items 74 to 80.

41. **Exercising and testing**

After warming up until the oil temperature is 15°C. and the coolant temperature is 40°C. :—

(i) Test each magneto for a dead cut as a precautionary check before increasing power further.

(ii) Open up to the static boost reading (zero under standard atmosphere conditions) and check the operation of the

supercharger by pressing and holding in the test push-button. Boost should rise slightly and the red light come on when high gear is engaged. Release the test pushbutton, boost should fall slightly and the red light go out on return to low gear.

(iii) At the same boost, exercise and check the operation of the constant speed unit by moving the r.p.m. override lever through its full governing range past the automatic stop at least twice and then return it fully forward. Check that the r.p.m. are within 50 of those normally obtained, and check that the generator warning light is out.

(iv) Test each magneto in turn. The single ignition drop should not exceed 100 r.p.m. If it exceeds 100 r.p.m. but there is no undue vibration, a full power check should be carried out. If there is marked vibration, the engine should be shut down and the cause investigated.

(v) The following full power checks (for which the tail must be securely tied down) may also be carried out after repair, inspection other than daily, when the single ignition drop at the static boost reading exceeds 100 r.p.m. or at the discretion of the pilot. Except in these circumstances no useful purpose will be served by a full power check.

The full power checks should be carried out as follows:—

(a) Open the throttle fully and check take-off boost and r.p.m.

(b) Throttle back until the r.p.m. fall thus ensuring that the propeller is not constant speeding and test each magneto. If the single ignition drop exceeds 100 r.p.m. the aircraft should not be flown.

(c) Throttle back to +3 lb./sq. in. boost and set the r.p.m. override lever to AUTOMATIC when r.p.m. should fall to 1,800-1,850. Return the override lever to the maximum r.p.m. position.

(vi) After completing the checks either at static boost or full power, steadily move the throttle to the fully closed position and check the minimum idling r.p.m., then open up to 1,200 r.p.m.

(vii) Before taxying carry out items 81 and 82 of the Pilot's Check List.

42. **Take-off**

(i) Carry out items 83 to 91 of the Pilot's Check List.

(ii) Clear the engine if the run up has not been performed immediately prior to taxying on to the runway.

(iii) For a normal take-off, open the throttle slowly up to about +7 lb./sq. in. only. There is a strong tendency to swing to the right and to crab in the initial stages, and if much power is used tyre wear is severe. Power should be increased, consistent with rudder control, to +12 lb./sq. in. boost on becoming airborne.

(iv) The aircraft should be flown off at a speed of approximately 90 knots. At the maximum load with the rear fuselage tanks full, the aircraft may tend to pitch slightly immediately after leaving the ground.

(v) After raising the undercarriage, see that the red indicator light—UP—comes on and the tailwheel light goes out. It may be necessary to hold the lever through the gate at the top of the upper slot until the red indicator light does come on. Failure of the wheels to lock up will spoil the airflow through the radiators and oil cooler and result in excessive temperatures.

(vi) Move the r.p.m. override lever smoothly to AUTOMATIC when comfortably airborne.

(vii) As speed increases, directional retrimming will be necessary.

(viii) Set the air intake filter switch as required.

43. **Climbing**

(i) The speed for maximum rate of climb is 155 knots from sea level to 22,000 feet, reduced thereafter by 10 knots for every 5,000 feet.

(ii) *Maximum rate of climb using intermediate power.*

With the switch set to AUTO. the supercharger will automatically change to high gear at about 13,000 feet. This is the optimum gear change height for a full power climb. Under normal climbing conditions (2,600 r.p.m. +9 lb./sq. in. boost) the maximum rate of climb is obtained by delaying the gear change until the boost in low gear has dropped to +5 lb./sq. in. To do this proceed as follows :—

Set the supercharger switch to M.S., the throttle to give

+9 lb./sq. in. boost and climb at the speed quoted in (i). As the boost falls, the throttle should not be advanced to restore it, since the r.p.m. will then be increased beyond the maximum permitted for continuous operation. When boost has fallen to +5 lb./sq. in. set the supercharger switch to AUTO.

(iii) *Operational necessity*

Set the supercharger switch to AUTO. and open the throttle fully.

