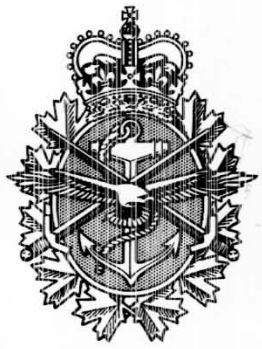
EO 05-10B-1

CANADIAN FORCES



AIRCRAFT OPERATING INSTRUCTIONS

CHIPMUNK

(This EO replaces EO 05-10B-1 dated 15 Apr 58)

REVISION NOTICE

LATEST REVISED PAGES SUPERSEDE THE SAME PAGES OF PREVIOUS DATE
Insert revised pages into basic publication.
Destroy superseded pages.

ISSUED ON AUTHORITY OF THE CHIEF OF THE DEFENCE STAFF

15 DEC 66
Revised 12 Dec 68

LIST OF REVISIONS

DATE	PAGE NO	DATE	PAGE NO
7 Jul 67	i		
7 Jul 67	iv		
7 Jul 67	v		
7 Jul 67	vi		
7 Jul 67	vii		
7 Jul 67	6		
7 Jul 67	10		
7 Jul 67	11		
7 Jul 67	13		
7 Jul 67	17		
7 Jul 67	21		
7 Jul 67	22		
7 Jul 67	23		
7 Jul 67	28		
7 Jul 67	31		
7 Jul 67	33 to 37		
12 Dec 68	i		
12 Dec 68	iii		
12 Dec 68	iv		
12 Dec 68	vii		
12 Dec 68	6		
12 Dec 68	8		
12 Dec 68	13		
12 Dec 68	14		
12 Dec 68	19		
12 Dec 68	20		
12 Dec 68	21		
12 Dec 68	22		
12 Dec 68	24		
12 Dec 68	25		
12 Dec 68	27		
12 Dec 68	28		
12 Dec 68	30		
12 Dec 68	33		

EO 05-10B-1

CANADIAN ARMED FORCES

AIRCRAFT OPERATING INSTRUCTIONS

CHIPMUNK

(This EO replaces EO 05-10B-1 dated 15 Apr 58)

REVISION NOTICE

LATEST REVISED PAGES SUPERSEDE THE SAME PAGES OF PREVIOUS DATE

Insert revised pages into basic publication.
Destroy superseded pages.

ISSUED ON AUTHORITY OF THE COMMANDER, TRAINING COMMAND

15 DEC 66

Revised 7 Jul 67

LIST OF REVISIONS

DATE	PAGE NO	DATE	PAGE NO
7 Jul 67	i		
7 Jul 67	iv		
7 Jul 67	v		
7 Jul 67	vi		
7 Jul 67	vii		
7 Jul 67	6		
7 Jul 67	10		
7 Jul 67	11		
7 Jul 67	13		
7 Jul 67	17		
7 Jul 67	21		
7 Jul 67	22		
7 Jul 67	23		
7 Jul 67	28		
7 Jul 67	31		
7 Jul 67	33 to 37		
(Issued on a restricted basis)			

EO 05-10B-1

CANADIAN ARMED FORCES



AIRCRAFT OPERATING INSTRUCTIONS CHIPMUNK

(This EO replaces EO 05-10B-1 dated 15 Apr 58)

ISSUED ON AUTHORITY OF THE COMMANDER, TRAINING COMMAND

15 DEC 66

LIST OF REVISIONS

DATE	PAGE NO	DATE	PAGE NO

NOTES TO USERS

1 This publication is divided into five Parts: Description, Handling, Emergency Handling, Operating Data, and Flight Testing.

2 PART 1 - DESCRIPTION of the controls and equipment with which the pilot should be acquainted.

3 PART 2 - HANDLING describes the normal handling of the aircraft by the pilot.

4 PART 3 - EMERGENCY HANDLING describes the emergency handling of the aircraft by the pilot.

5 PART 4 - OPERATING DATA gives the flying and engine limitations and includes information on fuel consumption, range, and endurance under various conditions of flight.

6 PART 5 - FLIGHT TESTING lists the procedures to be followed and the performance standards to be attained during flight testing of the complete aircraft or an individual system after maintenance.

7 In the text, words written in capital letters indicate actual markings on the controls concerned.

8 Comments and suggestions should be forwarded through the usual channels to the Commander, Training Command, attention: Deputy Chief of Staff Flying Training (DCOS FlyTrg).

9 Warning, Caution, and Note headings in this Engineering Order are defined as follows:

WARNING

To cover operating procedures, practices, etc., which, if not followed, will result in loss of life or destruction of equipment.

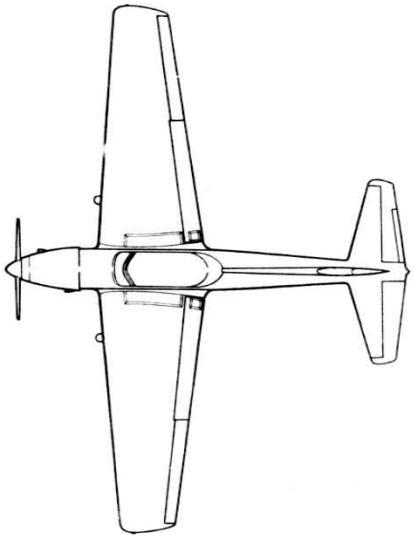
CAUTION

To cover operating procedures, practices, etc., which, if not observed, will result in damage to equipment.

NOTE

Any operating procedure, event, etc., which it is desirable to highlight.

THE CHIPMUNK



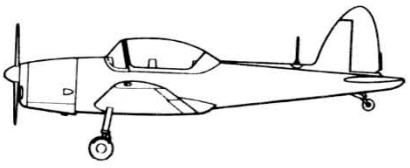


TABLE OF CONTENTS

PART 1

DESCRIPTION

PART 2

HANDLING

PART 3

EMERGENCY HANDLING

PART 4

OPERATING DATA

PART 5

FLIGHT TESTING

(This part is issued on a restricted basis)

LIST OF ILLUSTRATIONS

PART 1

DESCRIPTION

INTRODUCTION

1 The Chipmunk is a low-wing, single-engine aircraft of metal construction, designed for elementary flying instruction. It accommodates two in tandem arrangement, with duplicate controls and instruments in each cockpit. The engine develops 140 bhp at sea level and is fitted with a fixed-pitch metal propeller. The fuselage is of all-metal, semi-monocoque construction. The wings are of cantilever construction, with a fabric-covered rear section, containing a false spar that supports the flaps and ailerons. The tail assembly comprises an all-metal horizontal stabilizer and fin, and fabric-covered elevators and rudder. For dimensions of the aircraft, see Figure 1-1; for interior cockpit arrangement, see Figure 1-5.

LEADING PARTICULARS

DIMENSIONS

2 The overall dimensions of the aircraft are as follows:

Length	25 ft. 5 in.
Span	34 ft. 4 in.
Height	7 ft. 0 in.
Wheel Track	8 ft. 11 in.

WEIGHT

3 The maximum gross weight of the aircraft is 2,000 lbs.

FUEL AND OIL TANK CAPACITIES

4 Tank capacities are as follows:

Fuel	27 Imp gal.
Oil	2-2/3 Imp gal.

FUEL SYSTEM

GENERAL (see Figure 1-2)

5 Fuel is contained in two pliocel synthetic rubber fuel cells located in the "D" nose of the wing roots. Each cell has a capacity of 13½ Imp gal. and is equipped with a mechanically operated, float-type fuel quantity gauge, the indicator being mounted flush with the upper surface of the wing. The cells are not interconnected.

FUEL SELECTOR LEVER

6 A fuel selector lever is located to the left of the control column in each cockpit. The levers are interconnected and operate the fuel selector valve through a mechanical linkage. The positions are marked RIGHT TANK, LEFT TANK, and OFF.

FUEL PRESSURE GAUGE

7 A combined fuel pressure, oil temperature and pressure gauge is located on the right-hand side of the instrument panel (18, Figure 1-5).

FUEL QUANTITY INDICATORS

8 The fuel quantity indicators, one located on each wing, are graduated in large and small figures. The large figures indicate quantities in flying attitude, while the small figures indicate quantities in the three-point attitude.

PRIMER PUMP

9 The hand-operated engine primer pump (23, Figure 1-5) is located to the right of the instrument panel in the front cockpit. The pump draws fuel from the right-hand fuel tank and injects it into the induction manifold at four points.

CARBURETTOR IDLE CUT-OFF CONTROL

10 The aircraft is equipped with a carburettor

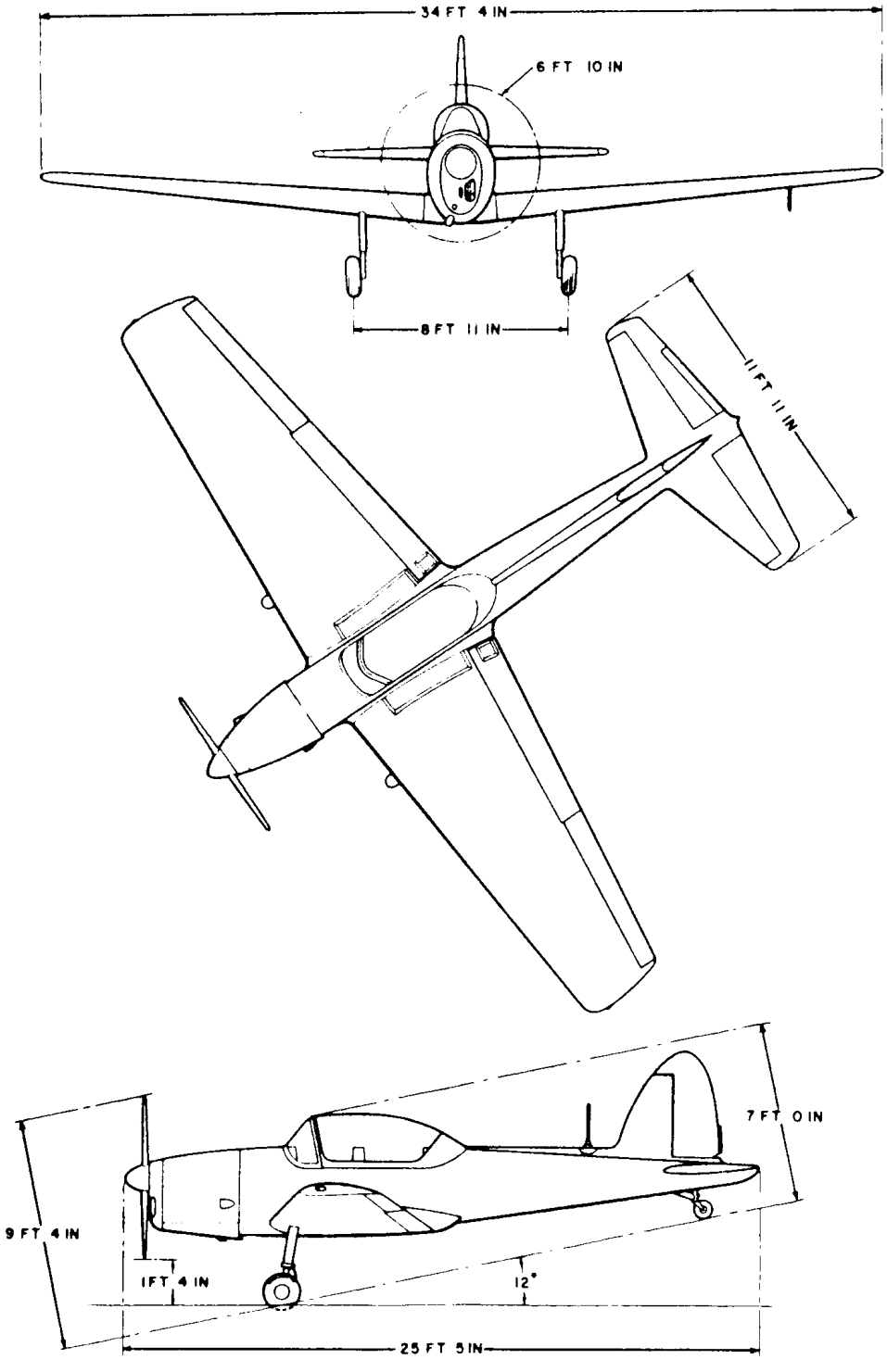


Figure 1-1 (Issue 1) Aircraft Dimensions

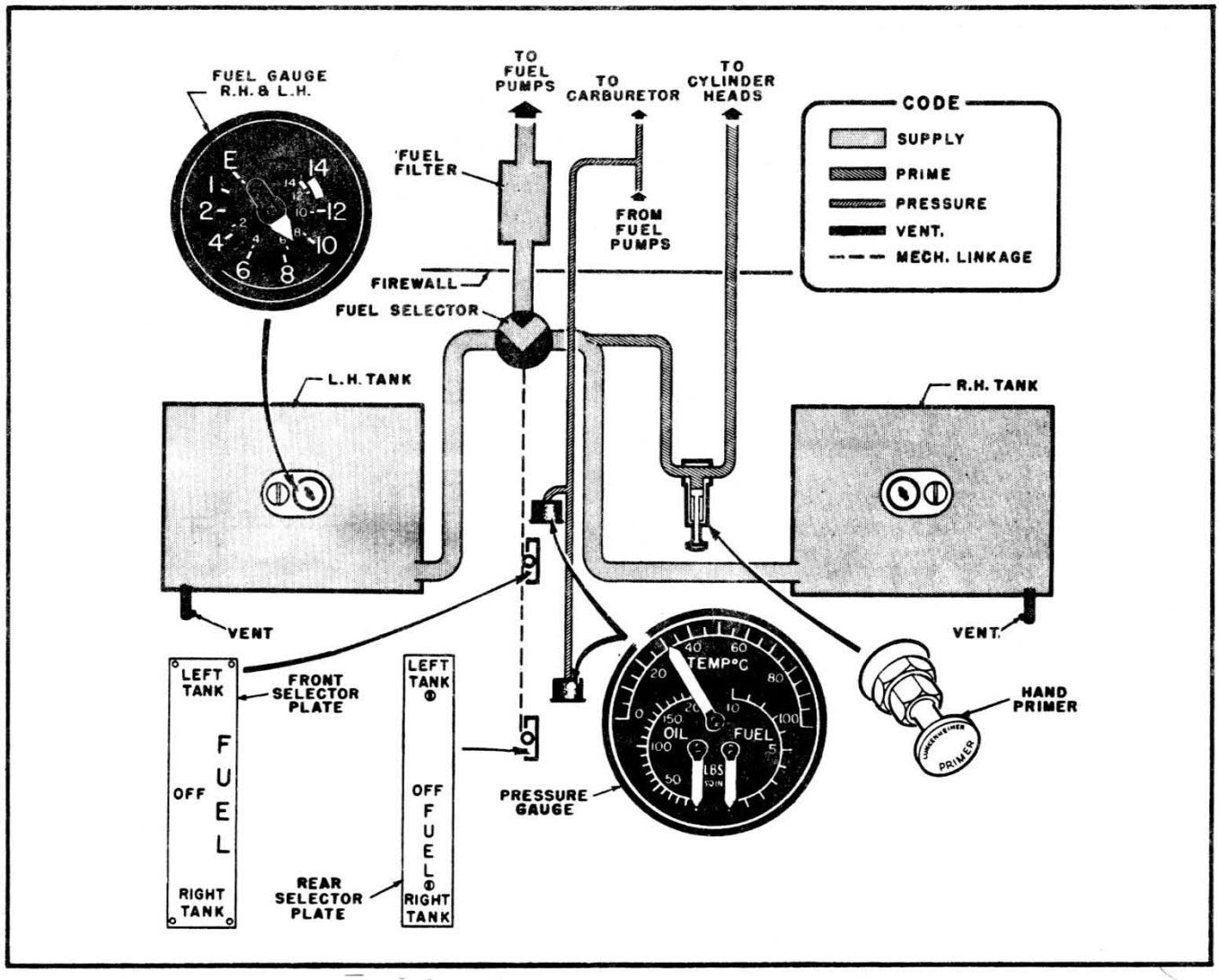


Figure 1-2 (Issue 1) Fuel System - Schematic

idle cut-off control which is mounted on the right side of the front cockpit (26, Figure 1-5). It is used to shut down the engine from idle, as outlined in Part 2, Shut-Down Check.

