

FOR OFFICIAL USE ONLY

AIR PUBLICATION
PILOT'S NOTES

PROVISIONAL PILOT'S NOTES

SECTIONS 1 & 2

BERMUDA I AIRCRAFT

WRIGHT GR-2600-A5B-5 ENGINE

TO BE DESTROYED ON RECEIPT OF OFFICIAL AIR PUBLICATION

BRITISH AIR COMMISSION 8/42.

SECTION 1

CONTROLS AND EQUIPMENT FOR PILOT

INTRODUCTION

1. The Bermuda I is a two seater, low-wing monoplane dive-bomber powered with one Wright GR-2600-A5B-5 engine, driving a Curtiss electric constant speed propeller.

MAIN SERVICES

2. Fuel System. Fuel is supplied by an engine-driven pump from three fuel tanks. A tank is mounted in the fuselage and two tanks are contained in the wing, one on each side. All tanks are self-sealing and each wing tank is divided into two sections protected by individual self-sealing cells. An extra tank (not self-sealing) can be fitted in the bomb-bay. The starboard wing tank is provided with a standpipe which maintains a reserve fuel supply. The fuel supply is controlled by a cock mounted centrally below the main instrument panel. A hand pump is fitted in both the front and rear cockpits for emergency use and for building up fuel pressure. The triple contents gauge for the three normal tanks is on the extreme right-hand side of the instrument panel.
3. Oil System. The system incorporates a thermostatically controlled cooler. The oil pressure and temperature are indicated by a combined gauge (which also shows the fuel pressure) on the right-hand side of the instrument panel.
4. Hydraulic System. The system provides for hydraulic operation of the undercarriage, the wheel brakes, the wing and diving flaps, the bomb-bay doors and the cowling gills. Pressure is stored in an accumulator which is kept charged by an engine-driven pump. A hand-pump is provided for operating any of the units if the engine-driven pump is not functioning. Pressure is indicated by a gauge on the auxiliary instrument panel at the right-hand side of the cockpit. Operating pressures are as follows:

Normal	-	800 to 1000 lb/sq.in.
Maximum	-	1200 lb/sq.in.
Minimum	-	600 lb/sq.in.

Operation of individual units is described in subsequent paragraphs.

5. Electrical System. Power for the operation of the starter, propeller, gun firing and bomb releasing, as well as all the lighting accessories, is supplied by an engine-driven generator and one accumulator. The lighting and general switches are on the switch panel on the right-hand side and the bomb releasing switches and propeller switches are on the left-hand side.

AEROPLANE CONTROLS

6. Primary Flying Controls and Locking Devices. The controls are conventional and each rudder pedal is adjustable to one of five positions by means of a small lever on the out-board side of each pedal. The control locking device consists of a cap over the control column, two cables from the cap which hook onto the outer ends of each rudder pedal, and two adjustable cables from the cap which hook onto the bulk-head behind the seat (the left-hand cable has a quick-release).
7. Trimming Tabs. A group of controls, on the left-hand side of the cockpit, adjust the elevator, rudder and port aileron trimming tabs. Each control works in the natural sense and is provided with a concentric luminous indicator showing the approximate position of the tabs.
8. Undercarriage Controls. The undercarriage units are raised and lowered hydraulically. Pressure is supplied by an engine-driven pump and normal operation is accomplished by moving the control lever (located under the engine control quadrant on the left-hand side of the cockpit) to the "Up" or "Down" position, as required. If the engine-driven hydraulic pump is not functioning, the undercarriage can be lowered or raised by operating the hydraulic hand pump located on the cockpit floor, forward of and to the right of the seat. The desired movement must first be selected by moving the control lever in the normal manner.
9. Undercarriage Emergency Lowering. Special emergency provision is made for lowering the undercarriage in case the normal method will not work. Procedure is outlined in Section 2.
10. Flap Control. Hydraulically-operated, split trailing edge flaps are fitted. These are unconventional in their arrangement. The underneath portions of the flaps can be lowered separately for use as normal flaps (e.g. when landing) and the underneath and upper portions can be lowered and raised, respectively, in unison, for use as diving brakes. A single control lever, located aft of the undercarriage control lever on the left-hand side of the cockpit, is used to produce either of these operations. The lever moves in a U-shaped slot.

- (i) To lower underneath flaps only: Move the lever forward from the neutral position to the end of the right-hand portion of the slot.
- (ii) To open split-flaps for diving: Move the lever to the left from the neutral position across the base of the U. Then push the lever forward to the end of the left-hand portion of the slot.

The flaps can be set in any position by returning the lever to "neutral" as soon as the desired setting has been reached. The position of the flaps is indicated on the same instrument as the undercarriage position (see paragraph 11). If the engine-driven hydraulic pump should fail or if the engine is stopped, the flaps can be operated by using the hydraulic hand pump.