(iv) *Climbing for range*

Set the supercharger switch to M.S., the throttle to give +7 lb./sq. in. boost and climb at the recommended range speed (175-185 knots). As height is gained the boost will fall but the throttle should not be advanced to restore it. When the boost has fallen to +3 lb./sq. in. set the supercharger switch to AUTO.

(v) Use of the air intake filter considerably reduces full throttle height.

44. **General flying**

(i) *Stability*

(a) At normal loads, with no fuel in the rear fuselage tanks, longitudinal stability is satisfactory under all conditions of flight. With the rear fuselage tanks full, the aircraft is longitudinally unstable and tightens in turns especially at high altitudes. Stability is further reduced with the addition of a full 90 gallon drop tank and fuel in the rear fuselage tanks.

(b) Laterally the aircraft is neutrally stable under all conditions of flight.

(c) Directionally, the aircraft is stable, but the application of yaw promotes a marked change in longitudinal trim. This characteristic is most noticeable at high altitude and especially when the rear fuselage tanks are full.

(ii) *Controls*

The elevator, rudder and their trimming tabs are powerful and sensitive and should be used with care. The elevator remains light throughout the speed range but the rudder and ailerons become heavier as speed increases.

(iii) *Changes of trim*

Flaps down ... ... Nose up
Flaps up ... ... Nose down

Movement of the undercarriage in either direction or operation of the canopy promotes little change of trim. Changes of power and speed induce marked changes in directional trim. These should be countered by careful and accurate use of the rudder trimming tab.

(iv) *Flying at reduced airspeed*

Reduce speed to 140 knots and lower the flaps. Set the r.p.m. override lever to AUTOMATIC and open the canopy. Fly at about 140 knots keeping a close watch on oil and coolant temperatures. The stalling speed under these conditions is about 60 knots.

45. **Cruising for maximum range**

(i) The recommended speed for maximum range is 175-185 knots.

(ii) Set the supercharger switch to M.S., the r.p.m. override lever to AUTOMATIC and adjust the throttle to obtain the recommended speed. Avoid a throttle setting which promotes rough running. At high altitudes, it will be necessary to advance the throttle progressively to restore the falling boost and thus maintain the recommended speed. As the throttle is opened, r.p.m. will increase and at a certain height, the recommended speed will be unobtainable even at a throttle setting which gives 2,400 r.p.m. At this height, the supercharger switch should be set to AUTO. and the throttle then adjusted as before to maintain the recommended speed.

46. **Fuel consumptions** (approximate galls./hour).

(i) *Weak mixture and low gear at 5,000 ft.*

Boost lb./sq. in.	R.p.m.			
	2,400	2,200	2,000	1,800
+7	88	85	80	—
+4	74	71	67	60
+2	65	63	59	52
0	57	55	51	46
−2	50	47	43	41

NOTE.—For every 5,000 ft. increase in height add 4 gallons per hour.

(ii) *Weak mixture and high gear at* 20,000 *ft.*

Boost lb./sq. in.	R.p.m.			
	2,400	2,200	2,000	1,800
+7	95	92	87	—
+4	82	78	74	70
+2	73	70	66	63
0	66	63	59	56
−2	59	56	52	49

(iii) *Rich mixture and low gear at* 5,000 *ft.*

Boost lb./sq.in.	R.p m.	
	2,750	2,600
+ 18	180	—
+ 12	130	—
+ 9	—	103

47. **Position error corrections.**

From	115	140	155	180	210	230	260	300	330	knots
To	140	155	180	210	230	260	300	330	370	
Add	4	2	0	—	—	—	—	—	—	knots
Subtract	—	—	0	2	4	6	8	10	12	

48. **Stalling**

(i) With full main tanks and full ammunition, the approximate stalling speeds in knots are :—

Power off—Undercarriage and flaps up	75
Power off—Undercarriage and flaps down	65
Power on—Under typical landing conditions	60-65

(ii) The above speeds are increased by about 5 knots with the rear fuselage tanks full or with the addition of external stores.

(iii) There is very little warning of the approach of the stall, especially with power on, but slight buffeting occurs about 5 knots before the stall. At the stall either wing and the nose drop together and the tail buffeting becomes more pronounced. Continued backward pressure on the control column, results in stronger buffeting and an in-

creased tendency for either wing to drop. With the rear fuselage tanks full, there is a tendency for the nose to rise as the speed falls off.