FUEL PUMP

11 There is a dual fuel pump on the left side of the engine block, and fuel from a single inlet hose is pumped through a common feed pipe to the carburettor.

FUEL SPECIFICATION

12 Recommended fuel: 80/87 gasoline 3-GP-25 (NATO F-12). There is no alternate fuel.

OIL SYSTEM

GENERAL (See Figure 1-3)

13 The oil for engine lubrication is supplied from a 2-2/3 Imp gal + 1 gal air space tank, mounted on the forward face of the firewall. Cooling air is scooped in on the left side of the cowling, ducted around the oil tank and exhausted through a louvre on the right side. Access to the combined filler cap and dipstick is gained through a quick-release panel in the oil tank cooling shroud at the right side.

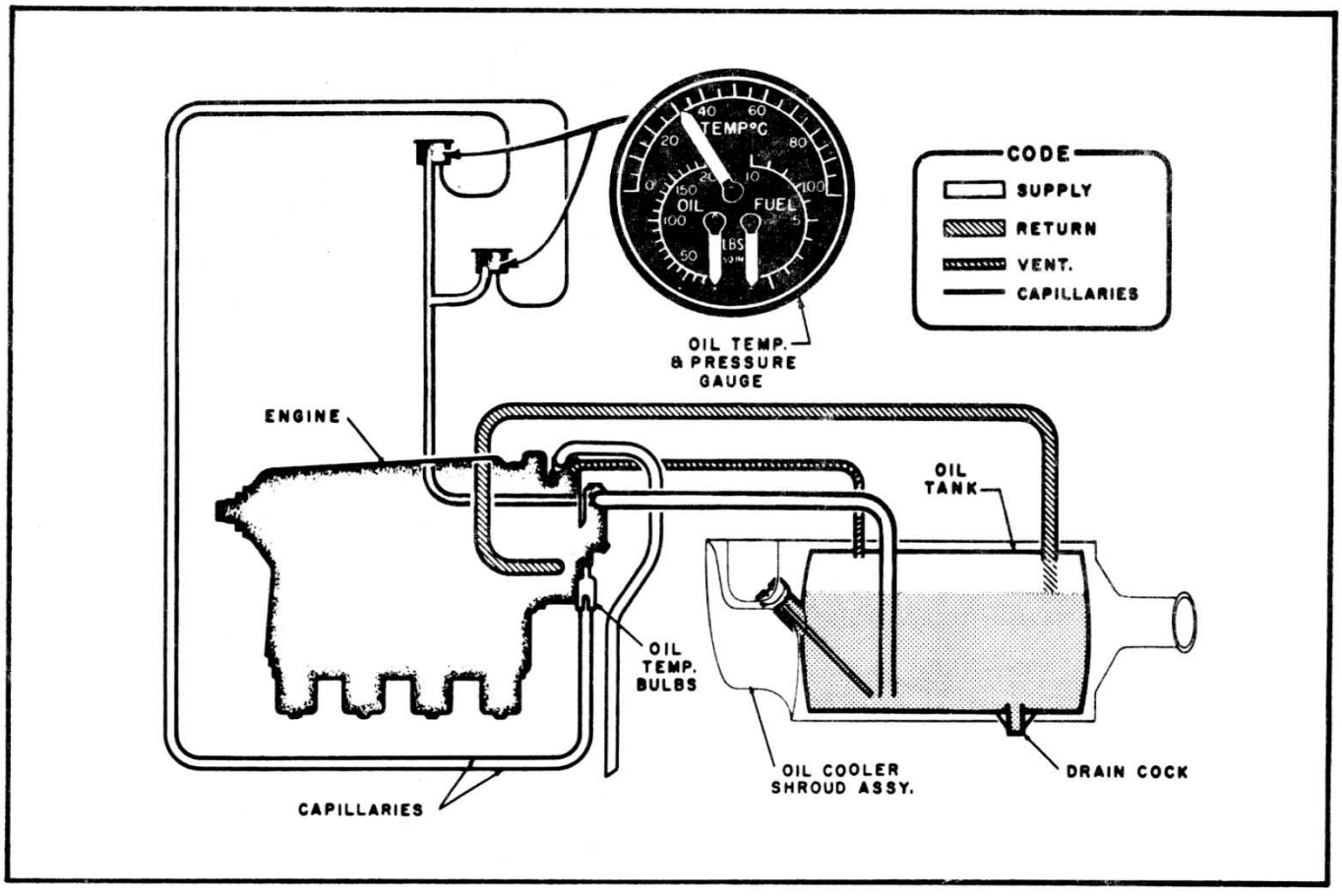


Figure 1-3 Oil System - Schematic

OIL GAUGE

14 A combined fuel pressure, oil temperature and pressure gauge is located on the right-hand side of the instrument panel (18, Figure 1-5). Oil temperature is taken from the return line at the rear of the engine.

OIL SPECIFICATION

15 The oil specification is MIL-L-22851A, AMI Type 2 (NATO 0-128).

ELECTRICAL SYSTEM

GENERAL

16 Electrical power is direct current supplied by a 17 amp, 28 volt generator in conjunction with a pair of 12 volt, 66 ampere hour batteries connected in series to provide 24 volts. The generator output is controlled by an automatic voltage regulator.

ELECTRICALLY OPERATED EQUIPMENT

17 The following equipment is operated by the electrical system: starter, interior lights, navigation lights, landing light, intercom, radio, pitot heater.

EXTERNAL POWER RECEPTACLE

18 A receptacle for connecting an external power supply is located on the left side of the fuselage above the trailing edge of the wing (see Figure 1-4).

GENERATOR SWITCH

19 The GENERATOR switch is located on the electric panel (Figure 1-7). A GEN. circuit

breaker switch on the top of the panel trips to the OFF position when the maximum (17 amps) generator output is exceeded.

BATTERY MASTER SWITCH

20 The battery MASTER switch is located on the electrical panel (see Figure 1-7).

NOTE

When an external power supply is connected, the MASTER switch must be left in the OFF position; otherwise the batteries will parallel the external supply.

PITOT HEAT SWITCH

21 The pitot heat switch (51, Figure 1-5), located to the left of the airspeed indicator on the instrument panel in the front cockpit, is a two-position, toggle-type circuit breaker switch. The switch controls the electrical power to the pitot heater and also acts as a circuit breaker to safeguard the pitot heater circuit.

CAUTION

The pitot heater must not be switched on when the aircraft is on the ground. It must not be operated simultaneously with the landing light at any time.

ELECTRICAL SYSTEM INDICATOR

22 The voltmeter, located centrally on the electrical panel, operates only when the battery master switch is ON. The instrument indicates generator output voltage when the generator is functioning, battery voltage at other times.

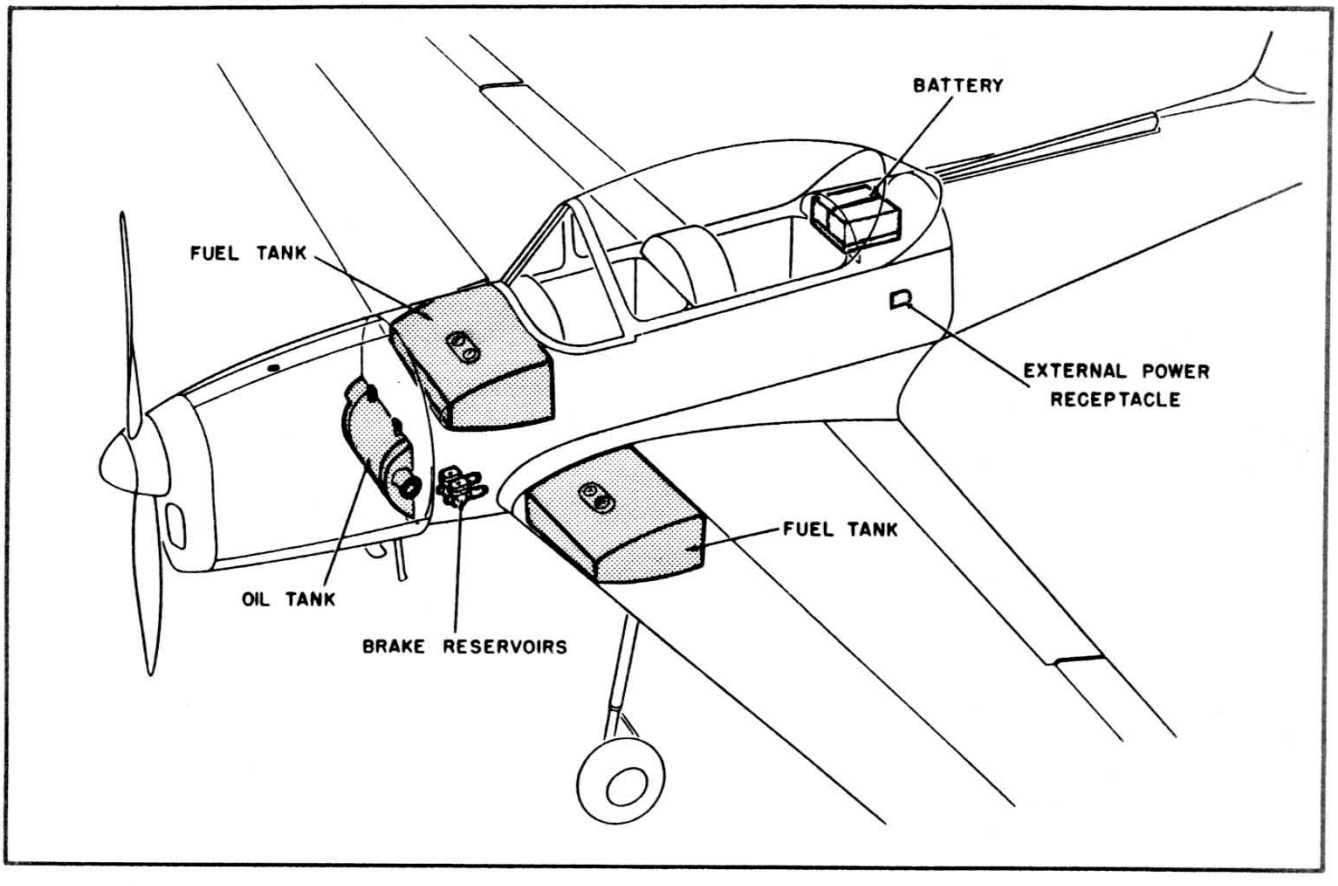
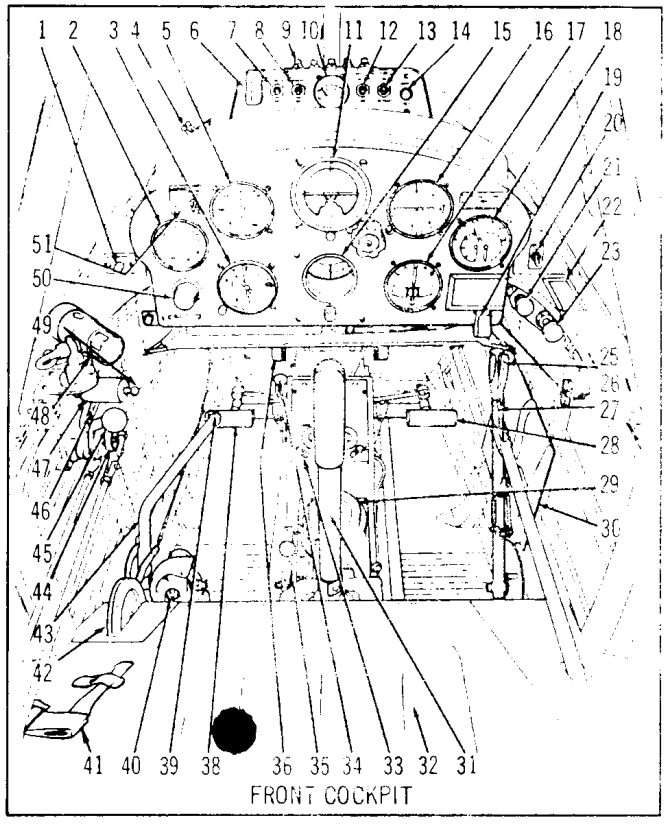
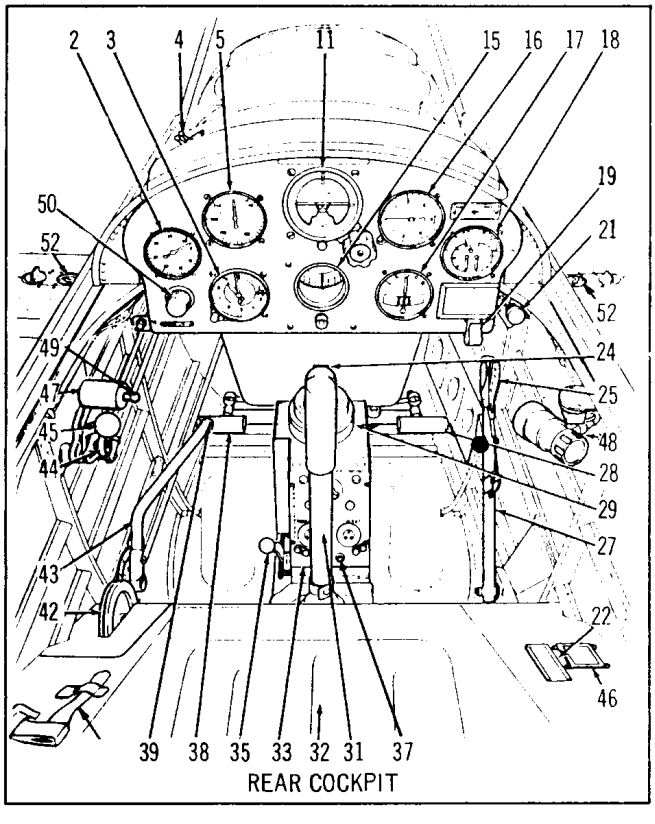


Figure 1-4 Servicing Points

1 Fuel Quantity Light Switch
2 Tachometer
3 Altimeter
4 Magneto Switches
5 Airspeed Indicator
6 Starter Switch
7 Generator Switch
8 Battery Master Switch
9 Circuit Breakers
10 Voltmeter
11 Artificial Horizon
12 Navigation & Fuel Gauge Light Switch
13 Landing Light Switch
14 Identification Light Switch
15 Direction Indicator
16 Vertical Speed Indicator
17 Turn-and-Slip Indicator
18 Oil Temp. Pressure & Fuel Pressure Gauge
19 Headset Stowage
20 Radio Master Switch
21 Carburettor Heat Control
22 Radio Frequency Card Holder
23 Primer Pump
24 I/C Button
25 Flap Selector Lever Release
26 Idle Cut-off Control





27 Flap Selector Lever
28 Right Hand Rudder Pedal
29 Magnetic Compass
30 Map Stowage
31 Control Column
32 Cockpit Seat
33 Radio Control Panel
34 Cockpit Heat Control
35 Fuel Selector
36 Control Locks Stowage
37 Radio Control Button
38 Left Hand Rudder Pedal
39 Parking Brake Release Button
40 Fire Extinguisher
41 Hatchet
42 Elevator Trim Wheel
43 Brake Lever
44 Tension Nut
45 Mixture Lever
46 Compass Deviation Card Holder
47 Throttle Lever
48 Instrument Ultra-violet Light
49 I/C and Transmit Button
50 Cockpit Light Rheostat
51 Pitot Heat Switch
52 Fuel Contents Gauge