- 11. Undercarriage and Flap Position Indicator. The combined undercarriage and flap position indicator is mounted on the left side of the main instrument panel. In the upper half of the dial is an outline of a twin-engined aeroplane. In the lower half of the dial is a cross-sectional outline of an aeroplane wing and in appropriate position is mounted a small pointer shaped to represent a flap. When the wheels are in raised and locked position nothing is indicated below the wing. As each wheel is unlocked a red tab appears. As the wheel descends the red tab is pushed downwards. When the wheel is locked in the down position, the red tab is pushed down out of sight and only the wheel remains visible. The red flag is always revealed until the up or down locks operate, then it quickly snaps out of sight. As the flaps are opened the indicator pointer moves to indicate exact angular position of flaps. The landing flaps alone are indicated, as the dive flaps are visible to the pilot. The relative motion of the dive flaps when in use is the same as the landing flaps. If for any reason the power supply is shut off, the landing wheel markers drop out of sight, leaving a flag marked "off" exposed. The flap pointer also moves off its normal scale and hangs straight downwards.
- 12. Wheel Brakes. The brakes are each applied by a toe pedal on the corresponding rudder pedal; hydraulic operating pressure is obtained from the main hydraulic system. If the main system should fail, pressure may be obtained in an emergency by operating the hydraulic hand pump at the same time as the brake pedals are depressed. A parking brake is not provided.
- 13. Flying Instruments. Standard blind flying instruments are provided consisting of airspeed indicator, altimeter, directional gyro, artificial horizon, rate-of-climb indicator, compass and turn and bank indicator.

14. Dual Controls. The rear cockpit is provided with a skeleton set of controls consisting of:

Detachable control column
Rudder pedals (non-adjustable and without brakes)
Throttle lever only
Ignition switch

ENGINE CONTROLS

15. Throttle Control. Automatic boost control is not fitted. Full throttle position should be used for take-off.
16. Mixture Lever. This is situated on the throttle quadrant, "Rich Mixture" position being to the rear, "Automatic Lean" in the middle and "Idle Cut-Off" fully forward. On the Holley 168H and 168HA carburettors, the mixture control is fully automatic, furthermore, should the mixture control be left in the lean position when throttle is opened, a special valve automatically enriches the mixture to a safe strength.
17. Propeller Control. The Curtiss electric propeller may be either (a) under constant speed control, or
(b) fixed at any desired pitch setting.
For constant speed control or for changing the fixed pitch, the propeller safety master switch must be ON. The propeller electrical switches are mounted on the left-hand side of the cockpit near the instrument panel.
- (a) Constant Speed Operation. With the selector switch at AUTO, the r.p.m. can be set as required by operating the lever (marked "P") on the throttle quadrant. Push the lever forward to increase r.p.m. and pull it back to decrease r.p.m.
- (b) Changing Fixed Pitch. The propeller pitch is fixed when the selector switch is at MANUAL. Pitch is changed by holding the switch to either INC. R.P.M. or DEC R.P.M. until the desired r.p.m. are attained.

NOTE:- The circuits for AUTO and MANUAL operation are separate and in the event of failure of one the other may be used. If the circuit is overloaded the safety switch is tripped and moves to the neutral position. To reset the switch it must first be moved to OFF, and then to ON, after short delay.

18. Supercharger Control. The lever on the throttle quadrant (marked "SC") is moved fully forward for HIGH (S) gear and fully aft for LOW (M) gear.
19. Carburettor Air-Intake Heat Control. The push-pull control below the left-hand side of the instrument panel should be pushed in for cold air, and pulled out for warm air. Intermediate positions should not be used.
20. Cowling Gills Control. The cowling gills are hydraulically operated. The control knob is located under the right-hand portion of the main instrument panel. The gills are opened by pulling the knob fully outwards and are closed by pushing it fully inwards. They can be set any any intermediate setting by returning the knob to the half-way position.
21. Fuel Priming Pumps. Two priming pumps are fitted, a hand pump on the left of the pilot's seat for priming the fuel system and building up fuel pressure, and an electrically operated pump for priming the cylinders controlled by a switch on the right-hand electrical panel.
22. Ignition Switch. This is on the panel at the left-hand side of the cockpit.

WARNING:- An ignition switch is also fitted in the rear cockpit and this switch must be at the BOTH ON position at all times. If it is OFF the front cockpit switch will be inoperative.
23. Inertia Starter. This is an Eclipse Series 41 electric inertia and direct cranking starter. It is energised by the aircraft accumulator or by an external electrical source or by a hand-crank operated from the ground. The starter switch is on the right-hand electrical switch panel.

COCKPIT ACCOMODATION AND EQUIPMENT

24. Pilot's Seat. The seat is adjustable for height by means of a lever at the right-hand side of seat.
25. Hood Control. The sliding hood is moved by a crank on the right-hand side of the cockpit. The crank can be disengaged by pulling the handle inwards, in order to slide the hood quickly by hand. When entering the cockpit the crank can also be disengaged by pressing the button protruding through the fuselage skin near the lower forward corner of the cockpit opening.
26. Sun-blinds. These are provided on top of the sliding hood.

27. Cockpit Lighting. The instrument panel is illuminated by two fluorescent lamps and separate lamps are provided for the compass, chartboard and general cockpit lighting. The switches are on the right-hand switch panel.
28. Intercockpit Message Carrier. Written messages can be passed from one cockpit to the other by a mechanically operated message carrier, located at the upper left-hand rear corner of the pilot's cockpit.