(iv) If the aircraft is stalled in a turn or in the recovery from a dive, some warning is given by tail buffeting. At the stall the aircraft may flick in either direction. Recovery is immediate if the pressure on the control column is relaxed.

49. **Spinning**

(i) Intentional spinning is not permitted.

(ii) Should an unintentional spin occur, normal recovery action should be applied immediately.

50. **Diving**

(i) As speed is gained, the aircraft becomes increasingly tail heavy and should, therefore, be trimmed into the dive, although it can be held to the limiting speed without re-trimming. The tendency to yaw to port should be corrected by accurate use of the rudder trimming tab control.

(ii) Compressibility effects may be encountered when approaching the maximum diving speeds at high altitudes. These effects produce a nose down change of trim and there may be a tendency for either wing to drop. If the nose down change of trim is observed, it must be held on the control column alone, and no attempt must be made to correct it with the elevator trimming tab as this action will not immediately prove effective, and is likely to render recovery violent when the Mach number falls at a lower altitude.

(iii) When the rear fuselage tanks are full, care must be taken to avoid applying unduly high "g" in the recovery from dives. This can easily be done inadvertently and may overstress the aircraft's structure.

51. **Aerobatics**

(i) The following speeds in knots are recommended :—

Roll	190-220
Loop	280-300
Half roll off loop	300-350
Upward roll	300 plus

(ii) Flick manœuvres are prohibited.

(iii) Aerobatics are not permitted when carrying any external stores (except the 30 gallon blister type drop tank) or when there is any fuel in the rear fuselage tanks.

52. **Approach and landing**

(i) Carry out items 92 to 99 of the Pilot's Check List.

(ii) The recommended speeds in knots at which the airfield boundary should be crossed are :—

At maximum landing weight, flaps down

Engine assisted	85
Glide	95

(At light loads the above speeds may be reduced by 5 knots).

(iii) The initial approach should be made some 20 knots above these figures.

(iv) The above speeds should be increased by about 5 knots when landing with external stores.

53. **Mislanding and going round again**

(i) The aircraft will climb away easily with the undercarriage and flaps down and the use of full take-off power is unnecessary. The throttle should be opened slowly and care taken to maintain directional control.

(ii) Raise the undercarriage.

(iii) Climb at about 140 knots with the flaps lowered.

(iv) Raise the flaps at a safe height and retrim.

54. **After landing**

(i) Before taxying, carry out items 100 to 103 of the Pilot's Check List.

(ii) After reaching dispersal, if the serviceability of the engine is in doubt, such items of the run up given in para. 41 as may be necessary should be carried out. In all cases, however, the engine should be idled at 800-900 r.p.m. for half a minute and then stopped by moving the fuel cut-off control to the fully aft position.

(iii) When the engine has stopped, carry out items 104 to 112 of the Pilot's Check List.

(iv) *Oil dilution*

(a) The oil level should be adjusted to the normal full level.

(b) The recommended dilution periods for a cold start at the temperatures quoted are as follows :—

−10°C. to −15°C.	1 min.
−15°C. to −26°C.	2 mins.

(c) No special partial boiling off precautions are necessary.

PART III
LIMITATIONS

55. Engine limitations—Griffon 65 or 67

	Supercharger Gear	R.p.m.	Boost lb./sq. in.	Temp. °C. Coolant	Oil
TAKE-OFF 5 MINS. LIMIT	Low	2,750*	+12		
INTERMEDIATE 1 HOUR LIMIT	Low / High	2,600	+9	125	90
CONTINUOUS	Low / High	2,400	+7	105	90
OPERATIONAL NECESSITY 5 MINS. LIMIT	Low / High	2,750*	+18	135	105

* There is a tolerance on "maximum" r.p.m. (see para. 19).

OIL PRESSURE

NORMAL	60-80 lb./sq. in.
MINIMUM IN FLIGHT	45 lb./sq. in.

MINIMUM TEMPERATURES FOR TAKE-OFF.

OIL	+15°C.
COOLANT	+40°C.