Figure 1-5 (Issue 4) Cockpit Layout (Sheet 1 of 2)

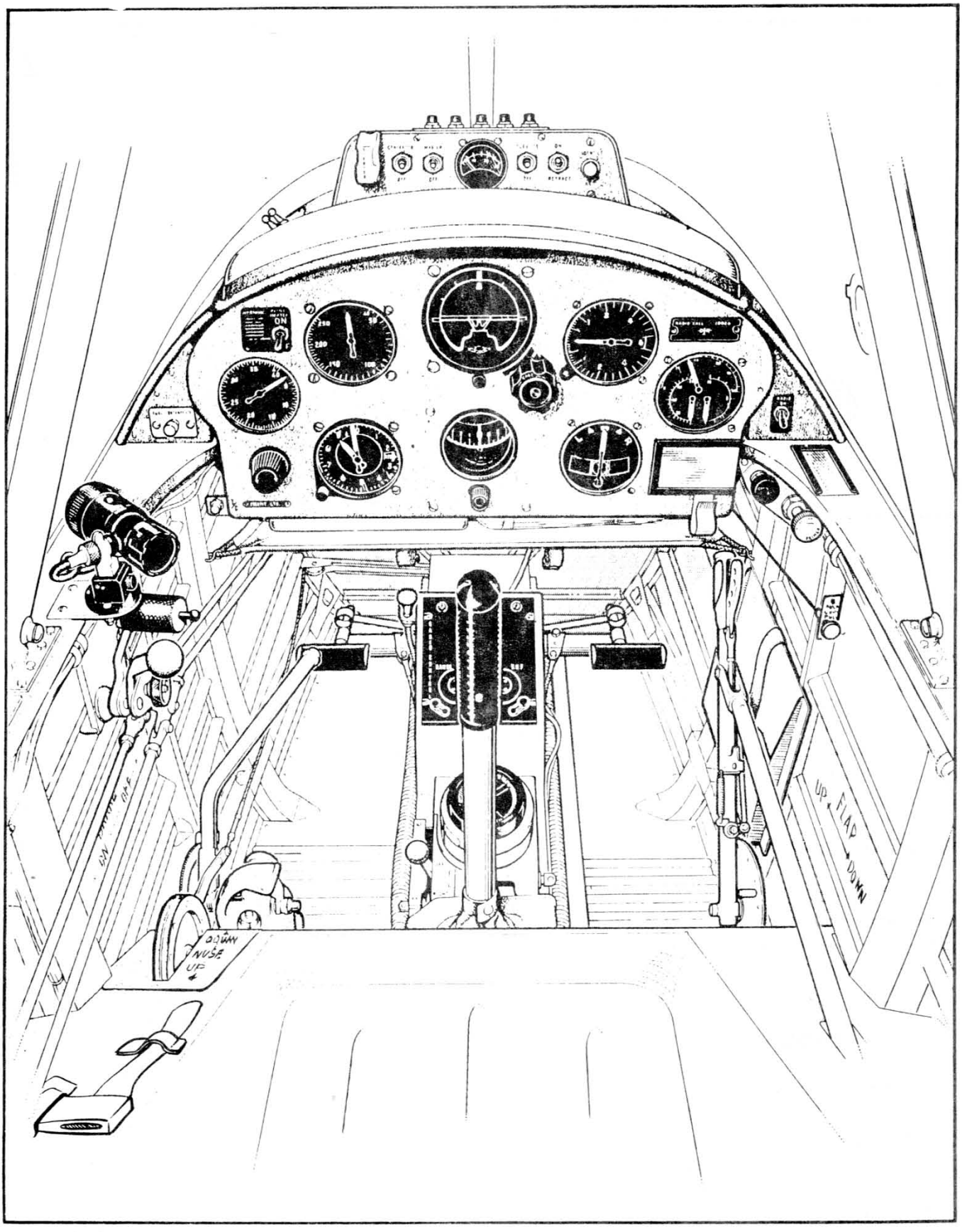


Figure 1-5 (Issue 2) Cockpit Layout (Sheet 2 of 2)

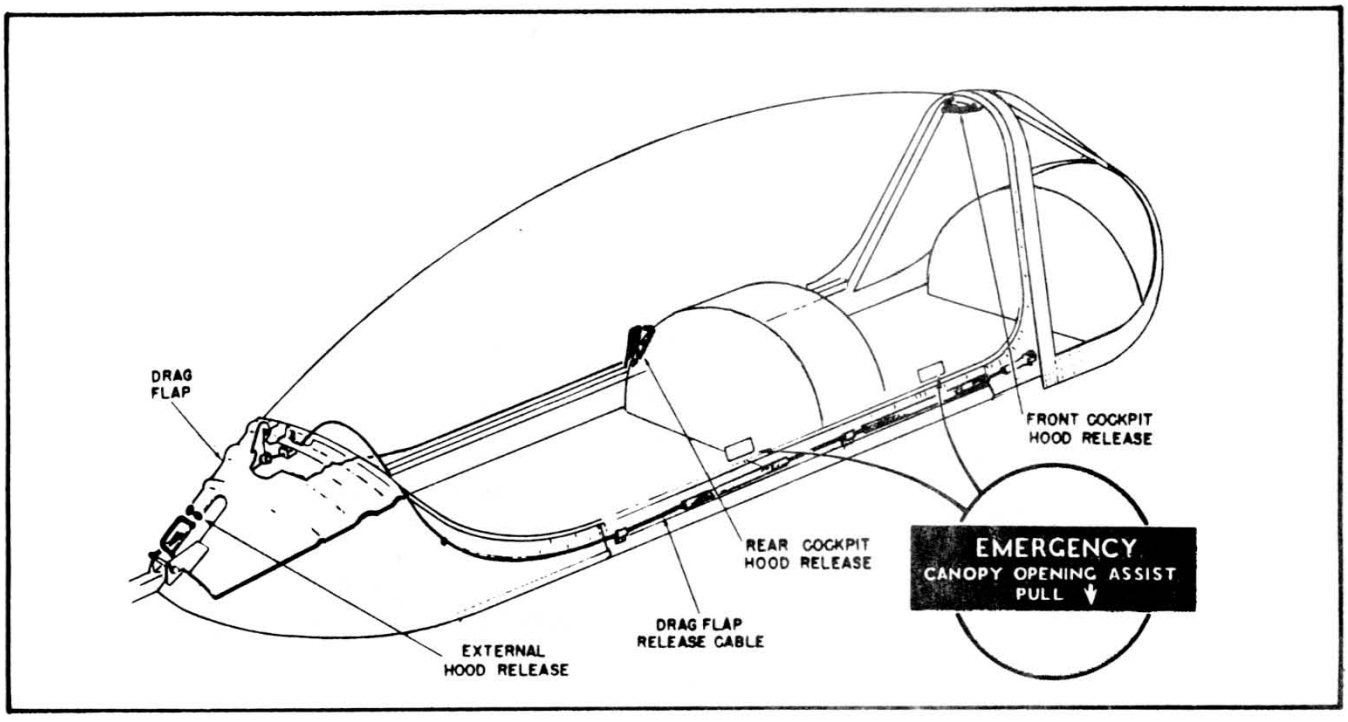


Figure 1-6 (Issue 1) Canopy

POWER PLANT

ENGINE

23 The aircraft is powered by a DH Gypsy Major CIG, 7G, 10MK1-3 or 10MK1-3A engine that develops 140 bhp at sea level. It is four cylinder in line, inverted, air-cooled, with a direct drive, fixed-pitch Fairey Reid propeller.

ENGINE TACHOMETER

24 The engine tachometer, located on the main instrument panel (2, Figure 1-5) indicates engine rpm. The instrument is driven by a direct drive cable from the engine.

ENGINE CONTROLS

THROTTLE LEVERS

25 The throttle levers (47, Figure 1-5) are located on the left side in the cockpits and are interconnected. A push-pull rod connects the throttle levers to the carburettor throttle valve. A tension nut (44, Figure 1-5) on each quadrant, when rotated clockwise, increases the friction on the levers.

26 The fuel-air mixture is manually controlled by the mixture control levers (45, Figure 1-5) mounted inboard of the throttle levers. The levers are connected to the carburettor by a push-pull rod linkage. They are moved aft for rich and forward for lean mixture. The tension nut (44, Figure 1-5) is common to both throttle and mixture control levers.

CARBURETTOR HEAT CONTROL

27 Hot air for the carburettor is drawn from the crankcase wall, between the inter-cylinder baffles, and passed into the mixing chamber. The supply is controlled by a flap valve which is operated by a push-pull control in each cockpit (21, Figure 1-5). A flame trap, fitted in the hot air inlet, restricts the flame travel from a backfire.

ENGINE MAGNETO SWITCHES

28 There are two sets of magneto switches (4, Figure 1-5), one set on the front fuselage deck,

the other set on the left side of the fuselage deck between the two cockpits.

STARTER SWITCH

29 The STARTER switch (6, Figure 1-5) is located on the electrical panel on the front fuselage deck. The switch is protected by a guard to prevent inadvertent operation.

FLIGHT CONTROLS

GENERAL

30 The control surfaces are conventionally operated by a control column and rudder pedals from either cockpit. Movement of the controls is transmitted to the surfaces by cables and mechanical linkages. The control columns are of the conventional stick type.

CONTROL LOCKS

31 Control locks may be fitted to secure the control column and rudder pedals. The rudder control lock also locks the fuel selector in the OFF position (see Figure 1-8).

RUDDER PEDALS

32 The rudder pedals may be adjusted for reach by removing the lock pin and sliding the pedals in or out as required, and replacing the lock pin in any of the three positions. The rudder pedals also provide the differential braking action in conjunction with the position of the hand brake lever, as described in Part 1, Brake System.

TRIMS

33 The elevator trim tab is actuated by trim wheels (42, Figure 1-5) from either cockpit.

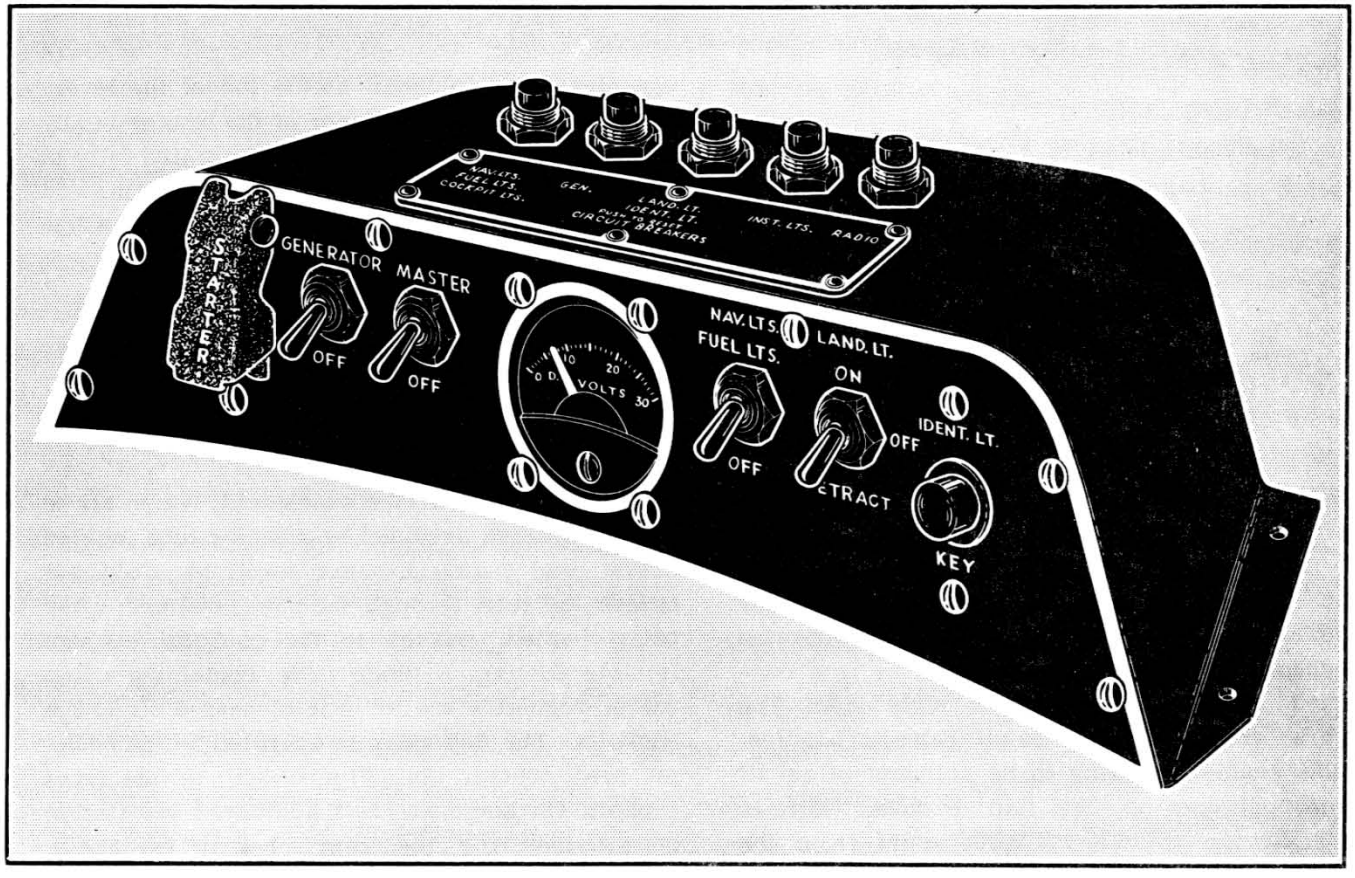


Figure 1-7 Electrical Panel

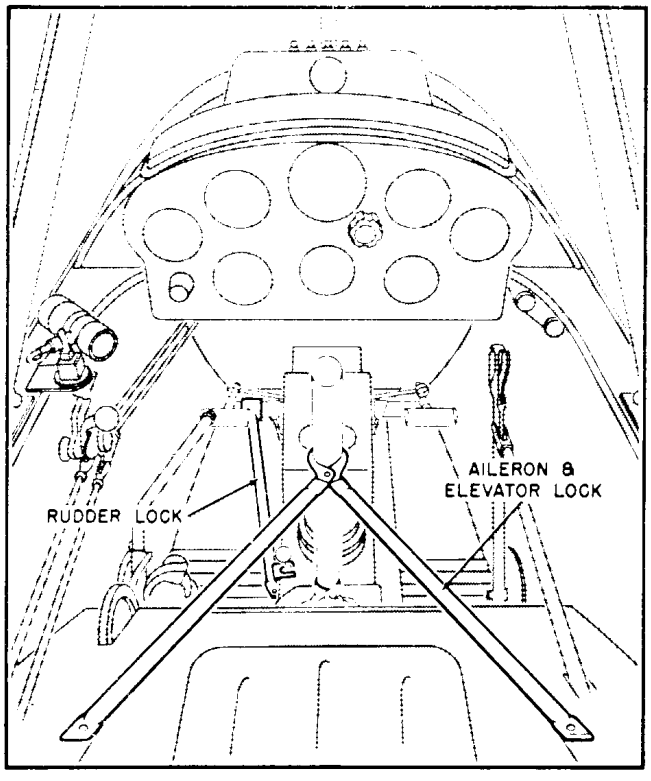


Figure 1-8 Control Locks

The trim wheel label is marked NOSE DOWN, and UP. A nose down change in trim is produced by rotating the trim wheel in the forward direction.

34 Trim tabs on the ailerons and rudder are fixed metal tabs and are adjusted on the ground.

WING FLAPS

35 The wing flaps are of the trailing edge type and extend from the wing roots to the inboard ends of the ailerons. They are operated mechanically from either cockpit by interconnected levers located on the right side. The levers are fitted with catch release handles, which enable the flaps to be selected in any of three positions: up, half flap, or down. There is no indicator in the cockpits apart from the position of the levers. See Figure 1-10 for system arrangement in the aircraft.