OPERATIONAL EQUIPMENT AND CONTROLS

29. Guns. The fixed guns are electrically controlled by a firing button on the control column. The selector switches are on the switch panel on the right-hand side of the cockpit. Gun charging handles are fitted, one on each side of the underside of the instrument panel, for the fuselage guns, and one on each side of the pilot's seat, for the wing guns.
30. Bomb Gear Switches and Distributor. The bomb selector switches and distributor are on the forward left-hand side of the cockpit. The bomb release switch is on the throttle lever.
31. Bomb Door Controls. The bomb doors are hydraulically opened and closed by moving the lever under the left-hand side of the instrument panel. Lever movement forwards opens the doors, and rearwards closes them.
32. Reflector Gun Sight. The sight is mounted above the instrument panel and is controlled by a dimmer switch on the base of the sight.
33. Camera. An F.24 camera can be fitted and provision is made for the normal pilot's controls on the left-hand side of the cockpit.
34. Windscreen and Carburettor Air-Intake De-Icing. De-icing fluid can be supplied to the carburettor air-intake and the windscreen by a common variable speed electrical pump. The fluid supply to the pump is controlled by a cock on the left-hand side of the cockpit. The pump is switched on and speed regulated by a rheostat on the left-hand side of

the cockpit. The supply to the windscreen can be cut off by a cock under the instrument panel if the fluid is required for the air-intake only (the air-intake cannot be isolated in a similar fashion).

NAVIGATIONAL, SIGNALLING AND LIGHTING EQUIPMENT

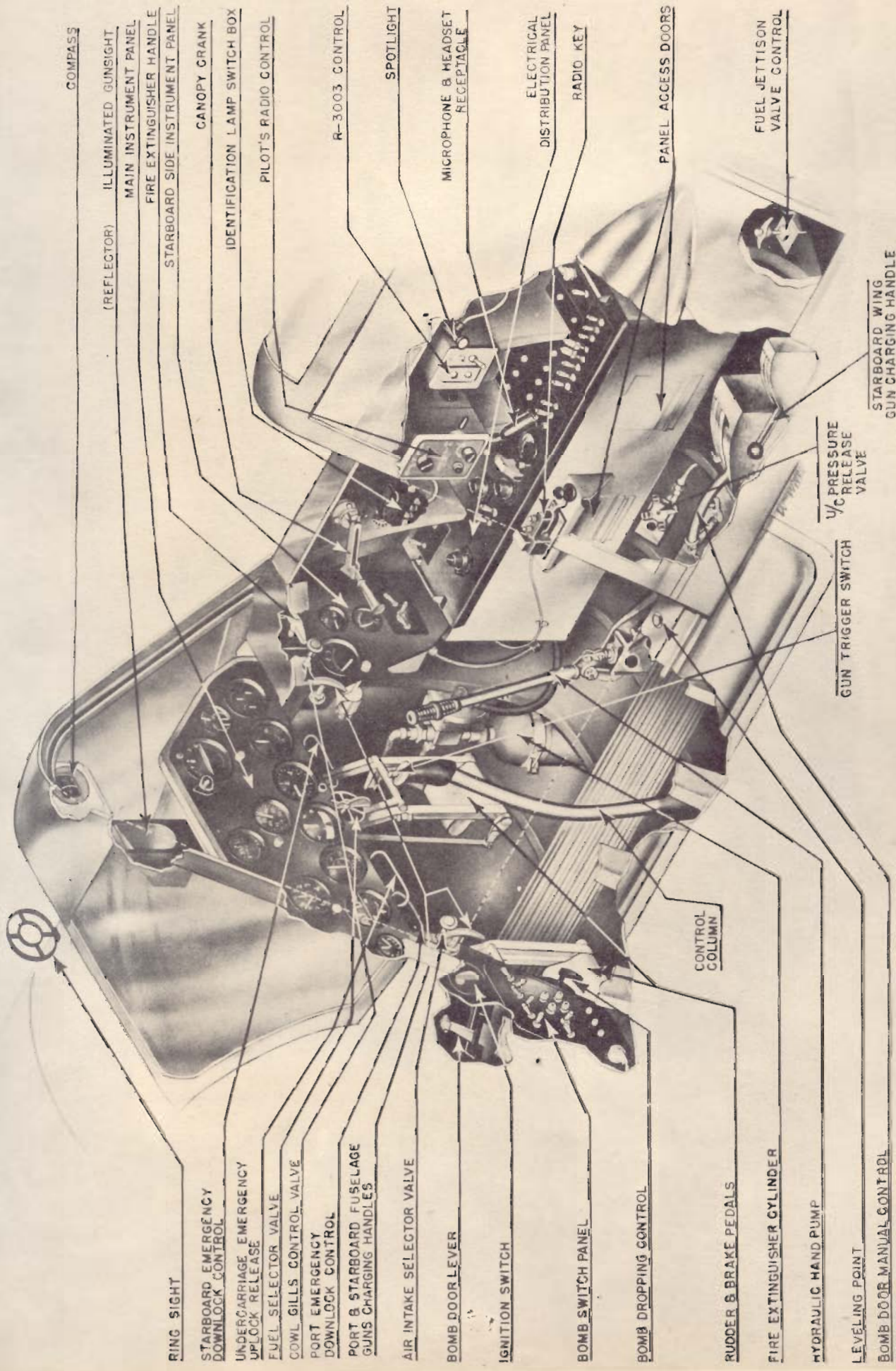
35. Wireless. A Bendix TA-12D transmitter and RA-10FB receiver are fitted and provision is made for an R.3003 receiver. The pilot's controls are on the right-hand side of the cockpit above the electrical panel.
36. Navigation and Identification Lamps. The toggle switches for the navigation, identification and formation keeping lamps are all clearly marked and are on or near the electrical panel on the right-hand side of the cockpit.
37. Landing Lamps. The lighting and operation of each lighting lamp is controlled by a switch in the electrical panel, on the right-hand side of the cockpit. The extension and retraction, as well as the switching on and off, of a lamp is effected automatically by just moving the switch to UP or DOWN as required.
38. Chartboard and Dalton Computer. A chartboard is stowed under the main instrument panel and a canvass case for the Dalton computer is provided on the left-hand side of the cockpit.

