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SECTION

1

PILOT'S CONTROLS AND EQUIPMENT

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SECTION 1

PILOT'S CONTROLS AND EQUIPMENT

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

Introduction

1. This Section serves as a general guide to the location of all the controls, equipment and instruments in the pilot's cockpit, with the method of operating the controls wherever this is not obvious. The various main systems are covered in full in their appropriate Sections as follows:—Fuel systems and engine controls in Sect. 8; Hydraulic and pneumatic systems in Sect. 9; and electrical systems in Sect. 6.

2. In order to simplify reference to any particular control or equipment, the illustrations are grouped under four main headings as indicated in the List of Illustrations above. Capital letters in the text indicate actual markings of items in the aircraft.

3. Some emergency controls are included in their appropriate groups but reference must be made to Sect. 2 for details of their operation.

Entry to cockpit

4. The only entry to the cockpit is with the canopy fully open; the operating handle on the right hand coaming is rotated to open or close the canopy. When opening the canopy, the initial turn of the handle will partially operate the canopy seal lever, to warn the pilot that it must be turned OFF before opening the canopy. To open or close the canopy from the outside press the button on the starboard side of the fuselage marked PRESS TO SLIDE CANOPY when it may be moved as desired.

Pilot's seat

5. The seat is a standard S.B.A.C. plastic design, and is adjustable for height by a lever arm on the right-hand side of the seat. For leg reach the rudder pedals are adjustable, fore-and-aft, by lifting them against the tension of the springs from one ratchet plate slot to another. The location of the release catch for the pilot's harness is shown in Sect. 2.

Cockpit ancillary equipment

Cabin seal

6. On the first 50 aircraft a lever is fitted next to the throttle lever for operating the cabin seal when the cabin hood is closed. The lever is moved to ON and air from the pressure side of the vacuum pump expands the rubber seal. Before the canopy can be made to slide open, the lever is moved to the OFF position, when air will be sucked from the sealing rubber.

7. Subsequent aircraft are fitted for pressurising the cabin, and the canopy seal pressure is maintained from the engine blower casing, a branch pipe being led from the engine blower casing to the cabin seal through a non-return valve. The lever for operating this is behind the throttle lever. It operates an oil clutch which brings the supercharger in or out of action as necessary. A manually-operated cock on the right-hand side of the cockpit deflates the cabin seal as necessary by transferring the pressure line to the suction side of the vacuum pump.

Cockpit lighting

8. The U.V. red light system is used and the dimmer switch arrangements will be found on the right-hand side of the cockpit above the electrical panel. A U.V. and red lamp are paired, and positioned on either side of the cockpit, and two red lamps are mounted on the lower centre instrument panel.

Oxygen supply

9. A Mk. 9A regulator is fitted to the right-hand side of the instrument panel; the high pressure control cock is fitted on the oxygen regulator which controls the supply to the oxygen economiser.

Pressure head heating

10. The switch is mounted on the electrical panel; when not required it should always be switched OFF.

FLYING CONTROLS AND EQUIPMENT

Control column and rudder pedals

11. These are conventional in operation; the single-hand-grip column carries the brake control lever and parking catch, gun firing switch and press-to-speak switch. The rudder pedals can be adjusted in flight as described in para. 5.

Trim-tab controls

12. The elevator tabs are the only controllable tabs in the aircraft and they are controlled by a hand wheel on the throttle control box. The indicator is on the top centre instrument panel on the left-hand side.

Wing flaps control

13. The operation of the wing flaps is controlled by a lever to the right of the undercarriage lever. The lever has a quadrant marked FLAPS UP—NEUTRAL—DOWN, and should be manually-operated to the NEUTRAL position on the completion of an operation. Any flap angle up to 80 deg. can be obtained by returning the lever to NEUTRAL when the desired angle is shown on position indicator. The lever should be left in the UP position for flaps up.

Dive brakes

14. Above the undercarriage and flap control levers on the throttle control box, is positioned the lever for operating the dive brakes. The lever quadrant is marked OFF—DIVE BRAKES—ON.

Wheel brakes

15. The brakes are operated pneumatically and are applied by operation of the lever on the control column. Differential control is obtained by operating the rudder pedals with the control lever ON. A parking catch for locking the lever in the ON position is mounted next to the brake lever.