LANDING GEAR

GENERAL

36 The landing gear is a non-retractable installation, consisting of two main wheel units and a fully-castoring tail wheel. Springing of the main wheel legs is achieved through a series of rubber compression and rebound blocks contained within the cantilever legs.

WHEEL BRAKES

37 The main landing gear wheels are fitted with hydraulic brake units connected by hydraulic lines to the brake master cylinders, which are actuated by operating the brake hand lever and applying rudder simultaneously.

HAND BRAKE LEVERS

38 A hand brake lever is located on the left side of each cockpit. A counterbalanced pawl, which is operated by a plunger at the top of the lever, provides for positive locking of the brakes in any position. The brake lever can be applied fully to prevent the wheels from turning, for parking and when running up the engine, or partially to allow for differential braking when taxiing.

HEATING AND VENTILATION SYSTEM

39 Air circulation in the cockpit enclosure (see Figure 1-12) is provided by an outside ventilator on the right side of the windshield. Warm air to the cockpits is provided by a heater tube located inside the engine exhaust manifold. Cold air enters the tube through the nose cowl and, after being heated, passes to the cockpits through flexible ducting. A dump valve, containing a flap valve, regulates the amount of heated air to the cockpits. The flap valve is operated by the cockpit heat control (34, Figure 1-5) in the front cockpit. On some aircraft additional ventilation is provided for the rear cockpit through a ventilator located on the right-hand side of the fuselage.

INSTRUMENTS

GENERAL

40 Shock mounted instrument panels are provided in both cockpits; each contains the following instruments (see Figure 1-9):

Airspeed Indicator

Altimeter

Turn-and-Slip Indicator

Directional Gyro

Artificial Horizon

Vertical Speed Indicator

Oil Temperature - Oil Pressure - Fuel Pressure Gauge

Tachometer

PITOT-STATIC SYSTEM

41 The pitot-static system is conventional, with the pitot tube under the left wing. There is no provision for an alternate static source.

PITOT-STATIC OPERATED INSTRUMENTS

42 The airspeed indicator, altimeter, and vertical speed indicator are operated by the pitot-static system.

VACUUM OPERATED INSTRUMENTS

43 The directional gyro, artificial horizon, and turn-and-slip indicator are operated by the vacuum system.

INTERIOR AND EXTERIOR LIGHTING

GENERAL

44 The aircraft lighting system (see Figure 1-11),

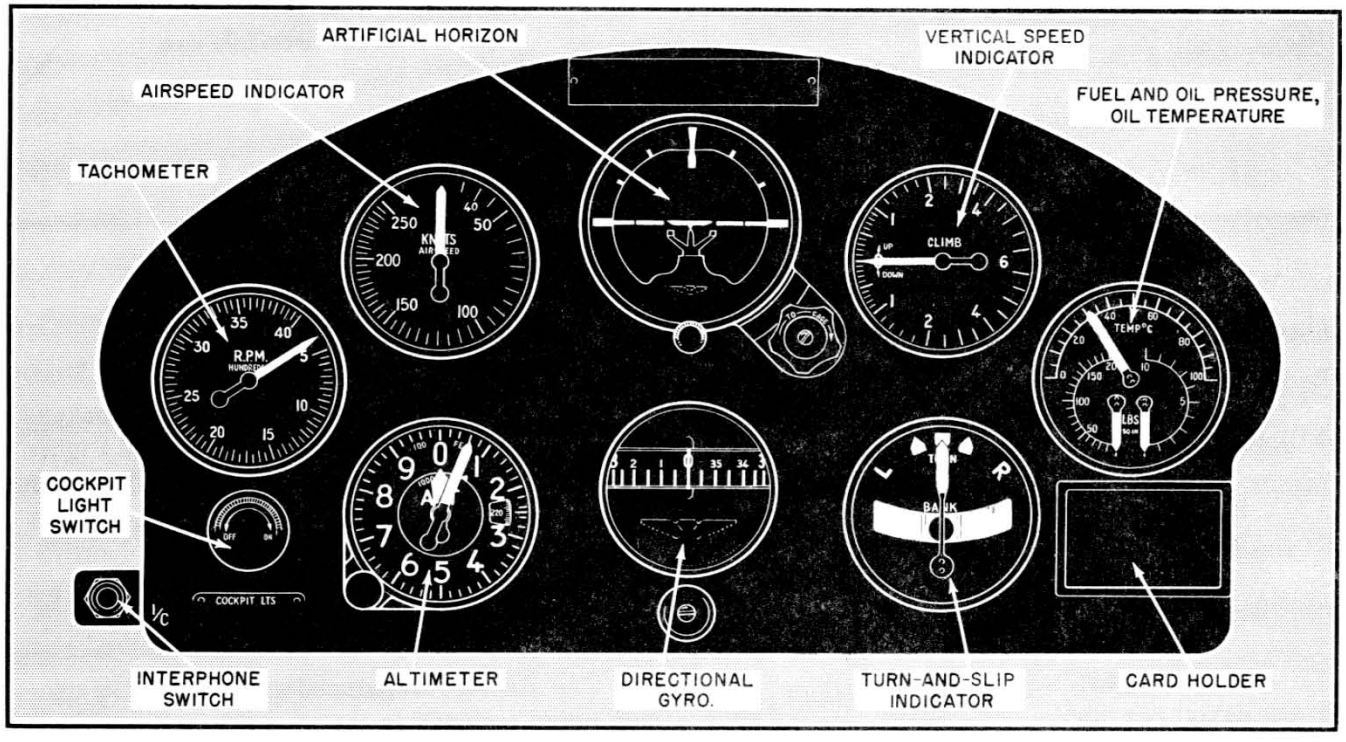


Figure 1-9 Instrument Panel (Issue 1)

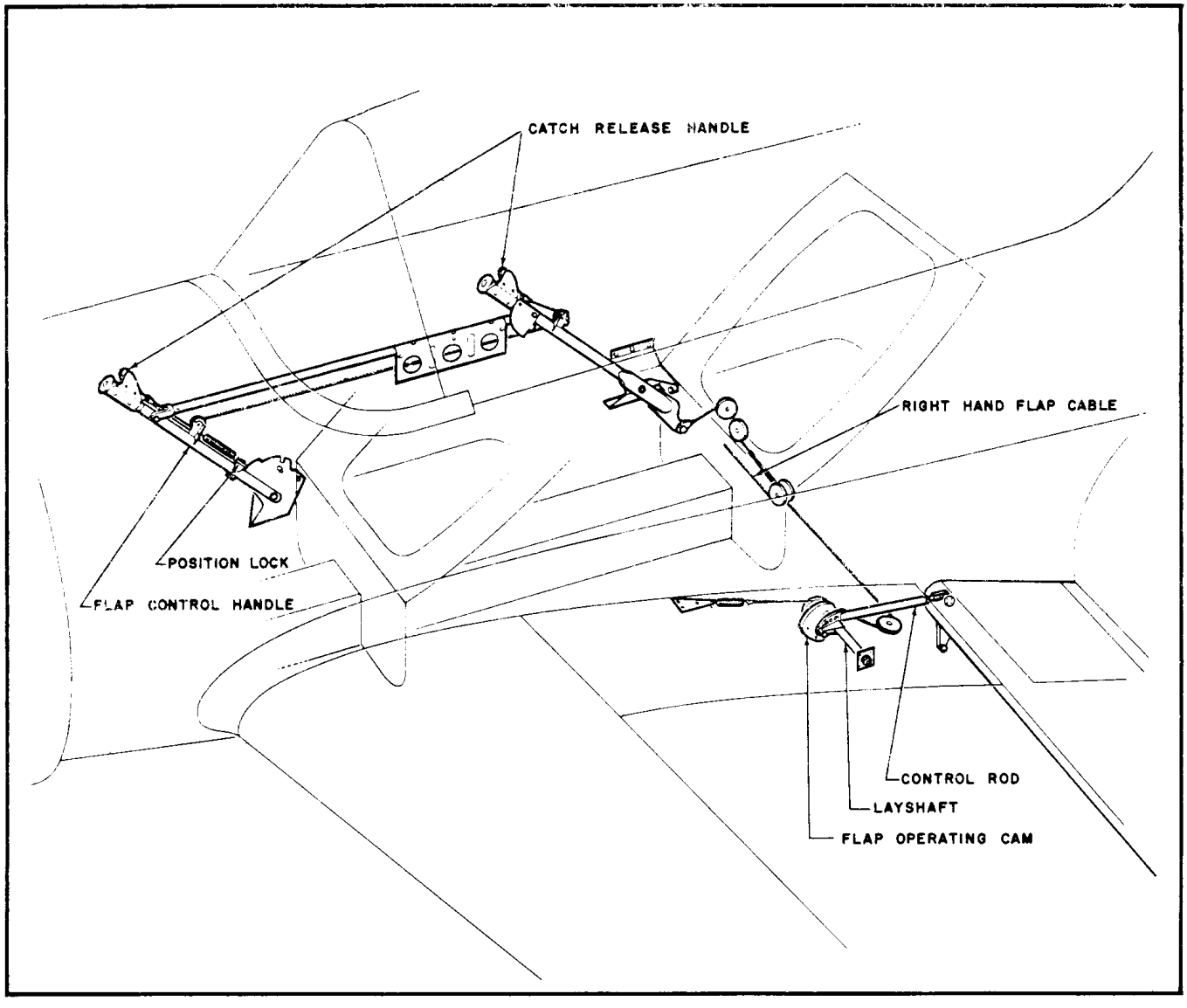


Figure 1-10 Flap System

which provides illumination for the aircraft interior and exterior, consists of the following:

(a) Interior Lights -

(1) instrument panel lights
(2) instrument panel flood-lights

(b) Exterior Lights -

(1) landing light
(2) navigation lights
(3) fuel quantity indicator lights
(4) identification lights

CIRCUIT BREAKERS

45 All circuits are protected by circuit breakers located on top of the electric panel (see Figure 1-7). The circuits are routed through the MASTER switch, and this switch must therefore be ON before any light can be operated.

NAVIGATION LIGHTS

46 The aircraft is equipped with standard navigation lights mounted in the wing tips and tail cone. They are controlled by the NAV. LTS. switch on the electrical panel.

COCKPIT AND INSTRUMENT LIGHTS

47 The cockpit and instrument lights are individually controlled by rheostats.

FUEL QUANTITY INDICATOR LIGHTS

48 The fuel quantity indicator lights can only be operated with the navigation lights on. To illuminate the instruments, press FUEL CONTENTS LTS. button on left side of the instrument panel in the front cockpit (1, Figure 1-5).

LANDING LIGHT

49 A retractable landing light is fitted in the lower surface of the left wing. The light is operated by the LAND. LT. switch (Figure 1-7) on the electrical panel, marked ON-OFF-RETRACT. The ON position extends and illuminates the light.

IDENTIFICATION LIGHT

50 The identification light is illuminated by pushing the IDENT. LT. KEY (Figure 1-7) on the right side of the electrical panel. The navigation lights need not be on to operate the identification light.

COCKPIT EQUIPMENT

SEAT AND HARNESS

51 The bucket-type seat in each cockpit is designed to accommodate a seat-type parachute and safety harness (see Figure 1-14). The seat is fixed and cannot be adjusted.

CANOPY

52 The one-piece, plexiglas, bubble-type canopy slides on three rails. The canopy may be locked in four positions, open, $\frac{1}{2}$ open, $\frac{1}{4}$ open, or closed, by a lock pin that engages in corresponding holes in the centre rail. The lock is operated by handles, which are accessible from inside the aircraft, or an external pushbutton at the rear of the canopy. The windshield structure serves as a crash pylon to protect the occupants in case of roll-over.

