Chapter 2 PREPARATION FOR FLIGHT

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LIST OF ILLUSTRATIONS

Safety precautions

1. Before starting the engine, the aircraft should be placed nose into wind and positioned so that there is no building, aircraft or other obstruction in line with the jet pipe within, at least, 100 yards. Failure to observe this precaution may result in considerable damage from the heat of the efflux, or by stones, etc., blown up from the ground. Similarly in view of the tremendous suction created forward of the air-intakes, the ground in front of the aircraft should be free from rags, paper, small pieces of wood, etc., which are liable to be sucked into the intakes. No person should approach within five yards of the intakes and, where practicable, the air-intake guards should be in position during engine ground running. During engine starting, it is essential that the control column is held well back to keep the elevator out of the path of the jet efflux. Fire fighting appliances of the appropriate type should be readily available. *Before catapult take-off, it is essential to check that the locking pins in the pilot's and observer's headrests are fully engaged.*

2. After any failure to start, particularly after failure to light-up, and to eliminate the possibility of a "wet" start, the tail boom is to be pushed down to drain surplus fuel from the tail pipe. ⋈ Consideration must be given to the fire hazard incurred as a result of fuel draining to the ground beneath the engine and, should this occur, it is recommended that the aircraft be moved to a new location before attempting a second start. Blanking boards must be fitted to the air-intakes and jet pipe whenever the engine is not running. During operation in freezing temperature conditions, the cartridge starter breeches should be cleaned to remove all excessive moisture immediately after engine shut-down, particularly after short ground runs.

General

3. This chapter outlines the general points requiring attention prior to flight and gives cross references to those chapters enlarging upon the detail given herein. Fig. 1 shows the approximate locations of the various filling and charging connections and the drain traps.

Refuelling

4. The procedure and order for filling the fuel tanks is as follows:—

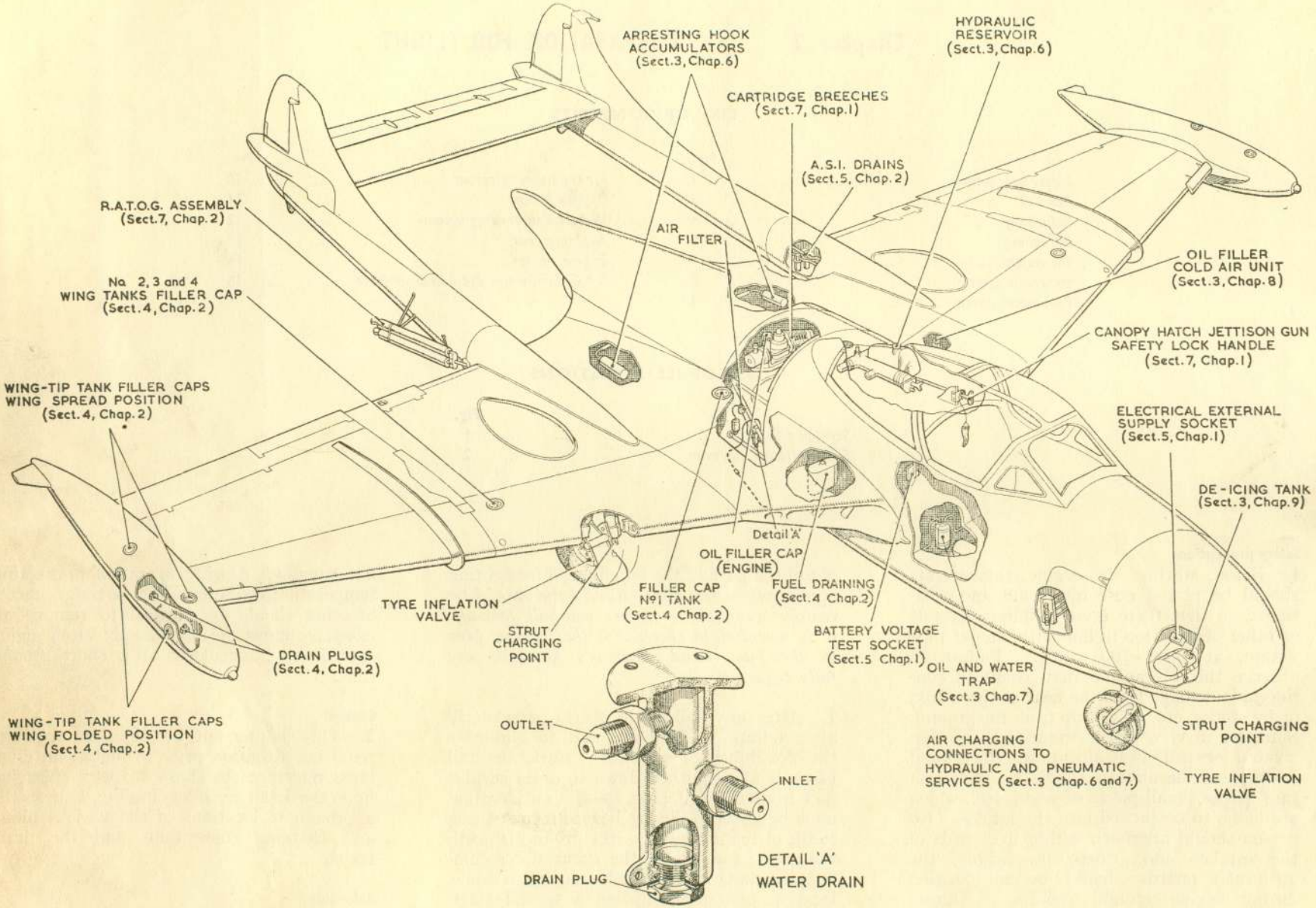

Fig. 1. Servicing Points

(1) Fuselage tank

(2) No. 1 wing tanks

(3) No. 2, 3 and 4 wing tanks (by the filler in No. 4 tank)