56. Flying limitations

(i) Maximum speeds in knots

S.L. to 20,000 ft.	410
20,000 to 25,000 ft.	370
25,000 to 30,000 ft.	335
30,000 to 35,000 ft.	290
Above 35,000 ft.	265

(ii) With a 90-gallon drop tank, the following speeds must not be exceeded :—

S.L. to 10,000 ft.	380
10,000 ft to 15,000 ft.	350
15,000 ft. to 20,000 ft.	315
20,000 ft. to 25,000 ft.	280
25,000 ft. to 30,000 ft.	250

(iii) Maximum speeds with undercarriage and/or flaps down, 140 knots.

(iv) Maximum weights in lb. :—

For take-off and gentle manœuvres only ...	10,490*
For all forms of flying and landing	9,100

* At this weight take-off must be made only from a smooth hard runway.

(v) Flying restrictions

(a) Intentional spinning is not permitted.

(b) Gentle manœuvres only are permitted when carrying any external stores (except the 30-gallon "blister" type drop tank) when there is any fuel in the rear fuselage tanks.

(c) When carried, the 90-gallon drop tank must be jettisoned before any dive bombing is commenced.

(d) Except in emergency the fuselage bomb or drop tank must be jettisoned before landing with wing bombs fitted.

(e) When jettisoning a drop tank the aircraft should be flown straight and level at a speed not greater than 260 knots.

PART IV
EMERGENCIES

57. **Undercarriage emergency operation**

(i) If the selector lever jams and cannot be moved to the fully down position after moving it out of the gate, return it to the fully forward position for a few seconds to take the weight of the wheels off the locking pins thus allowing them to turn freely, then move it to the DOWN position.

(ii) If, however, the lever is jammed so that it cannot be moved either forward or downward, it can be released by taking the weight of the wheels off the locking pins either by pushing the control column forward sharply or inverting the aircraft. The lever can then be moved to the DOWN position.

(iii) If the lever springs into the slot and the indicator shows that the undercarriage is not locked down, hold it fully down for a few seconds. If this is not successful, raise and then lower the undercarriage again.

(iv) If the undercarriage still does not lock down, ensure that the lever is in the DOWN position (this is essential) and push the emergency lever forward and downward through 110°. On some aircraft the label quotes 90° ; this is incorrect. The CO_2 cylinders will lower the main wheels (if Mod. 1677 is incorporated—the tailwheels also). The lever should not be returned to its original position and no attempt must be made to raise the undercarriage until the emergency bottles have been replaced.

NOTE.—If the CO_2 cylinders have been accidentally discharged with the selector lever in the up position, the undercarriage will not lower unless the pipeline from the cylinder is broken, either by hand or by means of the crowbar.

(v) If the undercarriage has been lowered by the normal method and the main wheels have locked down satisfactorily but the tailwheel green light fails to come on, the emergency system should be used to lower the tailwheel. If, however, Mod. 1677 is not incorporated, this may not be successful.

58. **Failure of the pneumatic system**

(i) If the flaps fail to lower when the control is moved to the DOWN position, it is probably due to a leak in the pipeline, resulting in complete loss of air pressure ; this will also render the brakes inoperative.

(ii) Alternatively, if a leak develops in the flaps control system the flaps may lower, but complete loss of air pressure will follow and the brakes will become inoperative. (In this case a hissing sound may be heard in the cockpit after selecting flaps DOWN).

(iii) In either case the flaps control should immediately be returned to the UP position in order to allow sufficient pressure to build up, so that a landing can be made with the brakes operative but without flaps.

(iv) As a safeguard pilots should always check the pneumatic supply pressure after selecting flaps DOWN. If pressure is low and does not build up, a landing without brakes must be anticipated although sufficient air may remain for their partial use.

59. **Flapless landing**

At light loads, the initial approach should be made, with or without power, at about 110 knots, aiming to cross the airfield boundary at 90 knots.

60. **Canopy jettisoning**

The canopy may be jettisoned in an emergency by pulling the rubber knob inside the top of the canopy forward and downward and then pushing the lower edge of the canopy outwards with the elbows. Before jettisoning the canopy the seat should be lowered and the head then kept well down.

61. **Crash landing**

In the event of engine failure necessitating a crash landing :

(i) If a drop tank or bomb load is carried it should be jettisoned.

(ii) If oil pressure is still available the glide can be lengthened considerably by pulling the override lever fully back past the stop in the quadrant.