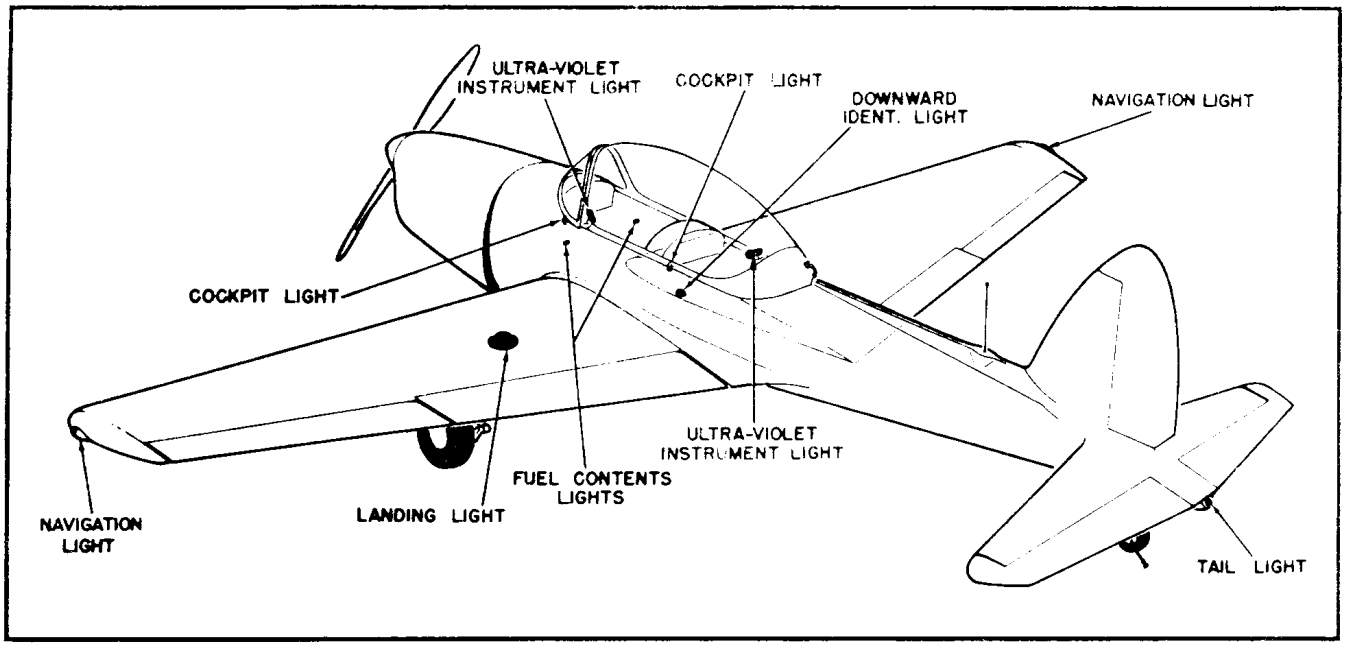


Figure 1-11 Aircraft Lighting

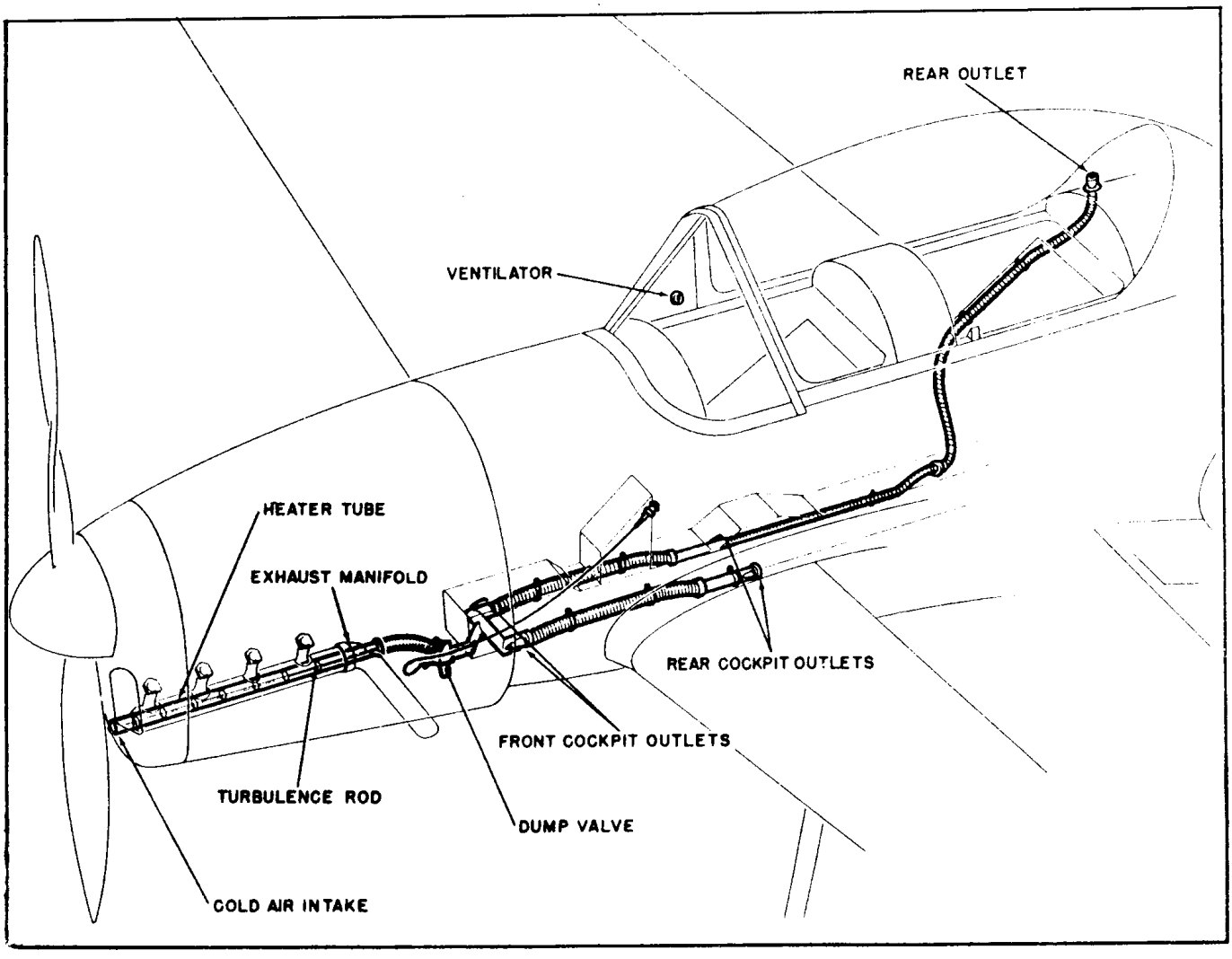


Figure 1-12 (Issue 1) Heating and Ventilating System

CANOPY DRAG FLAP

53 A drag flap is installed on the rear of the canopy to assist the pilot in opening it for emergency exit during flight. A release cable is attached to the canopy frame on the right side of each cockpit. The flap is released by pulling the coloured release cable inward sharply. When the flap is extended, wind force releases the canopy locking pin and drags the canopy to the rear.

FIRE EXTINGUISHER

54 A hand-operated, type A20 fire extinguisher is mounted on a quick-release bracket to the left of the front seat diaphragm (40, Figure 1-5).

FIRST AID KIT

55 The first aid kit is stored on the top of the fuselage just above and behind the rear cockpit on the battery access panel (see Figure 1-14).

HATCHET

56 A hatchet is located on the left side of the seat in each cockpit (41, Figure 1-5). It is to be used to break the canopy in an emergency exit.

MAP CASE

56A A map case is installed in the front cockpit, forward of the flap lever.

COMMUNICATION EQUIPMENT

RADIO

57 The aircraft is equipped with an ARC-12 type communication system, which operates on 28 volts and has a frequency range of 116 to 148 mcs on R/T. It is not operable on the 200 to 550 kcs band. The three transmitters, of five channels each, and the R-19 receiver are located behind the seat in the rear cockpit, and the R-11A receiver is located aft of the firewall (see Figure 1-13). The set is controlled from either cockpit by means of remote control panels (33, Figure 1-5) installed forward of each control column. The R/T antenna is a standard $\frac{1}{4}$ whip type, mounted on top of the fuselage just forward of the fin.

INTERCOM/TRANSMIT

58 An intercom and transmit spring-loaded toggle switch is incorporated on the throttle. By pressing the switch down, the intercom system is operated; moving the switch to the up position enables outside transmissions to be made on the VHF frequency selected.

NOTE

A press-to-talk intercom switch is located on the control column in the rear seat.

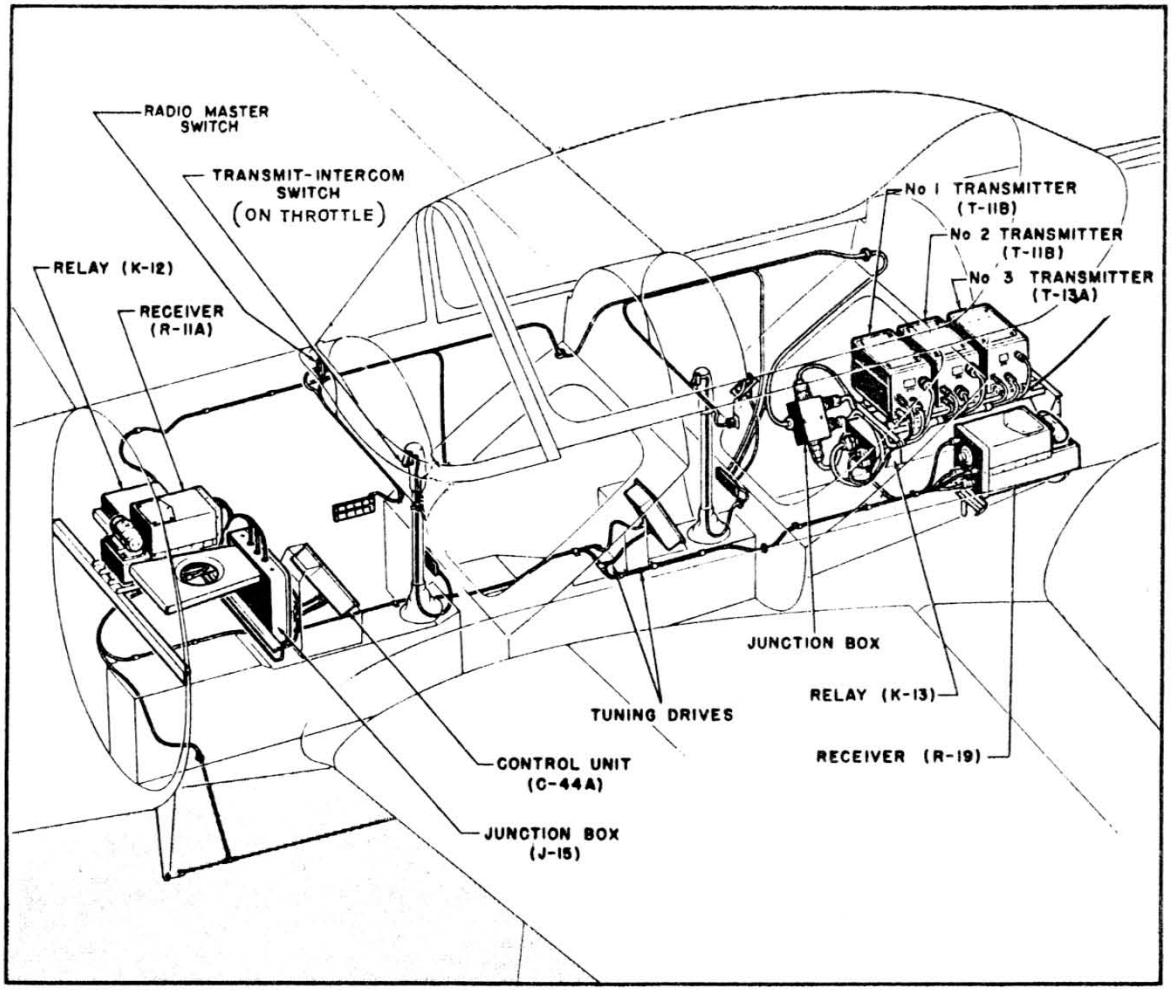


Figure 1-13 (Issue 1) Radio Installation

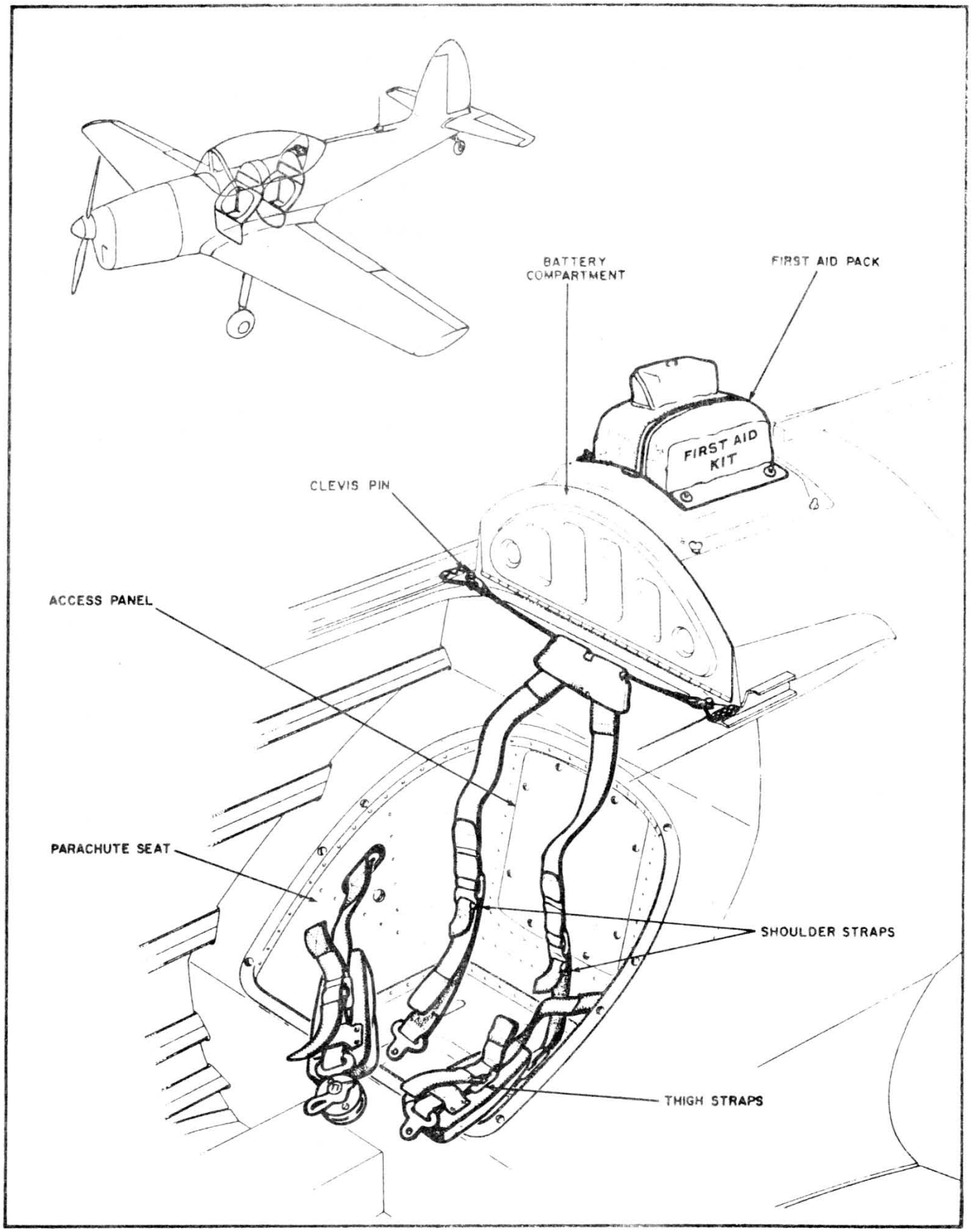


Figure 1-14 (Issue 1) Harness and Seating Arrangement

RADIO OPERATION

59 To operate the radio, proceed as follows (see Figure 1-15):

(a) To supply power, operate the RADIO switch (20, Figure 1-5), located to the right of the instrument panel, front cockpit.

(b) To establish communications on R/T, press the control switch on the remote control panel, then turn the VHF SENS control initially to maximum volume. Select channel for transmitting frequency. While the set is warming up, turn the VHF tuning crank to the desired receiving frequency. To fine tune the frequency, press in the tuning crank first and tune to maximum whistle. Release the pressure on the tuning crank.

(c) Transference of radio control from one cockpit to the other is accomplished by pressing the control switch on the remote control panel in the cockpit to which control is to be transferred. As soon as transference of control is accomplished, the desired frequency may be selected.

(d) When the radio switch is turned OFF, control of radios returns to front seat automatically.

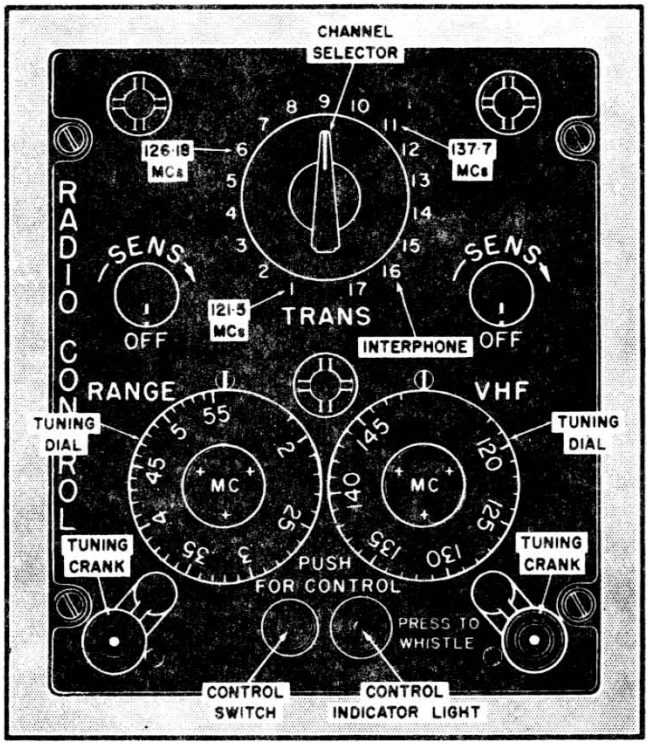


Figure 1-15 Radio Panel

MAGNETIC COMPASS

60 A magnetic compass (29, Figure 1-5) is mounted on top of the radio remote control panel in the rear cockpit. In the front cockpit, it is mounted on the floor between the radio remote control panel and the control column.

PART 2

HANDLING

PRE-FLIGHT CHECKS

BEFORE ENTERING COCKPIT

1 Check the Aircraft Maintenance Record Set for engineering status and ensure that the aircraft has been properly serviced.

EXTERNAL CHECK

2 Proceed as outlined in walk-around diagram (see Figure 2-1).

3 If it is necessary for the pilot to carry out a between-flight inspection, the following items should be checked in addition to the external pre-flight check:

(a) Engine for fuel and oil leaks.

(b) Oil tank for contents, cap secure.

(c) Cowlings secure.

4 BFIs in preparation for night flying are to include a functional check of all navigation and cockpit lights.

NOTE

This BFI authority does not authorize the pilot to undertake corrections of unserviceabilities.

REAR COCKPIT FOR SOLO FLYING

5 Check the rear cockpit as follows:

(a) Ensure there are no loose articles.

(b) Harness, radio cord, and hatchet for security.

(c) Rudder pedals in place.

(d) Gyros caged.

(e) Throttle tension nut loose.

(f) Canopy half closed.