EMERGENCY EQUIPMENT

39. Fire Extinguisher. The engine fire extinguisher can be manually operated (in case the automatic operators do not function) by pulling the T-handle on the right-hand subsidiary instrument panel.
40. First-Aid. A first-aid kit is provided in a box at the right-hand side of the cockpit alongside the armour plate at the back of the seat.
41. Fuel Discharge for Destruction of Aircraft. The bomb bay can be flooded with fuel from the starboard wing tank by pulling up the T-handle (normally secured by safety wire) on the floor at the right-hand side of the seat.

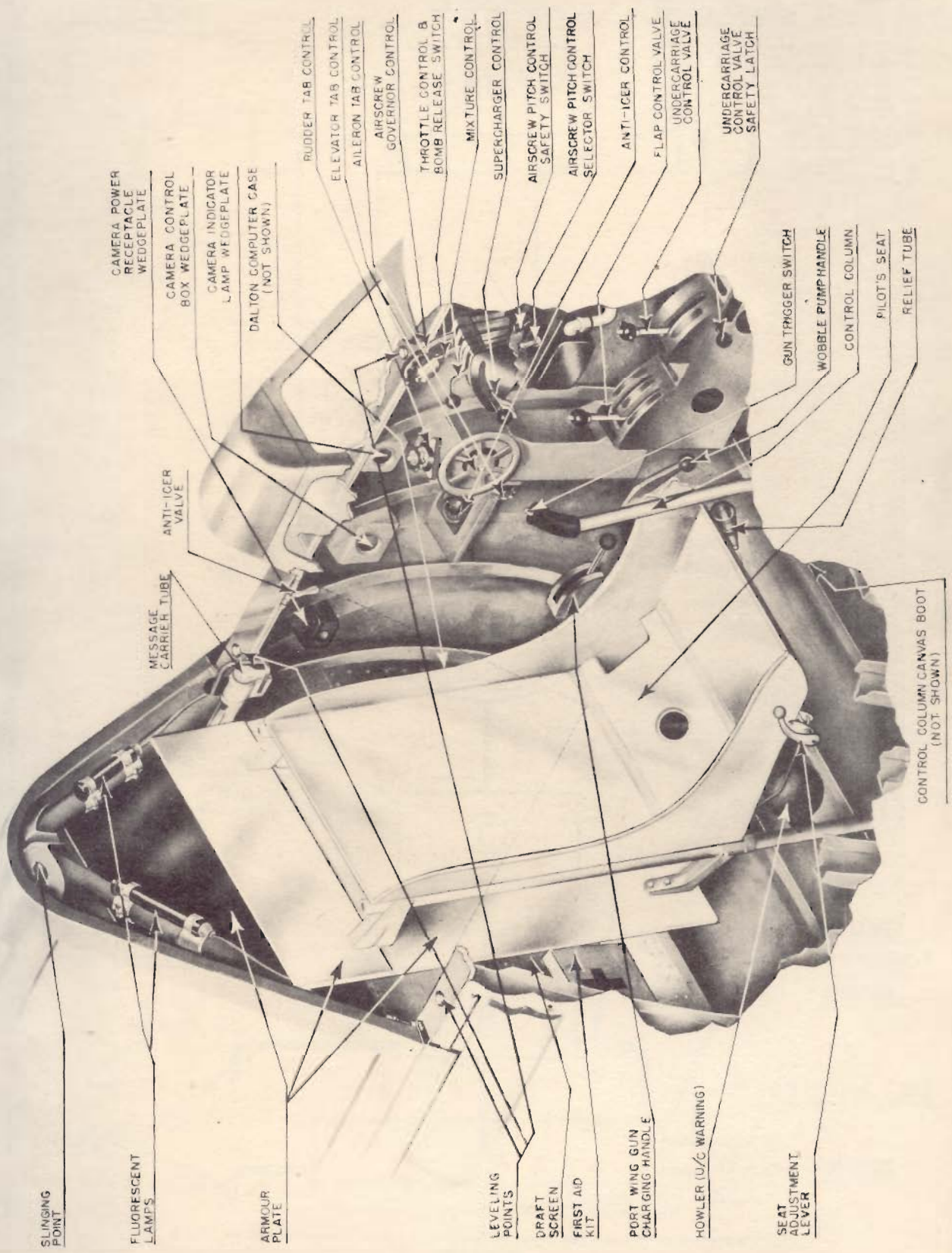
OIL DILUTION SYSTEM

42. A standard Worth oil dilution system is fitted which is operated by an electrical toggle switch situated beside the primer and starter switches.