Alighting gear

Selector lever

16. The alighting gear selector lever is positioned on the engine control box and has two positions only: UP or DOWN. It is held in the DOWN position by an electric solenoid plunger at the control box and cannot be raised until the aircraft is clear of the ground.

There is, however, an interlock override switch positioned on the top left hand instrument panel for use in emergencies.

Undercarriage indicator

17. The indicator is positioned on the instrument panel, and the indicator lamps have dimmer screens for night flying. Indications are :—

(i) Wheel units locked UP....	No lights
(ii) Wheel units locked UP, but throttle less than ¼ open	One RED light (above the R.P.M. indicator)
(iii) Wheel units between UP and DOWN	Three RED lights (on the under-carriage indicator)
(iv) Wheel units locked DOWN	Three GREEN lights (on the under-carriage indicator)

When the main wheels are lowered the red lights do not go out until the DOWN lock is engaged. There is no warning horn. For details of the ground locking devices, refer to Sect. 4, Chap. 2.

ENGINE AND ASSOCIATED CONTROLS

Engine controls

Throttle control

18. The throttle lever is mounted on the control box on the left-hand cockpit wall. The lever controls a metering device, in the control box of the power unit, which regulates the amount of fuel admitted to the combustion chambers. As the amount of fuel burned is the governing factor of r.p.m., the control is in every way similar to the normal hand throttle. There is no gate provided for either the maximum take-off or the maximum cruising positions.

Starter button

19. The starter button and starter switch are positioned at the forward end of the electrical panel. There is a ground starter plug under the starboard wing for the ground starter batteries. A booster coil press switch is positioned under the left-hand scuttling for re-lighting in the air (*see Pilot's Notes*).

Fuel system

Fuel tanks

20. The fuel is carried in three main tanks (one centre and two inboard wing tanks) and two drop tanks suspended under each wing. The inboard wing tanks are connected to the fuel collector box at the bottom of the centre tank by 1in. bore fuel pipes. The wing drop tanks are pressurised, for fuel transfer, from the pressure side of the vacuum pump. There is only one main ON—OFF fuel cock controlled by a red painted lever on the underside of the throttle control box in the cockpit.

21. Fitted to the underside of the centre tank is a negative "G" reservoir which holds approximately two gallons of fuel and is fitted with a gravity valve which closes on inverted flight.

Note . . . The maximum time allowed for inverted flight is 10 seconds.

Fuel cock control

22. The control lever, painted red, on the underside of the throttle box, is moved forward for fuel ON, and backward for fuel OFF. This lever controls both the high and low pressure fuel shut-off valves simultaneously. A fuel booster pump switch is positioned to the rear of the electrical panel next to the gun-sight switch.

Fuel contents gauges

23. The three fuel gauges, on the bottom centre instrument panel, register the contents of the port wing tanks, the centre tank and the starboard wing tanks respectively. There are no fuel gauges for the wing drop tanks.

Fuel tank venting

24. The main wing fuel tanks are vented direct to atmosphere via a common vent pipe which extends to the bottom of the fireproof bulkhead from the top of the main fuel tank.

Fuel drop tanks

25. The fuel drop tanks are pressurised from the pressure side of the vacuum pump, for transferring the fuel to the wing tanks. There are no controls for this ; the pressure is on all the time. The press button for jettisoning the fuel drop tanks is on the left-hand instrument panel.

Oil system

26. The engine carries its own supply in a small sump situated at the front of the engine low down on the port side of the front casing. A gear type pump is situated on the sump which supplies oil at 40 to 45 lb./sq. in. pressure through a filter.

Oil pressure gauge

27. The oil pressure gauge is fitted on the left-hand instrument panel and gives the pressure as delivered from the pump to the accessory gear sprays and metering pumps. The metering pump warning lights are positioned on the centre instrument panel and will give a warning when there is " NO FLOW " or " EXCESSIVE PRESSURE " in the metering pump lines.

Electrical system

28. A generator driven by the engine supplies electrical power for :—

Instruments and cockpit lighting,	Undercarriage warning lights,
Identification, navigation and landing lamps,	Fuel pressure warning,
Radio,	Fire extinguisher, R.I. compass and gun operation.

Note . . . A red warning light, on the right-hand side of the top centre instrument panel, lights when the generator is not charging. On the ground, so long as the accumulators are connected, this light will function, but the current consumed is negligible.

OPERATIONAL CONTROLS

Gun and camera gun controls

Gun control

29. The thumb-operated switch, with safety flap, on top of the control column, acts as master and firing switches for the guns. The flap over the switch is the safety control and has to be raised before the guns are fired.