PRE-START CHECK

6 On entering aircraft proceed as follows:

(a) Adjust safety harness -

(1) tighten seat belt, so as to position it as low as possible, ensuring that the release mechanism is centred;

(2) fasten shoulder harness.

NOTE

The shoulder harness is fixed to the airframe. Be sure to leave sufficient slack to reach the radio for tuning.

(b) Check controls for freedom of movement.

(c) Brakes ON.

(d) Select fuel LEFT TANK ON.

(e) Throttle $\frac{1}{2}$ inch open.

(f) Mixture fully RICH, carburettor air COLD.

STARTING PROCEDURE

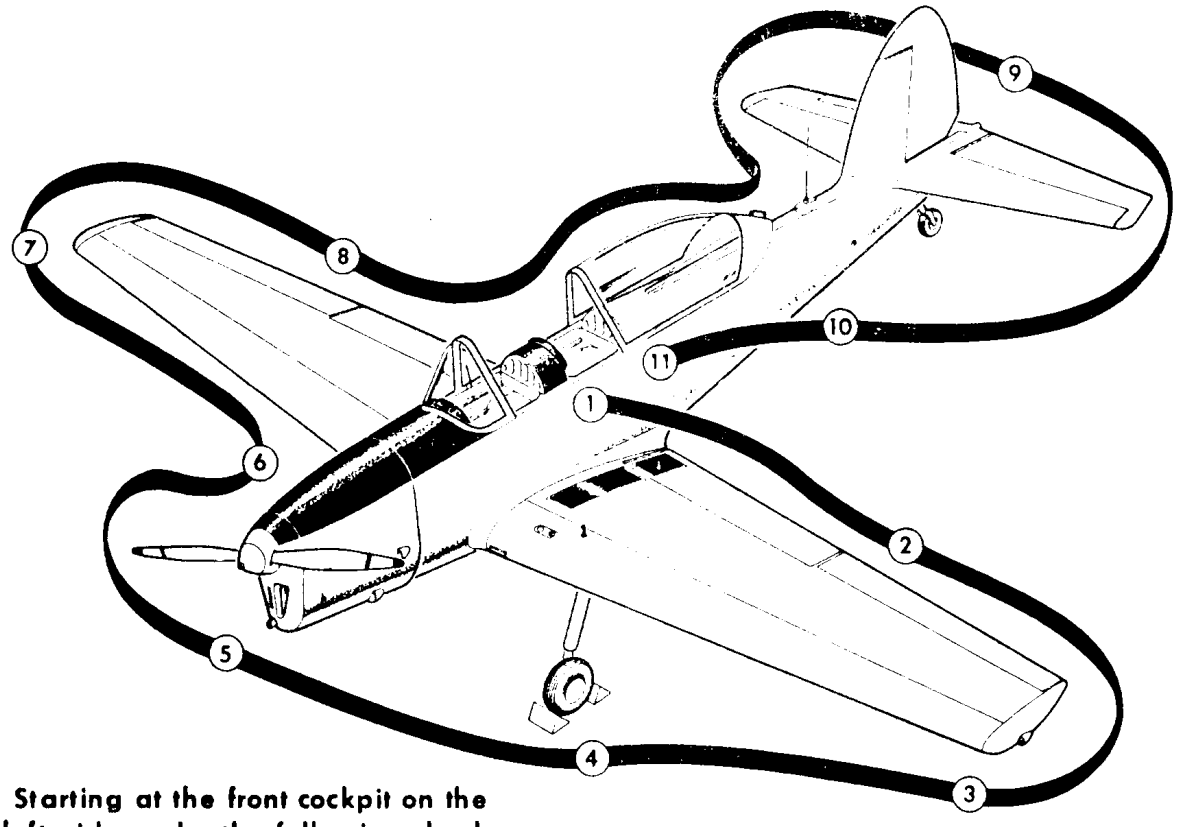
START CHECK

7 Proceed as follows:

(a) Prime engine six or seven positive strokes when engine is cold; less when warm.

(b) Auxiliary Power Unit (APU) connected.

(c) Call "All Clear" and place both sets of magneto switches ON.



Starting at the front cockpit on the left side make the following checks

1. Battery master and magneto switches OFF. Parking brakes OFF. Control locks OFF. No loose articles.

2. Left Wing - Flap, aileron, and upper wing surfaces for damage.

3. Left Wing - Condition of navigation light, pitot head, landing light, zipper fasteners; leading edge and lower wing surface for damage.

4. Left Fuel Tank - Contents, cap secure, vent clear, drain cock closed and wire secure. Left Undercarriage - Oleo leg, chock in place. Tire for wear and creep, brake line condition.

5. Power Plant - Cowlings for damage and security. Carburettor and oil cooler intake clear. Propeller blades for nicks, and fairings for condition. Exhaust manifold for condition.

6. Same as 4 for right side.

7. Right Wing - Leading edge and lower surface for damage; condition of zipper fasteners and navigation light.

8. Right Wing - Upper wing surface, aileron, and flap for damage.

9. Empennage - Condition of rudder, elevator, trim, tail wheel, ground wire.

10. Fuselage - Antenna secure, static vent clear, drag-flap lock-wired.

11. First aid kit, crash instructions in place; battery cover secure, battery area for overflow or electrolyte spillage.

Figure 2-1 (Issue 2) Exterior Inspection Diagram

(d) Press starter button until engine starts; do not press for more than 5 seconds at a time. Allow one minute to elapse between attempts.

(e) Check oil pressure, APU disconnected, master battery switches ON.

CAUTION

If oil pressure does not register within 30 seconds, stop the engine immediately and have the cause investigated.

FAILURE TO START

8 If engine fails to start due to over-priming, proceed as follows:

(a) Switch magnetos OFF.

(b) Open throttle wide.

(c) Have propeller rotated by hand six complete revolutions in direction of rotation.

(d) Repeat starting procedure, but do not prime.

WARMING UP ENGINE

9 As soon as the engine is started and external power disconnected, check the following:

(a) Battery MASTER switch ON.

(b) GENERATOR switch ON.

(c) Run the engine slowly at first - 600-800 rpm. Ensure that oil pressure registers. When the oil pressure is satisfactory, warm the engine at 1,000-1,200 rpm.

NOTE

Minimum oil pressure at slow running is 20 psi, when oil temperature is 65°C.

TAXIING PROCEDURE

PRE-TAXI CHECK

10 Before commencing to taxi the aircraft, check the following:

(a) Radio MASTER switch ON - SENS volume HIGH.

(b) Fire extinguisher and hatchet secure.

(c) Test elevator trim for full, free, and correct movement.

(d) Compass appears serviceable, check heading.

(e) Test flap actuation and return to up position.

(f) Emergency maps in place.

(g) Ensure primer fully in and locked.

(h) Check operation of carburettor heat control.

(j) Check instruments for reading within specified range.

(k) Uncage gyros. Set directional indicator to compass heading.

(m) At minimum rpm, switch OFF each magneto in turn. Check for dead magneto.

(n) Check all unnecessary switches OFF.

(p) Check circuit breakers in.

(q) Fine-tune radios to desired frequency.

(r) Chocks removed.

TAXIING

11 Set hand brake lever approximately four notches to obtain proper control on the wheel brakes. Check brake operation when leaving the line. Adjust setting as required for strong wind conditions. Hold control column to give maximum safety during taxiing, giving consideration to wind speed and direction, rough ground, or amount of power used.

CAUTION

Do not press the plunger down while pulling the lever to set the brakes. To unlock the brake, first pull back further to release the pawl, then move lever forward without touching the plunger.

TAXI CHECK

12 Check flight instruments.

RUN-UP

13 Proceed as follows:

(a) Taxi to run-up position and apply brakes fully.

(b) Check fuel selector right tank - ON.

(c) Check oil temperature, oil pressure, and fuel pressure. Tension adjusted. Minimum oil temperature for run-up is 15° C.

(d) Check if areas ahead and behind are clear.

(e) Hold control column fully back.

(f) Open throttle to give 1,600 rpm and check each magneto in turn. Drop should not exceed 100 rpm on either magneto.

(g) Switch generator switch off and on and check voltmeter for indication that the generator is functioning.

(h) Apply full carburettor heat for approximately 30 seconds and then return to OFF position and note slight change in rpm.

(j) Open throttle fully and check rpm which should be ±50 of reference rpm. Check oil pressure, oil temperature, and fuel pressure.

NOTE

Normal oil pressure is 40-45 psi.

(k) If a drop of more than 100 rpm was indicated on the initial magneto check, throttle back to 1,600 rpm and check again before throttling fully back. Drop should not exceed 100 rpm on either magneto. Check slow running at 650-750 rpm.

CAUTION

Engine must not be run with full throttle for more than 30 seconds.

TAKE-OFF PROCEDURE

PRE-TAKE-OFF CHECK

14 Prior to take-off, complete the following check:

H - Hood - as required.

T - Trim - elevator trim to neutral.
- Throttle tension adjusted.
- Temperatures and pressures - within limits.

M - Mixture - fully RICH position for all take-offs. Carburettor air - COLD.

F - Fuel - check contents and pressure on tank selected.
- Flaps - as required.

G - Gyros - set and uncaged.

S - Switches - magneto, master, generator, radio - ON.

H - Harness - tight.

CAUTION

Canopy may be placed in any position except the one-quarter open position for landing and take-off.

TAKE-OFF

15 Proceed as follows:

(a) After clearance for take-off has been received, taxi on to the runway, line up with the centre line, open throttle to 1,500 rpm, and release brakes.

(b) Open the throttle smoothly to the fully open position.

(c) Keep straight initially by coarse use of rudder, decreasing coarseness as speed increases. There is a tendency to swing to the right when the throttle is advanced.

(d) Raise the tail into flying attitude by gently easing the control column forward.

(e) At 53 knots IAS ease the aircraft off the ground by gently moving the control column back.

(f) If flaps were used for take-off, initial climbing speed must not exceed flap-down speed. After flaps are selected up, adjust elevator trim.

(g) Climb away at 80 knots IAS.

FLIGHT CHARACTERISTICS

GENERAL

16 The aircraft is reasonably stable, the controls are light and have good response. When flown solo, the C of G is forward.

CLIMBING

17 The aircraft should be climbed at 80 knots IAS, using full throttle.

NOTE

During the climb the oil temperature should not exceed 85°C.

CRUISING

18 Below 3,000 ft the mixture control should be left in the rich position. Above 3,000 ft the mixture control can be adjusted to give a leaner mixture, but care must be taken to ensure that the engine does not overheat or run roughly. Refer to Part 4 for recommended cruising speeds.

STALLS

19 The controls are effective down to the point of stall, and there is little warning. The stall without flaps is very gentle; the control column must be moved fully back in order to demonstrate the nose drop at the point of stall. With flaps fully extended, the stall is more positive. In all cases recovery is normal. Without power, there is a slight tendency for a wing to drop during the stall; this tendency becomes more pronounced with power on.

SPINS

20 Entry is made in the usual manner - stalling the aircraft and applying full rudder in the desired direction. The first turn is very slow, the next two are fast, after which the rate of turn diminishes and becomes constant. Spin recovery is normal, regardless of the previous number of turns. The initial dive after recovery is quite steep.

NOTE

Do not confuse the spiral dive with spinning. Airspeed in a spiral dive increases; in a spin the airspeed remains reasonably constant at, or near, the stalling speed.

AEROBATICS

21 The aircraft handles well during all aerobatic manoeuvres, providing they are entered at the recommended speeds.

NOTE

The canopy should be closed during all aerobatics and spinning. The elevator trim should be neutral during all aerobatics.

DIVING

22 Before diving the aircraft, place the elevator trim in the neutral position. The engine tends to overspeed in a dive at 175 knots IAS, even when the throttle is fully closed.

CAUTION

At no time must the engine speed be permitted to exceed a maximum of 2,400 rpm.

LANDING PROCEDURE

DESCENDING

23 During all prolonged descents the pilot should warm up the engine in order to prevent the plugs from fouling and to keep the oil temperature within the operating limits.

PRE-LANDING CHECK

24 During the downwind leg carry out the following checks:

(a) Fuel - Select fullest tank.

(b) Brakes - Fully OFF.

(c) Mixture - RICH. Carburettor air - COLD.

(d) Harness - Tight.

(e) Hood - As required.

APPROACH AND LANDING

25 Proceed as follows:

(a) Reduce speed to 65 knots IAS for the final approach.

(b) Lower flaps for landing (if required) and adjust elevator trim.

(c) Normally a three-point landing will be made. Be prepared to correct any tendency to swing by use of coarse rudder. When the aircraft has slowed to normal taxi speed, reselect hand brake for taxiing.

POST-LANDING CHECK

26 When safely clear of the runway, complete the following checks:

(a) Flaps - Up.

(b) Elevator trim - Neutral.

(c) Reduce friction on throttle lever.

(d) Unnecessary switches - OFF.

SHUT-DOWN CHECK

27 On shutting down the engine, proceed as follows:

(a) Brakes - ON.

(b) Idle engine at 700 to 800 rpm for 30 seconds under normal conditions, or for one minute in extremely hot conditions.

(c) Magneto Switches - Dead/Live Check.

(d) Oil pressure - Check.

(e) Throttle - Closed.

(f) Idle cut-off control - Pulled out.

(g) Magneto switches - OFF, after propeller stops.

ACTION AFTER SHUT-DOWN

28 After shutting down engine, check the following:

(a) Fuel - OFF.

(b) All switches - OFF.

(c) Gyros - Caged.

(d) Chocks - In place.

(e) Canopy - Closed.

COLD WEATHER OPERATION

GENERAL

29 Ensure that the airframe is thoroughly cleared of all snow and ice, particularly the control surfaces and hinges.

STARTING THE ENGINE

30 When starting engine, observe the following:

(a) After completing the customary checks of the aircraft, have the propeller turned through at least six revolutions by hand.

WARNING

Do not turn propeller when engine is warm. With a warm engine there is always a danger of hot spots, which may cause auto-ignition.

(b) It may be necessary to use the primer pump to keep the engine running. The warming up period will take longer than usual, but no attempt should be made to rush the process.

TAXIING

31 Taxi slower than normal to prevent snow, ice, or slush being sprayed over the control surfaces and freezing.

TAKE-OFF

32 Beware of sprayed control surfaces on take-off as they may freeze up after the aircraft becomes airborne.

CAUTION

The use of carburettor hot air for take-off will reduce the full-throttle power output of the engine. Be prepared for a longer take-off run and a slower rate of climb.

NOTE

When ambient air temperatures are below 10° C in flight, apply carburettor heat at all times to prevent carburettor icing. If engine roughness occurs during flight at or above 10° C, carburettor icing should be suspected and carburettor heat applied. In case of an overshoot return to cold air to ensure full power available.

LANDING CHECK

33 Inspect the aircraft as soon as possible after the engine is shut down, and have the control surfaces and hinges cleared of possible accumulations of snow and ice.

PART 3

EMERGENCY HANDLING

ENGINE FAILURE PROCEDURE

ENGINE FAILURE DURING TAKE-OFF

1 Proceed as follows:

(a) If the aircraft is not airborne, close throttle, carefully apply brakes, and stop in the shortest safe distance.

(b) If the aircraft is airborne, below circuit altitude, close throttle, lower the nose, and assume gliding airspeed of 70 knots IAS. Select landing area straight ahead, making only essential manoeuvres in order to avoid obstacles.

(1) If time permits, carry out FMS check:

Fuel - check pressure; if no indication, check fuel selector and contents.

Mixture - RICH

Carburettor heat - HOT

Magneto switches - ON

(2) Before touching down, select fuel and all switches OFF. Hood as required.

CAUTION

Never turn back to the airfield, as this entails a downwind landing at greater groundspeed, with the possibility of losing control during the turn.