(iii) The fuel cut-off control should be pulled fully back and the booster pump switched off.

(iv) The sliding canopy should be opened and the cockpit door set on the catch (see para. 32).

(v) A speed of at least 115 knots should be maintained while manœuvring with the undercarriage and flaps retracted.

(vi) The harness should be tight and locked.

(vii) The flaps must not be lowered until it is abundantly clear that the selected landing area is within easy gliding reach.

(viii) The final straight approach should be made at a speed of about 90 knots.

62. **Emergency drop tank and bomb release**

In an emergency the bombs or drop tank may be jettisoned by pulling the toggle (40) mounted below the left-hand side of the instrument panel near the plate marked DANGER. EMERGENCY BOMB RELEASE.

63. **Ditching**

(i) Whenever possible the aircraft should be abandoned by parachute rather than ditched, since the ditching qualities are known to be poor..

(ii) When ditching is inevitable any external stores should be jettisoned, release will be more certain if the aircraft is gliding straight, and the following procedure observed:

(a) The canopy should be jettisoned.

(b) The flaps should be lowered in order to reduce the touchdown speed as much as possible.

(c) The undercarriage should be kept retracted.

(d) The safety harness should be kept tightly adjusted and locked and the R/T plug should be disconnected.

(e) The engine, if available, should be used to help make the touchdown in a taildown attitude at as low a forward speed as possible.

(f) Ditching should be along the swell, or into wind if the swell is not steep, but the pilot should be prepared for a tendency for the aircraft to dive when contact with the water is made.

64. **Crowbar**

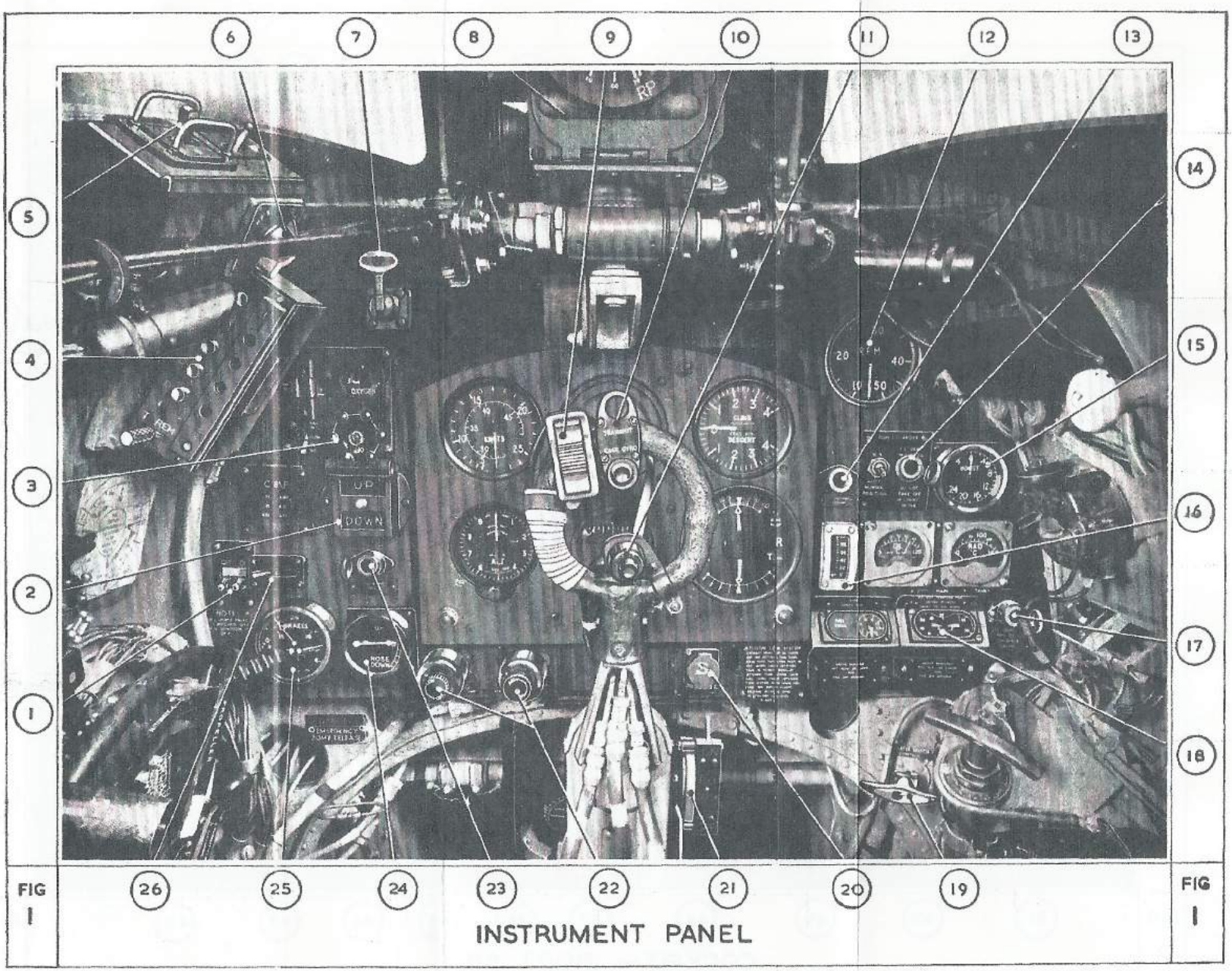
A crowbar (29) for use in emergency is stowed in spring clips on the cockpit door.