- COMPASS
- ILLUMINATED GUNSIGHT (REFLECTOR)
- MAIN INSTRUMENT PANEL
- FIRE EXTINGUISHER HANDLE
- STARBOARD SIDE INSTRUMENT PANEL
- CANOPY CRANK
- IDENTIFICATION LAMP SWITCH BOX
- PILOT'S RADIO CONTROL
- R-3003 CONTROL
- SPOTLIGHT
- MICROPHONE & HEADSET RECEPTACLE
- ELECTRICAL DISTRIBUTION PANEL
- RADIO KEY
- PANEL ACCESS DOORS
- FUEL JETTISON VALVE CONTROL
- STARBOARD WING GUN CHARGING HANDLE
- U/C PRESSURE RELEASE VALVE
- GUN TRIGGER SWITCH
- CONTROL COLUMN
- RING SIGHT
- STARBOARD EMERGENCY DOWNLOCK CONTROL
- UNDERCARRIAGE EMERGENCY UPLOCK RELEASE
- FUEL SELECTOR VALVE
- COWL GILLS CONTROL VALVE
- PORT EMERGENCY DOWNLOCK CONTROL
- PORT & STARBOARD FUSELAGE GUNS CHARGING HANDLES
- AIR INTAKE SELECTOR VALVE
- BOMB DOOR LEVER
- IGNITION SWITCH
- BOMB SWITCH PANEL
- BOMB DROPPING CONTROL
- RUDDER & BRAKE PEDALS
- FIRE EXTINGUISHER CYLINDER
- HYDRAULIC HAND PUMP
- LEVELING POINT
- BOMB DOOR MANUAL CONTROL

PILOT'S COCKPIT - GENERAL VIEW AND STARBOARD SIDE



SLINGING POINT

FLUORESCENT LAMPS

ARMOUR PLATE

LEVELING POINTS

DRAFT SCREEN

FIRST AID KIT

PORT WING GUN CHARGING HANDLE

HOWLER (U/C WARNING)

SEAT ADJUSTMENT LEVER

CAMERA POWER RECEPTACLE WEDGEPLATE

CAMERA CONTROL BOX WEDGEPLATE

CAMERA INDICATOR LAMP WEDGEPLATE

DALTON COMPUTER CASE (NOT SHOWN)