ENGINE FAILURE IN FLIGHT

2 Should failure occur above circuit altitude, gain height with excess airspeed; close throttle; then lower the nose and assume a normal gliding airspeed of 70 knots IAS. Select landing area, and at the same time:

(a) Carry out FMS check:

(1) Fuel pressure. If no indication, check tank selector and contents.
(2) Mixture - RICH.
(3) Carburettor air - HOT. (Control knob - out.)
(4) Magneto switches - ON.

(b) Trim elevators for glide, 70 knots IAS.

FORCED LANDING

3 With the engine inoperative, the landing area should be selected with extra care. A normal glide approach should be made. Aim directly into wind to reduce the landing run to a minimum, and touch down in the three-point attitude. On final approach carry out the following checks:

(a) Fuel - OFF.
(b) Brakes - OFF.
(c) Mixture - RICH, carburettor air - COLD.
(d) Harness - tight.
(e) Hood - open.
(f) Magneto switches - OFF.

ACTION IN EVENT OF FIRE

FIRE ON THE GROUND

4 The Chipmunk aircraft is not equipped with a fire extinguisher system. Should an engine fire occur on the ground, the following procedure shall apply:

(a) No attempt is to be made to deal with the fire by either opening the throttle or attempting to fight it, until the propeller has stopped. Upon first indications of a fire, the pilot or technician shall proceed as follows:

(1) Throttle - closed.
(2) Idle cut-off control - pulled out.
(3) Fuel - OFF.
(4) Magneto switches - OFF.
(5) Abandon cockpit (line crew shall deal with fire).

(b) No attempt is to be made to restart an engine that has been on fire, until the cause of the fire has been ascertained.

FIRE IN THE AIR

5 Sideslip the aircraft so that the flames and fumes are not directed at the cockpit, and at the same time proceed as follows:

(a) Throttle - closed.

(b) Fuel - OFF.

(c) Magneto switches - OFF.

(d) If fire persists, abandon aircraft.

COCKPIT FIRE

6 Operate the hand fire extinguisher, if it is obvious that the fire can be so controlled, and make a landing as soon as possible. Otherwise abandon aircraft.

WARNING

Be careful to avoid a concentration of fumes in the cockpit. Open the canopy as far as possible after the fire is extinguished, to dissipate fumes. Prolonged exposure to these fumes is dangerous.

ABANDONING AIRCRAFT IN FLIGHT

7 Proceed as follows:

(a) Open the canopy fully by pulling inward sharply on the canopy drag flap release cable.

WARNING

In normal speed ranges the canopy may only partially open. It will move fully to the rear, however, with slight elbow or hand pressure, or when aircraft is placed in climbing attitude. At speeds above 150 knots IAS the flap will drag the canopy fully to the rear stops.

(b) Ensure that student or passenger abandons the aircraft first.

(c) Fuel - OFF.

(d) All switches - OFF.

(e) Safety harness - undone.

(f) Headset - removed.

(g) Trim aircraft for normal glide and head away from inhabited areas.

(h) Vacate the cockpit, step out on the wing, and dive over the trailing edge, away from the aircraft.

DITCHING

8 Ditching this aircraft is not recommended, unless there is no alternative. If it is necessary to ditch, stall the aircraft onto the water in the three-point attitude with full flaps, canopy open, parachute harness undone, and safety harness tight. Expect the aircraft to nose over on contact.

ELECTRICAL FAILURE

9 In the event of electrical failure, check the following:

(a) Generator switch ON; circuit breaker in.

(b) Voltmeter reading.

(c) If the generator is inoperative, turn off all unnecessary electrical equipment to conserve battery power.

(d) Land as soon as practicable.

LANDING WITH FLAT TIRE

10 From a normal approach, using full flap, land on the good tire and tail wheel. Keep the flat tire off the ground as long as possible, and use brake as necessary to keep the aircraft straight and to slow down. Remember that the aircraft will swing towards the flat tire.

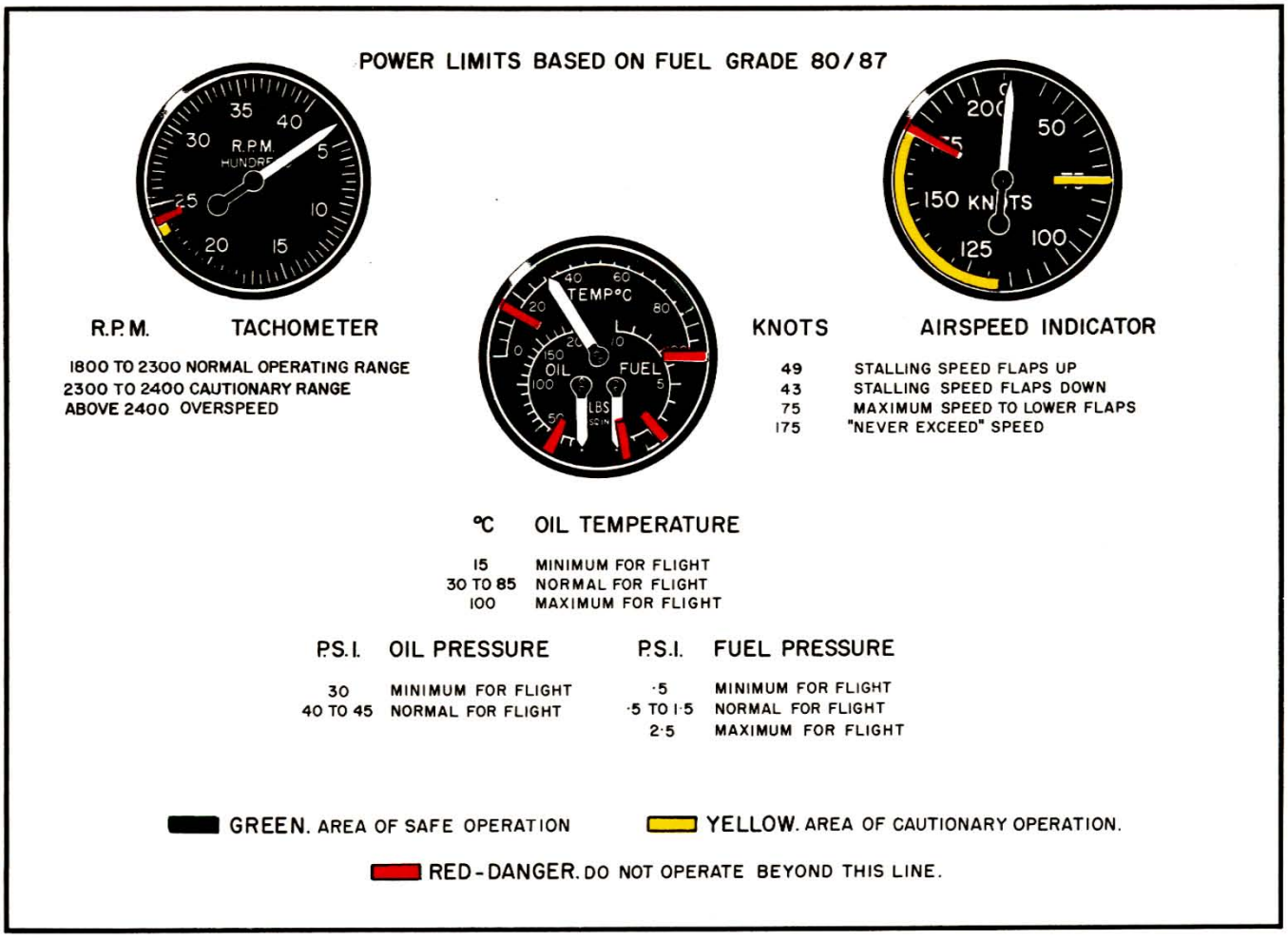


Figure 4-4 (Issue 2) Instrument Markings

STALLING SPEEDS

7 Stalling speeds for a gross weight of 2,000 lbs with power off are given in Figure 4-5.

CONDITION	SPEED (Knots IAS)
Flaps Up	49
Half Flaps	44
Flaps Down	43

Figure 4-5 Stalling Speeds Table

ACCELERATION LIMITS

8 The Operating Flight Strength Diagram (Figure 4-6) gives the maximum G values to which the airframe may be safely subjected in flight under various conditions.

ENGINE LIMITATIONS

9 Figure 4-7 gives the limitations for the Gipsy Major CIG, 7G, and 10 MK1-3 engines, as recommended by the manufacturer, and should not be exceeded.

CAUTION

All conditions of overspeeding must be noted in the Aircraft Maintenance Record Set, form CF335.

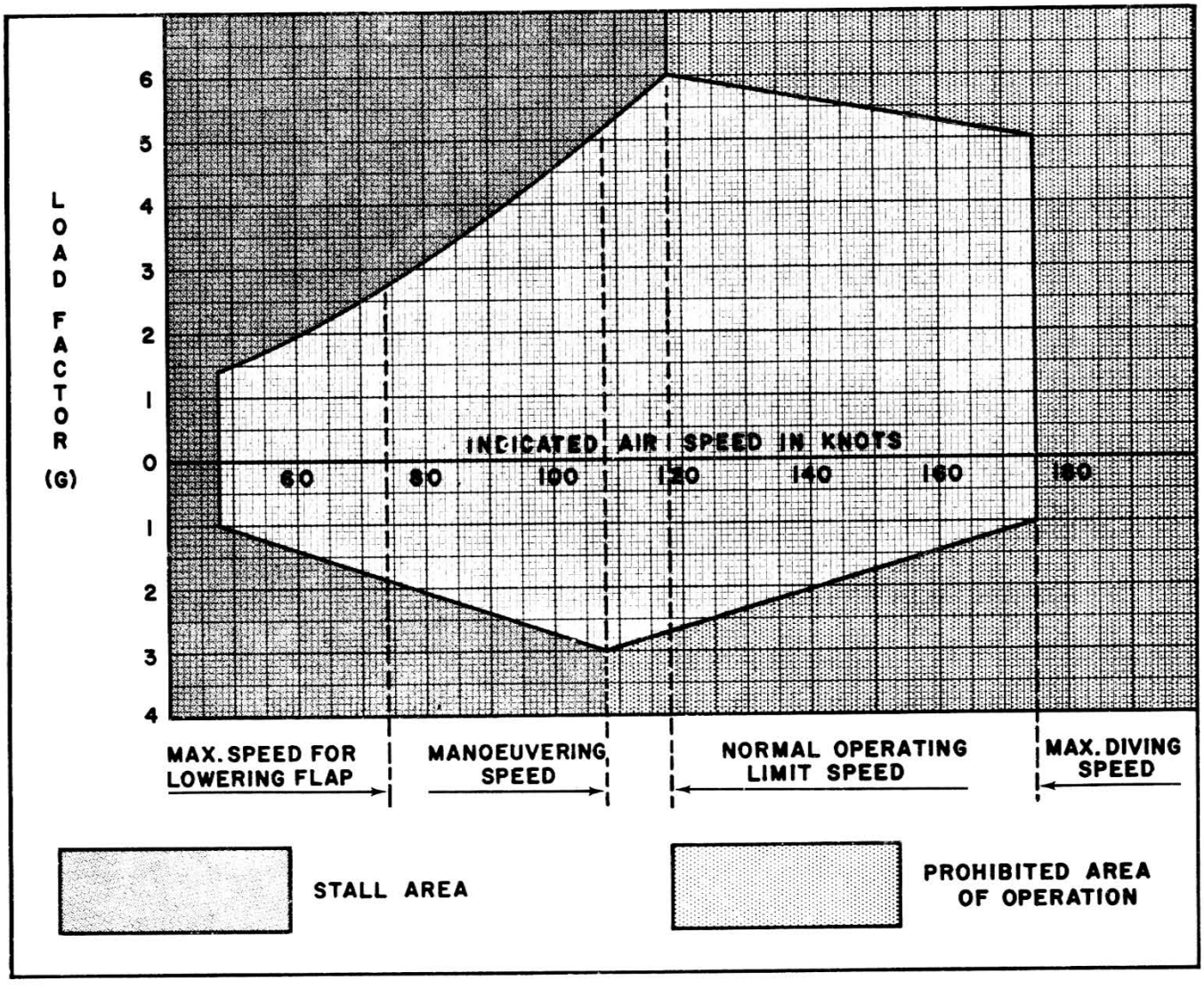


Figure 4-6 Operating Flight Strength Diagram

CONDITION	RPM	OIL TEMP	MIXTURE
Take-Off to 1.000 ft.	2.400 (Full Throttle)	100° C	Rich
Climb	2.400 (Full Throttle)	85° C	Rich
Cruising	2.300	85° C	Rich
Maximum RPM	2.400 (5 min limit)		Rich
Overspeed	Above 2.400		
Engine Removal	2.675		Rich

Figure 4-7 Engine Limitations Table

PART 4

OPERATING DATA

LIMITATIONS AND RESTRICTIONS

GENERAL

1 The aircraft must be operated according to the limitations and instructions given in this part.

NOTE

With two occupants, the fuel load is restricted to 17 Imp gal.

WEIGHT AND BALANCE

2 The maximum gross weight is 2,000 lbs for take-off and landing.

INSTRUMENT MARKINGS

3 For instrument markings, showing operating limits, see Figure 4-4.

AIRSPEED LIMITATIONS

4 Airspeed limitations under various conditions of flight are shown in Figure 4-1.

CONDITION	SPEED (Knots IAS)
For Lowering Flaps	75
For Lowering Landing Light	65
Max. Diving Speed, 2,400 rpm (5 min. limit)	175

Figure 4-1 Airspeed Limitations Table

MAXIMUM SPEEDS

5 The maximum speeds under various conditions of flight are presented in Figure 4-2.

CONDITION	SPEED (Knots IAS)
Level at Sea Level (Full Throttle)	118
Level at 1,000 ft (Full Throttle)	115
Level at 5,000 ft (Full Throttle)	106

Figure 4-2 Maximum Speeds Table

RECOMMENDED SPEEDS

6 The recommended airspeeds under various conditions of flight are shown in Figure 4-3.

CONDITION	SPEED (Knots IAS)
Take-Off	53
Rough Air	80
Climb to 5,000 ft	80
Glide	70
Approach	65
Overshoot (Flaps Down) (No Flaps)	65 70
Cruising at Sea Level (2,100 rpm)	103
Cruising at 5,000 ft (2,100 rpm)	93
Aerobatics -	
Roll	110
Loop	120
Half Roll Off Top Of Loop	135

Figure 4-3 Recommended Speeds Table

CONDITION	RPM	IMP GAL PER HOUR
Economical Cruising (Below 3,000 ft)	2,100	6.75
Economical Cruising (Above 3,000 ft)	1,800/2,100	5.5-6.4
Take-Off	2,000/2,100	8.7-9.8

Figure 4-8 Fuel Consumption Table

NOTE

The maximum rpm obtainable with the Chipmunk aircraft under level flight conditions is 2,250 to 2,350.

POSITION ERROR CORRECTION

10 The correction for position error is negligible.

FUEL CONSUMPTION

11 Figure 4-8 gives the fuel consumption for various power settings.

OIL CONSUMPTION

12 The oil consumption varies from 4.5 pints per hour at full throttle to 2.0 pints per hour at economical cruising.

FLIGHT DATA

13 The data shown in Figure 4-9 are based on ICAN standard atmosphere, with an aircraft gross weight of 2,000 lbs.

NOTE

With one occupant only, the fuel capacity is 27 Imp gal. Range and endurance increases accordingly.

Take-off Ground Run, Sea Level, Zero Wind Total Take-Off Distance to Clear 50 ft	645 ft 1,040 ft
Landing Ground Run, Sea Level, Zero Wind Total Landing Distance over 50 ft	490 ft 960 ft
Rate of Climb at Sea Level	825 fpm
Service Ceiling	16,000 ft
Absolute Ceiling	18,200 ft
*Cruising at 5,000 ft (17 Imp gal. fuel capacity)	235 nms
*Endurance, cruising at 5,000 ft (17 Imp gal. fuel capacity)	$2\frac{1}{4}$ hrs

Figure 4-9 Flight Data Table

*Based on an allowance of approx. 2 Imp gal. fuel for warming up, take-off, and climb to 5,000 ft.