Camera gun control

30. The camera gun master switch, on the right-hand side of the top centre instrument panel, must be ON before the camera can be operated, either alone by pressure on the switch at the top of the control column (above the gun switch) or, when the safety flap is lifted, by operation of the gun firing switches. A camera footage indicator is on the right-hand instrument panel.

Gun sight

31. The gyro gun sight, mounted in front of the pilot, can be controlled from the throttle control lever during acceleration. The gun sight switch is mounted to the rear of the electrical panel.

NAVIGATION AND SIGNALLING CONTROLS

Radio

32. The T.R. 1464 is installed in the compartment behind the pilot's seat and is controlled by a push button unit on the lower left-hand side of the instrument panel. A press-to-speak switch is also fitted on the top of the control column.

33. The controller for the I.F.F. (R. 3121) is on the right-hand instrument panel and the G manual and AUTO is positioned on the left-hand instrument panel next to the V.H.F. controller.

Identification lights

34. A selector switch for selecting RED, GREEN or AMBER is positioned on the electrical panel with a push button for operating the downward identification lights for steady illumination or morsing.

Navigation lights

35. The switch for the navigation lights is on the electrical panel.

Landing light

36. The switch for the one landing light, on the port wing, is situated to the rear of the electrical panel. The switch has three positions, OFF—LOW—HIGH.