PART V
ILLUSTRATIONS

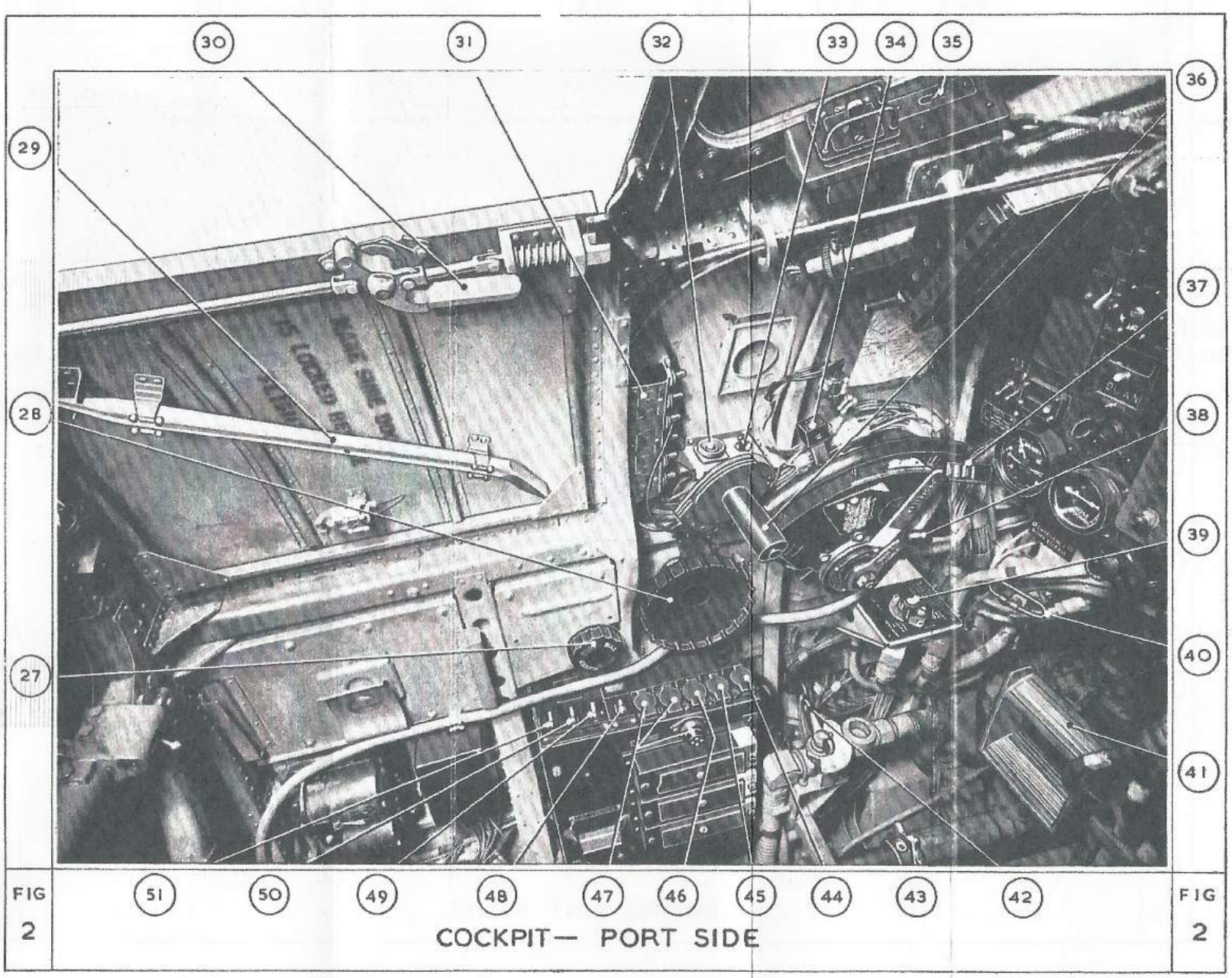
KEY TO *Fig.* 1

INSTRUMENT PANEL

1. Ignition switches.
2. Undercarriage indicator.
3. Mk. 11(c) oxygen regulator.
4. Radio pushbutton controller.
5. R.P./bombs selector switch.
6. R.P./guns selector for G.G.S.
7. Flaps selector lever.
8. Gyro gunsight.
9. Gun firing pushbutton.
10. Press-to-transmit and G.G.S. gyro caging pushbutton.
11. Cine camera pushbutton.
12. R.p.m. indicator.
13. Fuel pressure warning light.
14. Supercharger gear-change switch and indicator light.
15. Boost gauge.
16. Engine pressure and temperature gauges.
17. Low fuel level warning light.
18. Main tank fuel contents gauges.
19. Starter indexing control.
20. Starter pushbutton.
21. Main tank fuel cock control.
22. Panel light switches.
23. Tailwheel indicator light.
24. Elevator trimming tab indicator.
25. Pneumatic supply and brakes pressure gauge.
26. Electrical master switch.



INSTRUMENT PANEL



KEY TO *Fig.* 2

COCKPIT—PORT SIDE

27. Rudder trimming tab control.
28. Elevator trimming tab control.
29. Crowbar.
30. Cockpit door latch lever.
31. Bomb selector and fusing switches.
32. I.F.F. "g" button.