PART 5

FLIGHT TESTING

INTRODUCTION

1 The procedures detailed in this Part are to be observed during all flight testing of the aircraft and its systems. The Flight Test Profile is shown in Figure 5-1. The Flight Test Card is shown in Figure 5-2. The following rules also apply:

(a) All maintenance flight testing must be carried out in accordance with CFP 100(A), art 232; EO 00-50-20, Part 4; and Parts 2, 3, and 4 of this EO.

(b) All flight data must be taken from the front cockpit instruments.

(c) Ensure that the weight and balance, as shown in EO 05-10B-8, are within specified limits.

NOTE

The following test procedures do not relieve the test pilot from complying with the procedures and checks laid out in Parts 1 to 4 inclusive and the Chipmunk Check List. Items that are checked in normal operations are not detailed in this Part, unless amplification is required.

BEFORE FLIGHT

EXTERNAL

2 Carry out all the external checks listed before entering the cockpit.

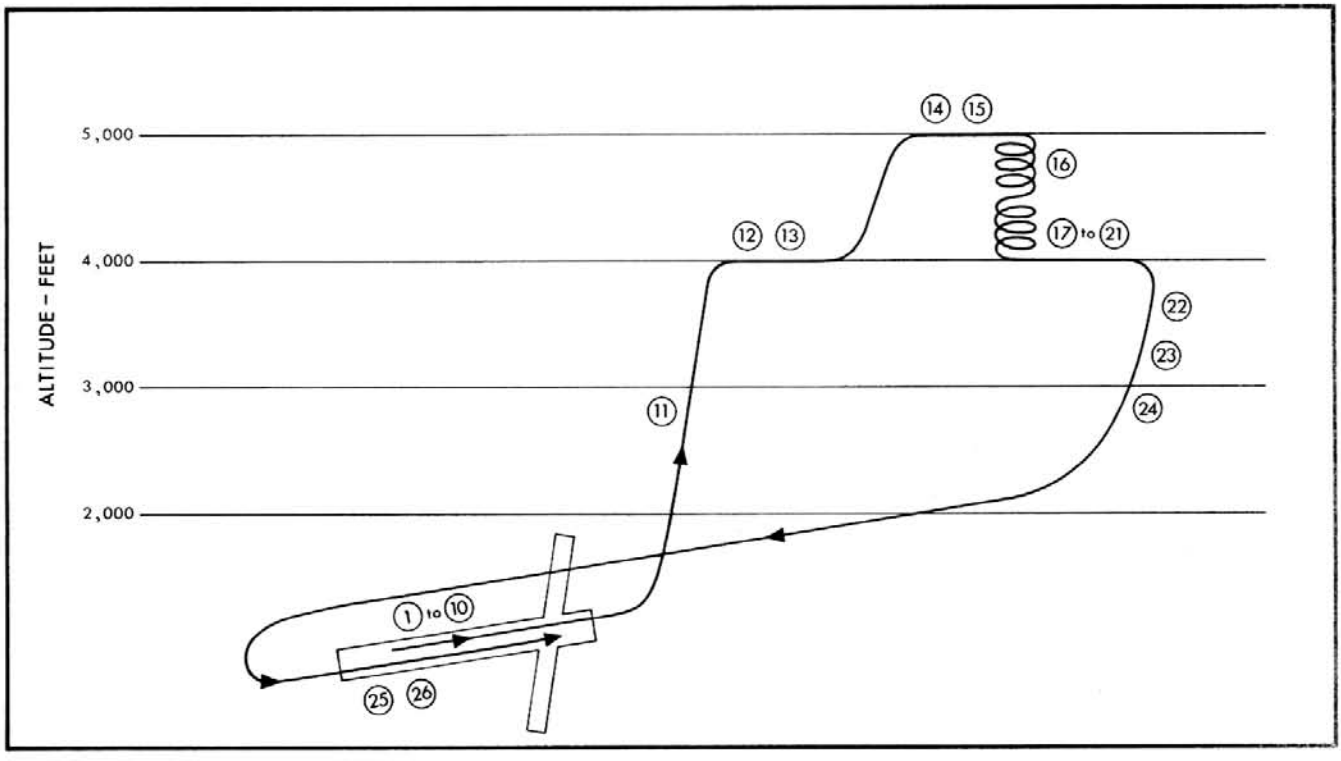


Figure 5-1 Flight Test Profile

PRE-START

NOTE

Carry out the pre-start check, and include the following specific items in normal sequence.

3 Check aileron, rudder, and elevator controls for smooth and correct operation.

4 Check elevator trim; ensure that the trim tab operates correctly.

NOTE

With the parking brakes on and the rudder neutral, the rudder pedals are to be even.

START

5 Carry out normal start. Record oil pressure, fuel pressure, generator operating, and idling rpm readings.

BEFORE TAXIING

6 Before taxiing, ensure that generator is charging.

7 Complete a functional check of intercommunication and VHF on normal and emergency frequencies.

TAXIING

NOTE

At this stage, adjust altimeter to field altimeter setting. Ensure that each instrument reads within ± 50 feet of the airfield altitude.

8 Check the wheel brakes while taxiing; the brake handle counterbalanced pawl should engage positively when selected.

ENGINE CHECK

9 Complete the engine run-up before lining up on the runway.

(a) Open up to 1,600 rpm.

(b) Check each magneto.

(c) Check voltmeter reading.

(d) Check carburettor heat.

(e) Check power, full throttle, note rpm; check oil pressure, oil temperature, and fuel pressure.

(f) Check slow running.

IN FLIGHT

TAKE-OFF

10 During take-off, note the airspeed when the aircraft becomes airborne; check control response.

CLIMB

11 Climb at full throttle.

(a) Note rpm.

(b) Note oil temperature, oil pressure, fuel pressure.

(c) Check elevator trim.

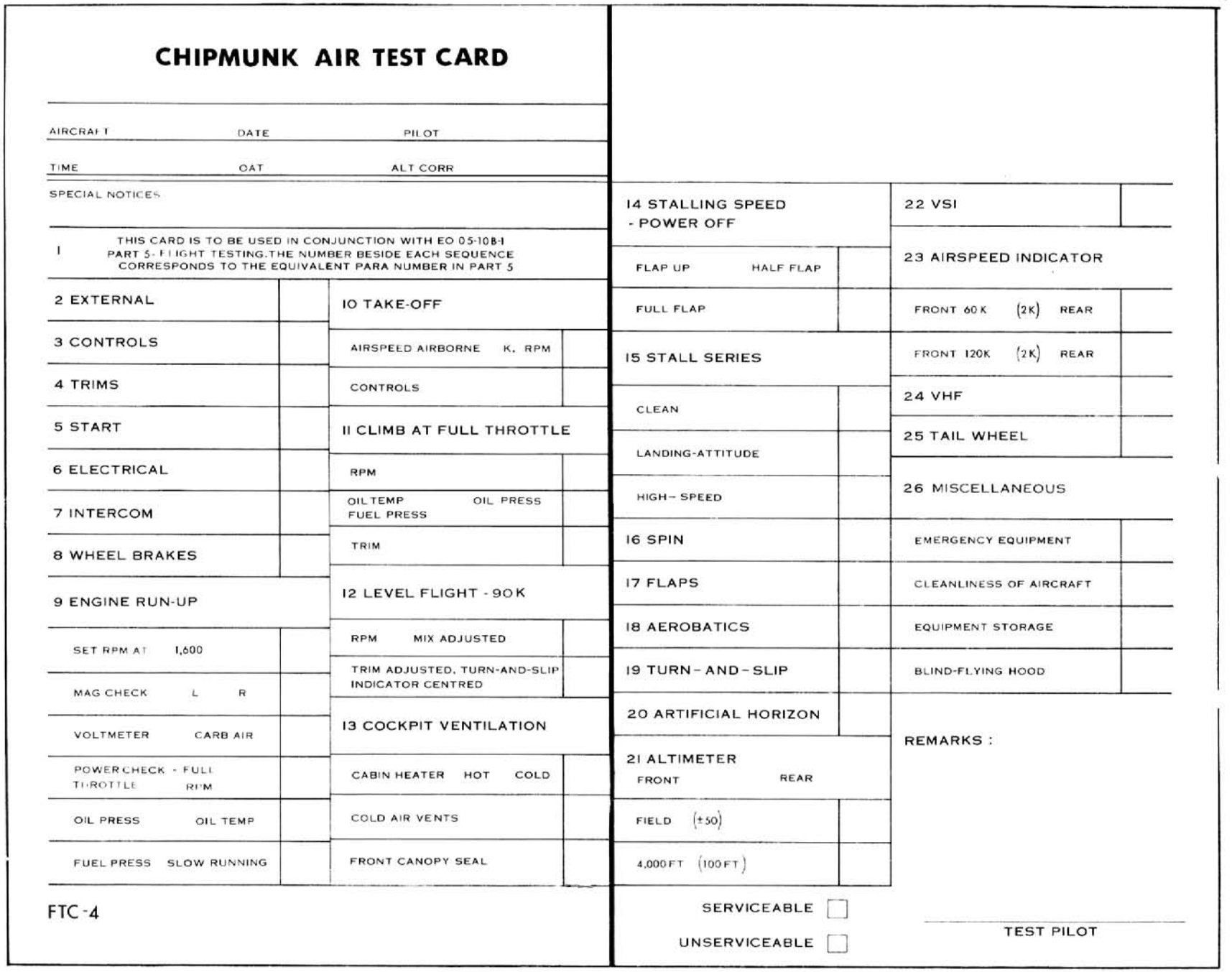
LEVEL FLIGHT

12 Level the aircraft at 4,000 feet and adjust power to give 90 knots IAS.

(a) Note rpm.

(b) Adjust mixture control.

(c) Trim aircraft for straight-and-level flight, and note turn-and-slip indicator.



CHIPMUNK AIR TEST CARD

AIRCRAFT DATE PILOT

TIME OAT ALT CORR

SPECIAL NOTICES

1 THIS CARD IS TO BE USED IN CONJUNCTION WITH EO 05-10B-1 PART 5 - FLIGHT TESTING. THE NUMBER BESIDE EACH SEQUENCE CORRESPONDS TO THE EQUIVALENT PARA NUMBER IN PART 5

2 EXTERNAL

3 CONTROLS

4 TRIMS

5 START

6 ELECTRICAL

7 INTERCOM

8 WHEEL BRAKES

9 ENGINE RUN-UP

- SET RPM AT 1,600
- MAG CHECK L R
- VOLTMETER CARB AIR
- POWER CHECK - FULL THROTTLE RPM
- OIL PRESS OIL TEMP
- FUEL PRESS SLOW RUNNING

10 TAKE-OFF

- AIRSPEED AIRBORNE K. RPM
- CONTROLS

11 CLIMB AT FULL THROTTLE

- RPM
- OIL TEMP OIL PRESS FUEL PRESS
- TRIM

12 LEVEL FLIGHT - 90K

- RPM MIX ADJUSTED
- TRIM ADJUSTED, TURN-AND-SLIP INDICATOR CENTRED

13 COCKPIT VENTILATION

- CABIN HEATER HOT COLD
- COLD AIR VENTS
- FRONT CANOPY SEAL

14 STALLING SPEED - POWER OFF

- FLAP UP HALF FLAP
- FULL FLAP

15 STALL SERIES

- CLEAN
- LANDING-ATTITUDE
- HIGH-SPEED

16 SPIN

17 FLAPS

18 AEROBATICS

19 TURN-AND-SLIP

20 ARTIFICIAL HORIZON

21 ALTIMETER FRONT REAR

- FIELD (±50)
- 4,000 FT (100 FT)

22 VSI

23 AIRSPEED INDICATOR

- FRONT 60K (2K) REAR
- FRONT 120K (2K) REAR

24 VHF

25 TAIL WHEEL

26 MISCELLANEOUS

- EMERGENCY EQUIPMENT
- CLEANLINESS OF AIRCRAFT
- EQUIPMENT STORAGE
- BLIND-FLYING HOOD

REMARKS :

FTC-4

SERVICEABLE ☐

UNSERVICEABLE ☐

TEST PILOT

Figure 5-2 Flight Test Card

(d) Move control column approximately 2 inches to the right, then release. The aircraft should roll in response to the aileron deflection, and the control column should re-centre.

(e) Move control column approximately 1 inch forwards or back, then release. The aircraft should pitch in response to elevator deflection, and the control column should re-centre.

NOTE

Failure to meet the requirements of (c), (d), and (e) may indicate improperly rigged systems or control malfunction.

COCKPIT VENTILATION

13 Check operation of the cabin heat control, outside air control and note any drafts from front canopy seal.

STALL SPEED

14 Climb up to 5,000 feet, perform a power-off stall with flaps up, and note the stalling speed. Repeat the stall with half flap and full flap, and note the stalling speeds.

STALL

15 This stall series is conducted to determine any undesirable flight characteristics involving severe wing drops or flick rolls. Carry out the sequence at 5,000 feet.

(a) Clean stall - Enter with nose slightly above the horizon, keeping wings level with aileron. Reduce power to 1,500 rpm and hold attitude until the aircraft stalls.

(b) Landing-attitude stall - Simulate final approach, full flaps down and 1,500 rpm; allow airspeed to decrease to 50 knots, then round out until the stall occurs.

NOTE

The aircraft is serviceable if there is no wing drop throughout the approach to the stall. Wing drop may occur after the stall.

(c) High-speed stall - Enter a co-ordinated 60-degree bank turn at 90 knots. Reduce power to 1,500 rpm and permit the airspeed to decrease. At 70 knots, increase the back pressure on the stick until the aircraft stalls. Repeat in the opposite direction.

SPIN

16 Proceed as follows:

(a) Spin aircraft to both the left and the right with power off and flaps up. The aircraft must make at least two full turns.

(b) Record any abnormal characteristics.

FLAPS

17 To test flaps, proceed as follows:

(a) Trim aircraft straight and level at 70 knots IAS. Fully extend and retract the flaps.

(b) There must be no change in lateral trim during flap movement.

AEROBATICS

18 Perform several aerobatic manoeuvres and note any adverse handling characteristics.

TURN-AND-SLIP INDICATOR

19 Proceed as follows:

(a) Trim aircraft in straight-and-level flight at 90 knots IAS.

(b) Establish and hold a rate-one turn through 360 degrees, first to the right, then to the left.

(c) Ensure that the time lapse for the complete turn is 2 minutes. Ensure that during the turning manoeuvres the needle and ball of each instrument move freely, and that both instruments indicate alike.

NOTE

A momentary indication of a turn in the opposite direction may occur as the turn is initiated.

ARTIFICIAL HORIZON

20 During the turns to check the turn needle, also check the artificial horizon; the angle of bank should be 15 to 20 degrees. On straightening out from each turn, the bank angle error should not exceed 5 degrees.

ALTIMETER

21 The altimeter pointers should move positively and without hesitation under normal flying conditions. The reading between the two instruments should not differ more than 100 feet at 4,000 feet.

VERTICAL SPEED INDICATOR

22 The difference in reading between the two instrument pointers must not exceed 200 feet per minute. Check the instruments' accuracy against a timed climb or descent.

AIRSPEED INDICATOR

23 The airspeed indicator should be checked at two or three airspeeds. The maximum allowable difference between the two airspeed indicators is 2 knots.

RADIO

24 The radio should be checked at altitude before returning to the circuit. Two-way communication should be satisfactory on the frequency selected.

LANDING AND POST-LANDING

TAIL-WHEEL SHIMMY

25 On landing, ensure there is no tail-wheel shimmy.

EQUIPMENT CHECKS

26 Note the security and condition of the emergency equipment, articles stowed, and blind-flying hood. The aircraft should be clean internally and externally.