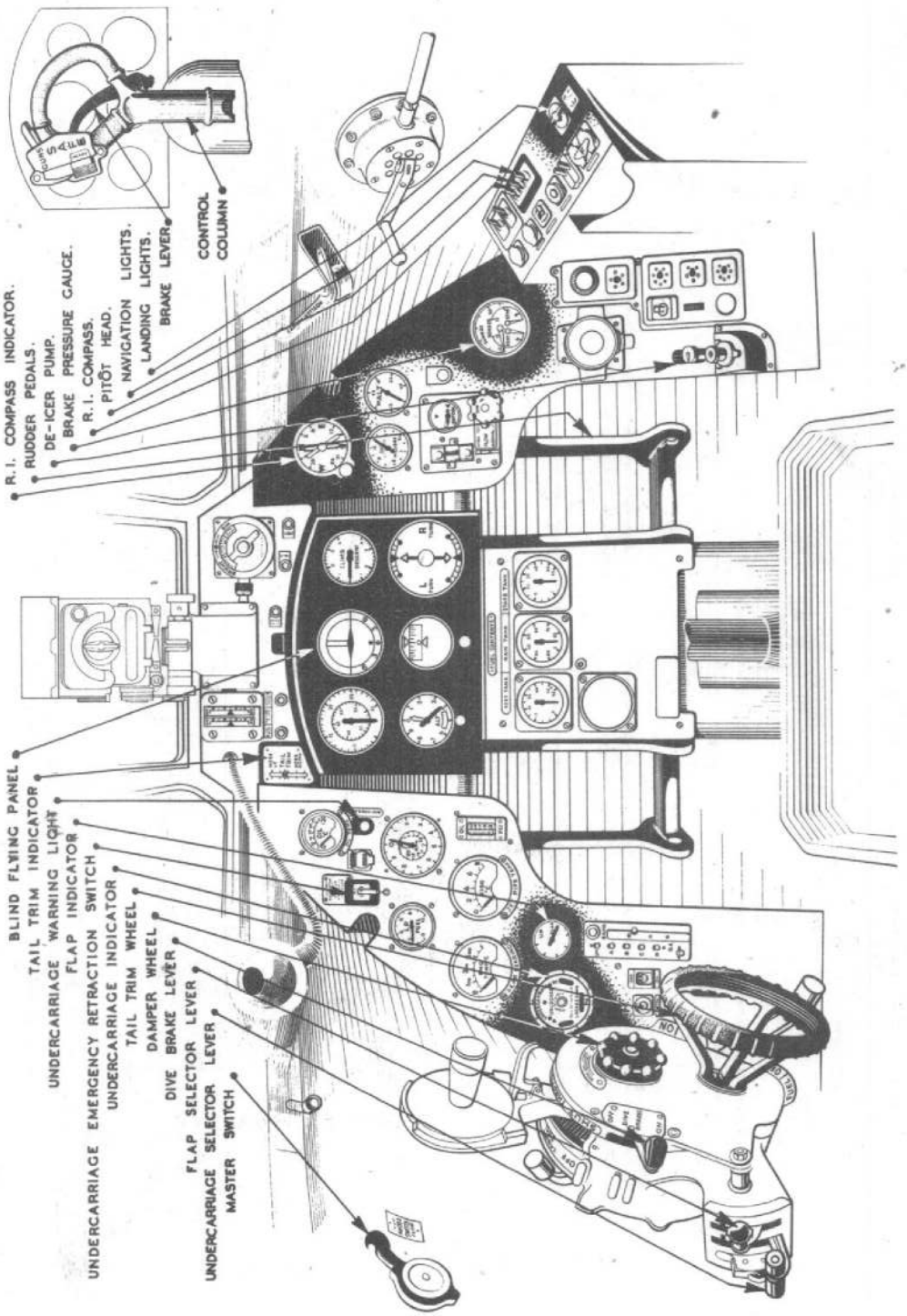

FIG. 1 — FLYING CONTROLS — FIG. 1

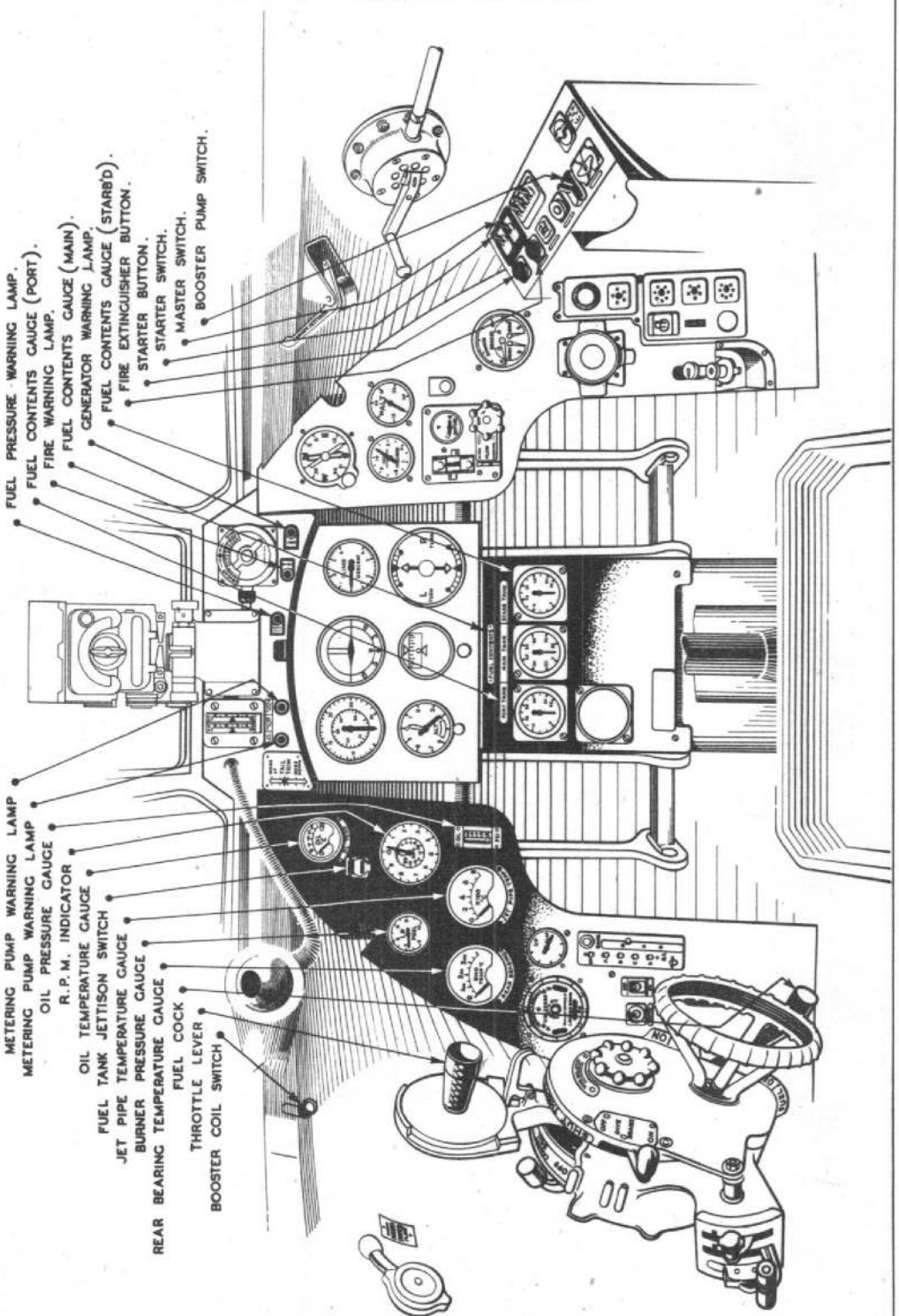