MESSAGE CARRIER TUBE

ANTI-ICER VALVE

RUDDER TAB CONTROL

ELEVATOR TAB CONTROL

AILERON TAB CONTROL

AIRSCREW GOVERNOR CONTROL

THROTTLE CONTROL & BOMB RELEASE SWITCH

MIXTURE CONTROL

SUPERCHARGER CONTROL

AIRSCREW PITCH CONTROL SAFETY SWITCH

AIRSCREW PITCH CONTROL SELECTOR SWITCH

ANTI-ICER CONTROL

FLAP CONTROL VALVE

UNDERCARRIAGE CONTROL VALVE

UNDERCARRIAGE CONTROL VALVE SAFETY LATCH

GUN TRIGGER SWITCH

WOBBLE PUMP HANDLE

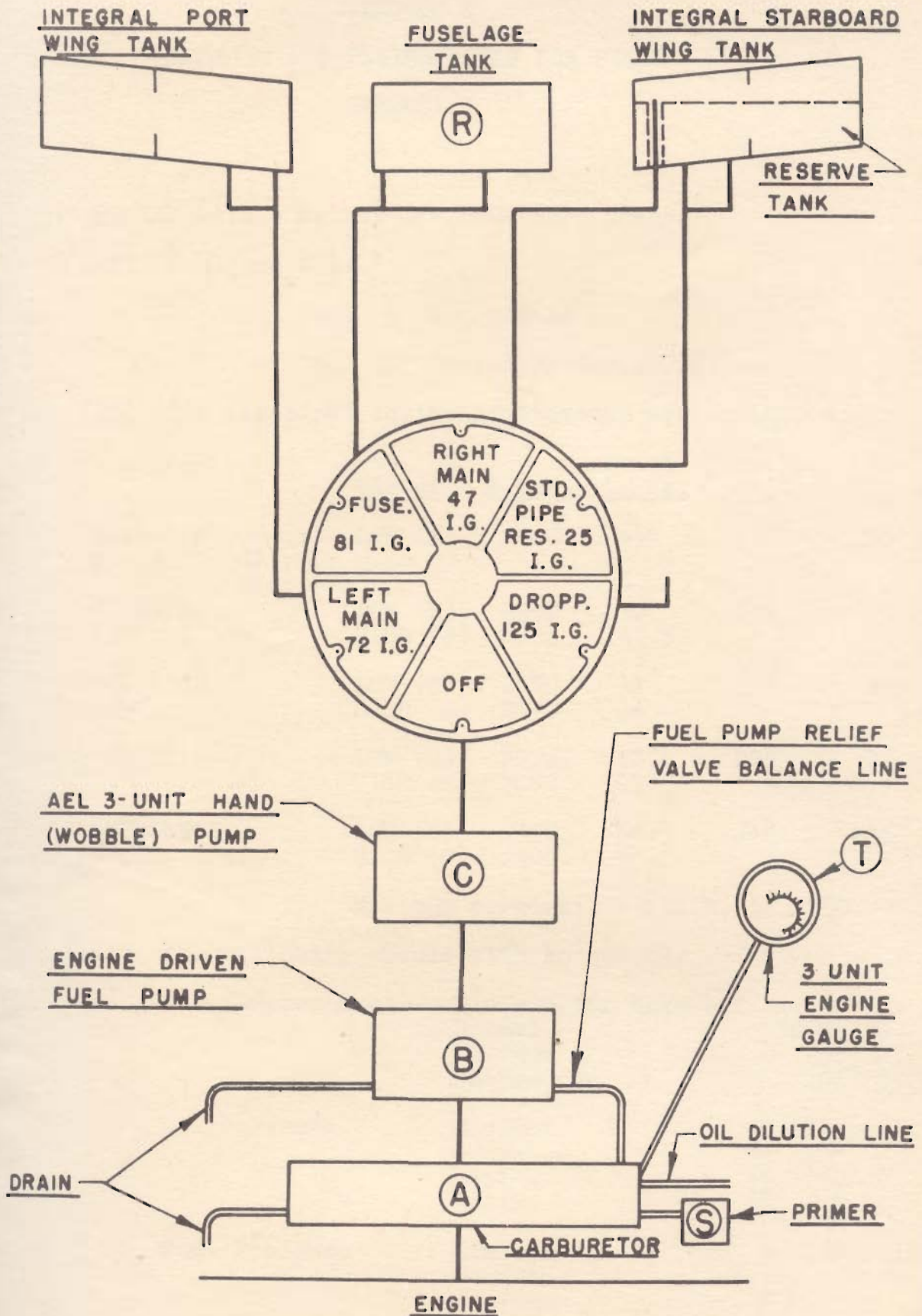
CONTROL COLUMN

PILOT'S SEAT

RELIEF TUBE

CONTROL COLUMN CANVAS BOOT (NOT SHOWN)

BERMUDA FUEL SYSTEM



SECTION 2

HANDLING AND FLYING NOTES FOR PILOT

BERMUDA I

1. ENGINE DATA - Wright GR-2600-A5B-5 Engine

(i) Fuel and Oil:

Fuel - 100 Octane

Oil - Specification 472.C.

(ii) The principal engine limitations are as follows:

	<u>Blower</u>	<u>R.P.M.</u>	<u>Boost in Hg.</u>	<u>Temp. °C. Cyl.</u>	<u>Oil</u>	
TAKE-OFF 3 min. limit	LOW (M)	2400	45"	248	95	
CLIMBING 1/2 hr. limit	LOW (M)	2300	37	232	95	
	HIGH (S)	2300	41.5			
CRUISING	RICH	LOW (M)	2050	31	205	95
		HIGH (S)	2050	34		
	WEAK	LOW (M)	2050	28.5	205	95
		HIGH (S)	2050	31.5		
EMERGENCY 5 min. limit	LOW (M)	2400	44.5	248	105	
	HIGH (S)	2400	44.5			

Maximum permissible R.P.M. is 2750.

(iii) The following should also be noted:-

Oil Temperature	- Minimum for take-off	50° C.
	Normal	50-70° C.
	Maximum	95° C.
	Emergency	105° C.
Oil Pressure	- Minimum	75 lbs/sq.in.
	Normal	85 "
	Maximum	95 "
	Idling	30 "
Fuel Pressure	- Minimum	6 lbs/sq.in.
	Normal	6-7 "
	Maximum	7 "

Hydraulic Pressures - Minimum 600 lbs/sq.in.
Normal 800-1000 "
Maximum 1200 "

WARNING:- On those aircraft which have engine switches in both the front and rear cockpits, both switches must be ON before the engine will run. The engine can be switched off by operating either front or rear switches. It is therefore advisable to keep rear cockpit switch to BOTH ON at all times, and use the front switches to control the engine.

2. FLYING LIMITATIONS

Maximum speeds for:-

Diving	-	400 I.A.S.
Undercarriage down	-	200 I.A.S.
Flaps down	-	200 I.A.S.
Bomb doors open	-	No limit

Minimum R.P.M. for firing fuselage guns - 1450 R.P.M.

3. MANAGEMENT OF FUEL SYSTEM

Tanks must be used in the following order:-

Run-up and take-off on	-	LEFT MAIN
After take-off use	-	FUSELAGE
Then use balance of	-	LEFT MAIN
Then	-	RIGHT MAIN
Lastly	-	RESERVE

(Instructions regarding use of BELLY TANK will be issued later.)