33. I.F.F. "g" switch.
34. Fuel cut-off lever.
35. R.P./bombs pairs/salvo switch.
36. Throttle lever and G.G.S. ranging control.
37. R.p.m. override lever.
38. Friction adjuster.
39. Fuel transfer selector cock.
40. Bomb emergency release.
41. Rudder pedal.
42. Rear fuel tank cock.
43. Rudder pedal adjuster.
44. Oil dilution pushbutton.
45. Radiator shutter test button.
46. Supercharger test button.
47. Booster pump test buttons and ammeter socket.
48. Booster pump master switch.
49. Cine camera master switch.
50. Pressure-head heater switch.
51. Navigation light switch.

KEY TO *Fig.* 3

COCKPIT—STARBOARD SIDE

52. Cylinder priming pump.
53. Cylinder priming cock.
54. Recognition light selector switch
55. Identification light switch box.
56. Canopy winding handle.
57. Gyro gunsight master switch.
58. Gyro gunsight selector dimmer.
59. I.F.F. demolition switches.
60. Harness release.
61. Undercarriage emergency lever.
62. Windscreen de-icing pump.
63. Fuel tank pressure release cock.
64. Undercarriage selector lever.
65. Windscreen de-icing cock.
66. Fuel drop tank jettison control.
67. Air-intake filter switch.
68. Drop tank fuel cock lever.