FIG. 2 **ENGINE CONTROLS** FIG. 2

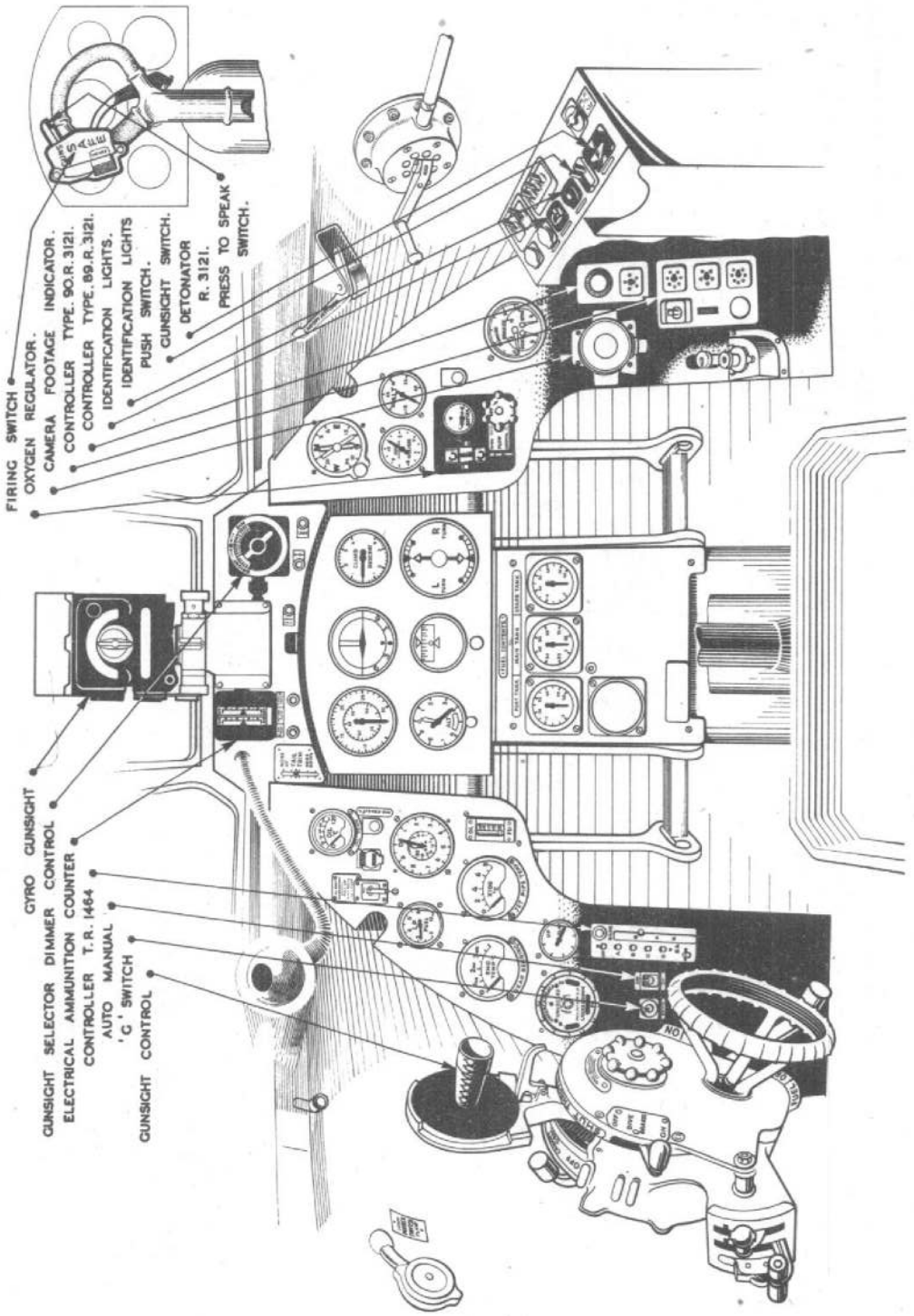

FIG. 3 — OPERATIONAL EQUIPMENT — FIG. 3

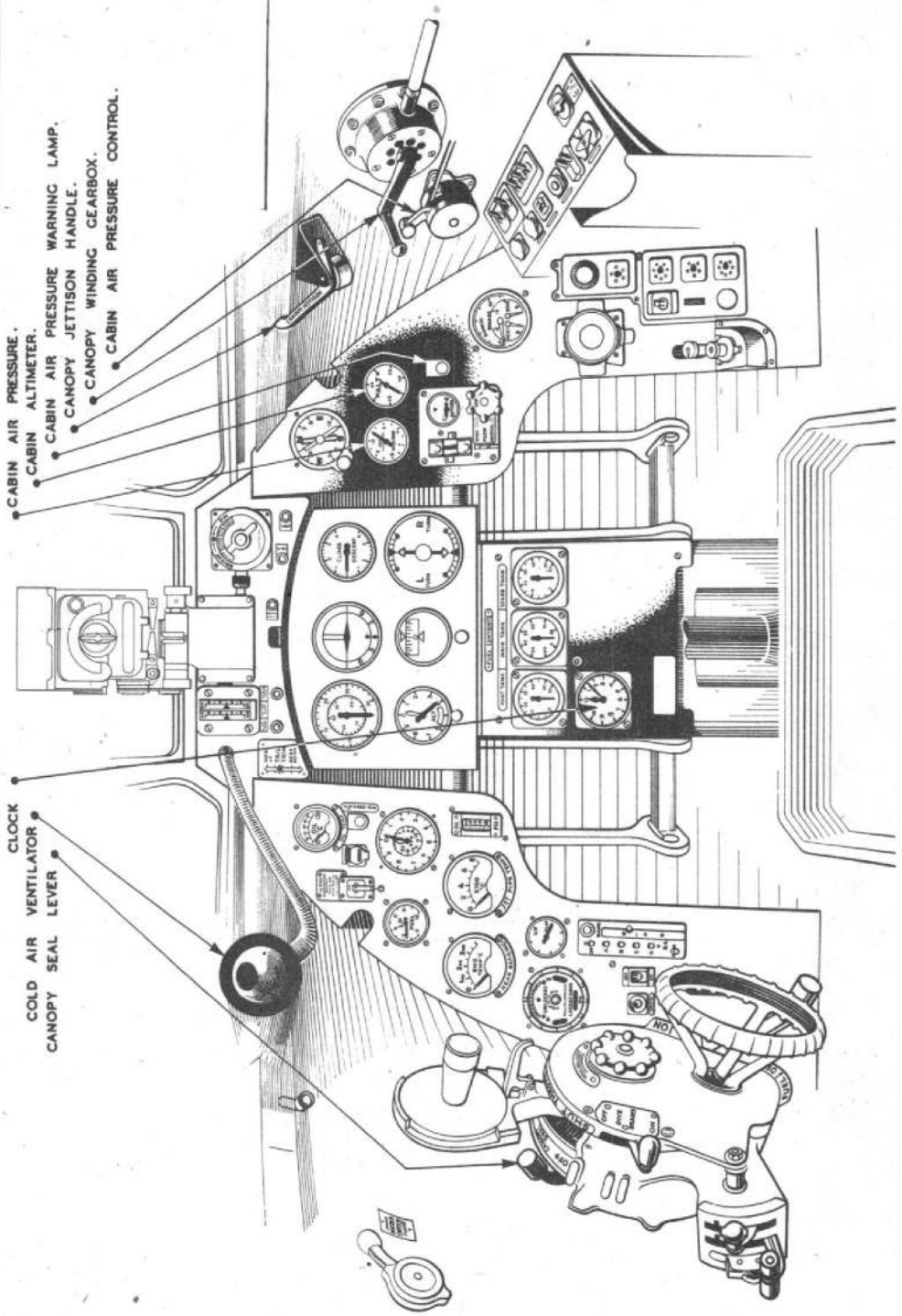

FIG. 4 **MISCELLANEOUS EQUIPMENT** FIG. 4

(17099) Wt. T.16975/G.3620/M.00812. 325. 12/45. P.L.H. & CO. LTD. G.943.