4. PRELIMINARIES

On entering cockpit check that:-

- (i) All gun and bomb switches are OFF.
- (ii) Bomb doors are SHUT.
- (iii) Undercarriage lever is in DOWN position.
- (iv) Flap and dive brake control is in NEUTRAL.

Then:-

- (v) Switch battery and instrument switches ON.
- (vi) Check contents of fuel tanks and turn onto LEFT MAIN tank.
- (vii) Check flying controls for free movement.

5. STARTING ENGINE AND WARMING UP

- (i) There is no parking brake and toes must be held on the brake pedals when starting and warming up.
- (ii) On those aircraft which have engine switches in both front and rear cockpits see that rear switches are to BOTH ON and front switches are OFF.
- (iii) Then set controls as follows:-
 - (a) Gills fully OPEN.
 - (b) Carburettor heat fully COLD.
 - (c) Supercharger to LOW BLOWER (M gear).
 - (d) Propeller control to MAXIMUM R.P.M.
 - (e) Propeller master switch to ON.
 - (f) Propeller selector switch to AUTOMATIC.
- (iv) If engine is cold, turn over by hand for at least two revolutions.
- (v) Build up fuel pressure with hand wobble pump.
- (vi) Switch front cockpit engine switches ON.
- (vii) Prime engine with primer switch, then energise starter and engage.
- (viii) When engine fires, open up to approximately 1000 r.p.m.
- (ix) Radio should be switched on from rear cockpit after the engine is running.

6. TESTING ENGINE AND INSTALLATIONS

WARNING:- If the oil dilution system has been used prior to switching off on previous flight, the oil temperature rise during warm-up and before testing engine should be 40° C.

- (i) Whilst warming up, make usual checks of temperatures, pressures, controls and flaps.
- (ii) Move supercharger control to HIGH BLOWER (S gear) and return to LOW BLOWER (M gear). Boost should rise when in HIGH BLOWER.
- (iii) Check operation of constant speed propeller by pulling lever back to reduce r.p.m., check drop in r.p.m., then return control lever to maximum r.p.m.
- (iv) At 30" Hg. check magnetos by:-
 - (a) Setting propeller selector switch to MANUAL.
 - (b) Checking each magneto in turn for drop in r.p.m., which should not exceed 90 r.p.m.
 - (c) Reset selector switch to AUTOMATIC.
- (v) Open up to maximum power and check boost and r.p.m., then check that generator is charging.

7. TAXYING

- (i) The view forward when on the ground is poor, and care must be exercised to avoid collision with obstacles when taxiing.
- (ii) Brakes when cold are apt to be harsh but improve once they are warm, but if subjected to long periods of use they become overheated and their efficiency begins to diminish. Care must always be exercised when taxiing this aircraft on account of the uncertainty of the brakes.
- (iii) In the event of failure of the engine-driven hydraulic pump, brake pressure will fail but the emergency hand-pump may be used to restore partial pressure.
- (iv) When a tailwheel lock is fitted this must be unlocked before turning the aircraft, but can be relocked if long periods of straight taxiing are undertaken, particularly in crosswinds, as this will relieve the load on the brakes. Tailwheel will not lock or unlock unless tailwheel itself is straight.

8. TAKE-OFF

- (i) Drill of vital actions is T - M - P - Flaps - Fuel - Supercharger - Gills - and (when fitted) Tailwheel Lock.

T - Trim Tabs - Rudder - 1-1/2 divisions RIGHT
 Elevator- NEUTRAL
 Aileron - NEUTRAL

M - Mixture - RICH

P - Pitch - MAXIMUM R.P.M.
 Master switch ON.
 Selector switch AUTOMATIC.

Flaps - UP

Fuel - LEFT TANK

Supercharger - LOW BLOWER (M gear)

Gills - FULLY OPEN

Tailwheel - LOCKED

- (ii) If tailwheel lock is not fitted, ensure that the tailwheel is straight before opening up to full power for take-off.
- (iii) Take the toes off the brakes once the aircraft is running straight. Do not allow a swing to develop. If a swing starts at slow speeds, stop and start again. At high speeds control the swing with rudder.
- (iv) As an emergency measure to assist take-off, flaps may be fully lowered during the take-off run, but should not be so operated until a speed of 50 I.A.S. is reached. This procedure is not necessary with light loads.
- (v) After take-off raise undercarriage immediately, and safety catch knob must be pulled out before undercarriage lever can be brought to the UP position.
- (vi) Raise flaps when above 300 feet.
- (vii) As soon as possible, change over to FUSELAGE TANK.

Note:- At weights of over 14,000 lbs. the take-off and climb are sluggish.

9. CLIMB

- (i) Do not open gills more than is necessary to keep cylinder head temperatures inside the prescribed limits.
- (ii) Climb at 147 I.A.S. from sea level to 8000 feet; reduce climbing speed thereafter by 3 per hour for every 2000 feet.
- (iii) High blower may be engaged above 10,400 feet.

10. GENERAL FLYING

- (i) Stability. The aircraft is stable at all normal loadings, but with full load and with the C.G. in the fully aft position, there is some slight instability on the full power climb, and also during the dive with the dive flaps open.
- (ii) Change of trim.
 - (a) Undercarriage down - Slightly nose heavy
 - Flaps down - Slightly tail heavy
 - Dive flaps open - Slightly tail heavy

These changes in trim are very small.