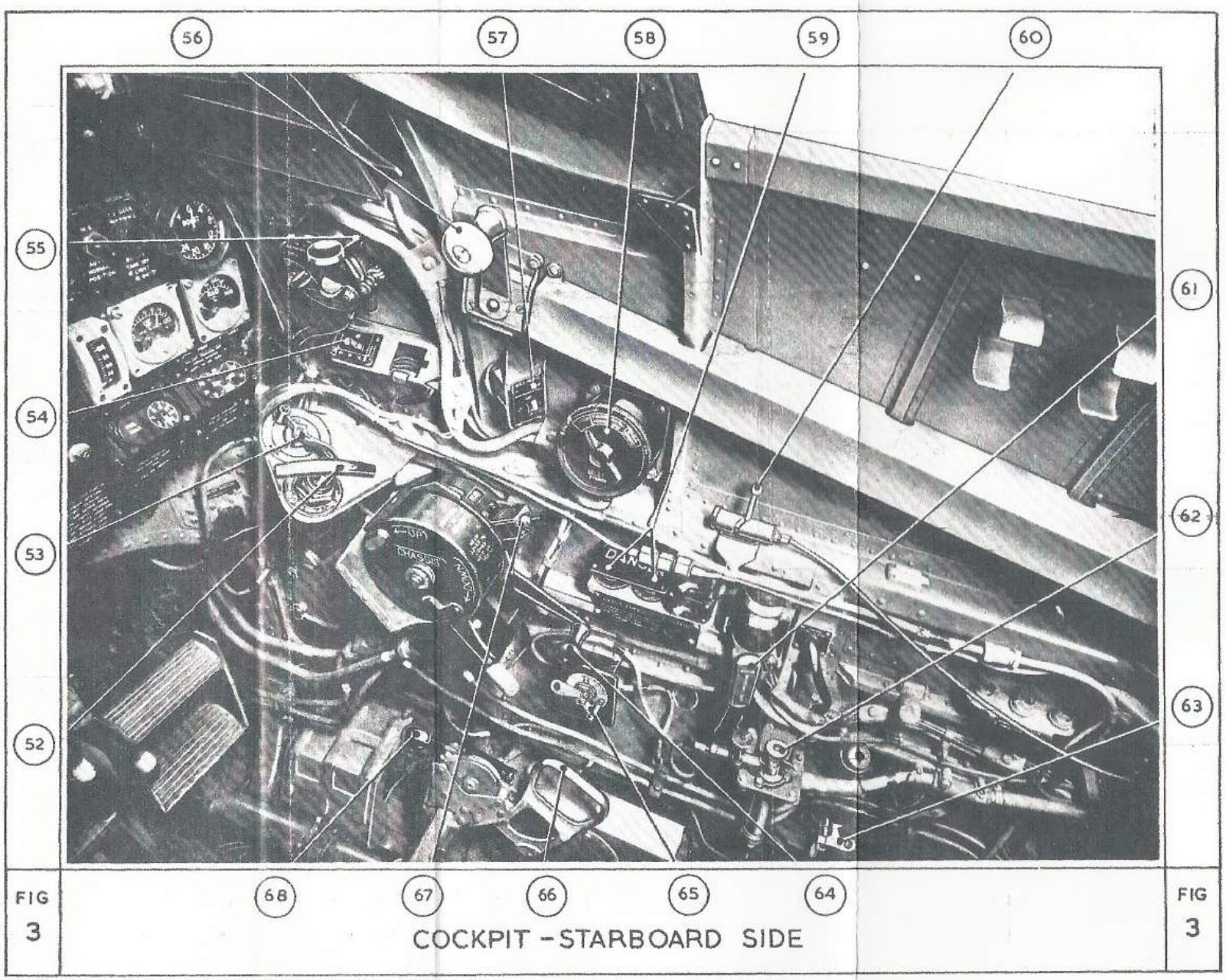


FIG 3

COCKPIT - STARBOARD SIDE

FIG 3

FINAL CHECKS FOR TAKE-OFF

TRIM	... ELEVATOR: NEUTRAL
	RUDDER: FULLY LEFT (WHEEL FULLY BACK)
PROP.	... OVERRIDE LEVER FULLY FORWARD
FUEL	... CONTENTS
	MAIN COCK ON
	BOOSTER PUMP ON
	TRANSFER COCK NORMAL
FLAPS	... UP

FINAL CHECKS FOR LANDING

FUEL	... CONTENTS
	MAIN COCK ON
	BOOSTER PUMP ON
	TRANSFER COCK NORMAL
BRAKES	... OFF
	CHECK PRESSURES
WHEELS	... DOWN AND LOCKED
PROP.	... 2,600 R.P.M.
FLAPS	... DOWN

These are being listed for the
beniffit for people interested
in British or Commonwealth
Aircraft
While it did cost me a great
sum of money to aquire
these documents, all I ask in
return is some credit.
~JimSan