 - (b) Trim tabs are effective, but not unduly sensitive and should be used at all times to adjust trim.
- (iii) Economical Cruising.

(To be supplied later.)
- (iv) Flying in Bad Visibility.
 - (a) Lower flaps to half-way position.
 - (b) Open hood.
 - (c) Increase r.p.m.
 - (d) Check head temperatures, and keep gills closed as much as possible.
 - (e) Fly at approximately 140 I.A.S.

11. STALLING

Stall characteristics are good and there is no tendency to spin off a straight stall. The stall occurs rather suddenly when loaded to 13,800 lbs. stalling speeds are as follows:-

Undercarriage and flaps up - 90 I.A.S.
Undercarriage and flaps down - 80 I.A.S.

12. SPINNING

Intentional spinning is prohibited. If an unintentional spin should develop, normal methods of recovery should be applied immediately.

13. AEROBATICS

Spinning, inverted spinning, inverted flight and flick rolls are prohibited.

14. DIVING

(i) Dive brakes may be opened at any speed.

(ii) Before diving, set engine controls as follows:-

(a) Gills SHUT.

(b) LOW BLOWER.

(c) COARSE PITCH.

(d) Throttle 1/3 OPEN.

Set aircraft controls as follows:-

(e) Rudder trim to NEUTRAL.

(f) Elevator trim between NEUTRAL and ONE DEGREE nose heavy.

(g) Open dive brakes.

(iii) When diving in the clean condition, acceleration is rapid and sufficient room must be allowed for recovery, particularly as elevator loads are heavy at high speed.

15. APPROACH AND LANDING

(i) Reduce speed to 150 I.A.S. and carry out drill of vital actions:-

- U - Undercarriage - DOWN
- M - Mixture - RICH
- P - Pitch - MAXIMUM R.P.M.
(Check propeller switches)
- Supercharger - LOW BLOWER
- Cowling gills - SHUT
- Tailwheel Lock (when fitted) - LOCKED
- Flaps - FULLY DOWN
- Fuel - BEST TANK

Note:- The tailwheel lock will only engage when the tailwheel is straight. This may prevent the engagement of the locking pin prior to landing if the take-off was done without locking the tailwheel or if the lock was disengaged when in the air. It is therefore important to lock the tailwheel for take-off and to keep it locked when in the air.

(ii) Best speeds for the approach:-

- Engine on - 105 I.A.S.
- Engine off - 110 I.A.S.

At slower speeds than the above, the elevator control becomes sloppy.

(iii) In the event of failure of the flap mechanism:-

- (a) If no flaps are available, approach with power on at 110-115 I.A.S.
- (b) If both dive and landing flaps should be open, make normal approach, but care must be exercised not to have to go round again.

16. MISLANDING

In the event of a mislanding, raise undercarriage as soon as possible and raise flaps when above 300 feet.

17. SIDESLIPPING

There is a noticeable lightening of the lateral control in a sideslip, and if it is necessary to lose height during the approach, a flat skid is recommended.

18. LANDING ACROSS WIND

No difficulty should be experienced in landing across wind, but ensure that the tailwheel is locked and care must be taken to keep the machine straight when on the ground.

19. PROCEDURE AFTER LANDING

- (i) When lock is fitted, unlock tailwheel before turning.
- (ii) Open cowling gills and raise flaps.
- (iii) To stop engine, increase r.p.m. to approximately 1200 r.p.m., turn OFF fuel and put mixture to IDLE CUT OFF.

20. EMERGENCY UNDERCARRIAGE OR FLAP OPERATION

- (i) In the event of failure of the engine-driven hydraulic pump, undercarriage or flaps may be operated by selecting the desired position on the operating lever and then pumping them down with the hand pump.
- (ii) Should the hydraulic system fail completely, the undercarriage may be lowered mechanically as follows:-
 - (a) Undercarriage lever to DOWN. If lever will not move, cut cable (with pliers provided) that runs through rear hole of undercarriage mounting bracket.
 - (b) Open relief valve on right-hand side of cockpit. (This is coloured red.)
 - (c) Pull "Emergency Landing Gear Release" ring, being careful to take up all the slack in the wire.
 - (d) Pull each wheel to locked position by pulling "Emergency Down Lock" rings.

21. I.A.S. CORRECTION TABLE

<u>I.A.S.</u>		<u>CORRECTION</u>
90	add	1.5
100	"	3
110	"	4
120	"	5
140	"	6
150	"	7
160	"	7.5
170	"	8.5
180	"	9
190	"	10
200	"	11
220	"	13
240	"	15
260	"	18

22. FUEL AND OIL CAPACITIES

Fuel -	LEFT WING MAIN TANK	- 72 Imp.Galls.	(87 U.S.Galls.))
	RIGHT WING MAIN TANK	- 47 "	(56 ")
	RIGHT WING RESERVE TANK	- 25 "	(31 ")
	FUSELAGE TANK	- 81 "	(97 ")
	BOMB BAY TANK	-125 "	(150 ")
Oil -	18.5 Imp.Galls. (22 U.S.Galls.)			