(4) Wing-tip tanks

Note . . .

(1) *The contents of No.* 1 *wing tanks should be re-checked after filling No.* 2, 3 *and* 4 *wing tanks*

(2) *The wing tanks are shallow, and care must be taken to ensure that the re-fuelling cages are in position to prevent the re-fuelling nozzle touching the fabric wall of a tank and causing damage.*

(3) *When filling the wing tip tanks in either the folded or spread position of the wings, the following sequence of operations must be observed:—*

(*a*) *Fill the* REAR *compartment first.*

(*b*) *Screw the filler cap* RIGHT DOWN.

(*c*) *Fill the* FRONT COMPARTMENT.

◄ (4) *During re-fuelling, should the full operation of the wing* spread *operation be arrested before the extension wing reaches approximately* 45 *deg. past top dead centre, the fully* spread *condition must be completed before wing* FOLD *is selected.* ►

5. Although a small quantity of water in the tanks will not affect the running of the engine, it may, however, freeze and possibly cause a fuel stoppage with consequent engine failure. Fuel tanks should therefore be kept full to minimise condensation, and every precaution must be taken to avoid the introduction of water during the filling process. To allow for any expansion of the fuel due to a rise in ambient temperature, however, it is advisable to leave an adequate air space. If the aircraft is filled completely and then pushed inside a hanger which is heated or filled and left in the sun, the fuel will expand up to a maximum of approximately 15 gallons, and, if no air space is available in the tanks, the fuel will overflow from the vent pipe on to the ground beneath the aircraft. If not noticed within a short time, in addition to the fire risk, fuel will eventually reach the tyres upon which it has a deleterious effect. The filler cap sealing washers must be kept in good condition, particularly those for the wing tip tanks as these have to withstand the pressure venting which transfers the fuel to the main tank. Further details of the fuel system are given in Sect. 4, Chap. 2. The water drains on the underside of the fuselage tank, on each of the No. 4 tanks, and on each of the wing tip tanks must be drained in accordance with the instructions given in Section 4, Chapter 2.

Defuelling

6. The main point for completely draining the wing and fuselage tanks is a drain valve situated in the base of the fuel collector box. Full drainage details are given in Sect. 4, Chap. 2.

Oil system

7. The oil system is self-contained within the engine and reference should be made to A.P.4320B, Vol. 1, for details. Access to the filler cap and sight glass is gained through hinged panels in the upper and lower starboard engine cowlings respectively. To top-up, estimate the amount required by checking the level on the sight glass which is marked in QUARTS, and then pour in the exact amount. This procedure will prevent over-filling and avoids the necessity to wait for the new oil level to settle down and register on the sight glass. The engine oil specification is given in the Leading Particulars and the procedure for draining the system is described in A.P.4320B, Vol. 1.

Hydraulic system

8. The procedure for topping-up the hydraulic system and charging the accumulator is given in Sect. 3, Chap. 6. Scrupulous cleanliness is essential during all servicing operations, and care must be taken to avoid spilling the fluid which has a harmful effect on most aircraft materials. The fluid specification is given in the Leading Particulars.

Note . . .

(1) *Accumulator fluid pressure must be released before topping-up the reservoir. Ensure that the filler neck filter is in position before topping-up.*

(2) *The positions of the hydraulic services selector levers during topping-up of the reservoir are* most important *and the procedure laid down in Sect.* 3, *Chap.* 6 *must be adhered to strictly.*

Pneumatic system

9. Information on charging the pneumatic system and the procedure for draining the oil-and-water trap is given in Sect. 3, Chap. 7. Access to these points is gained through the gun bay doors.

Air conditioning system

10. Access to the oil tank for the cold air unit is gained through a panel in the top skin of the port main plane root end. Sect. 3, Chap. 8 illustrates the arrangements of the dipstick and filler. For further information on the cold air unit refer to A.P.4340A, Vol. 1, Sect. 2.

Oxygen system

11. This installation is covered in Sect. 3, Chap. 10. The oxygen cylinders may be recharged *in situ* via a common charging connection, access to which is through the starboard ammunition door. Great care must be taken to avoid the contamination of any of the components of this system by oil or grease.

Windscreen de-icing system

12. The de-icing tank for the windscreen de-icing spray is located forward of bulkhead No. 1 and is accessible by raising the fuselage nose. Full details of the de-icing system are given in Sect. 3, Chap. 9 and the fluid specification is listed in the Leading Particulars.

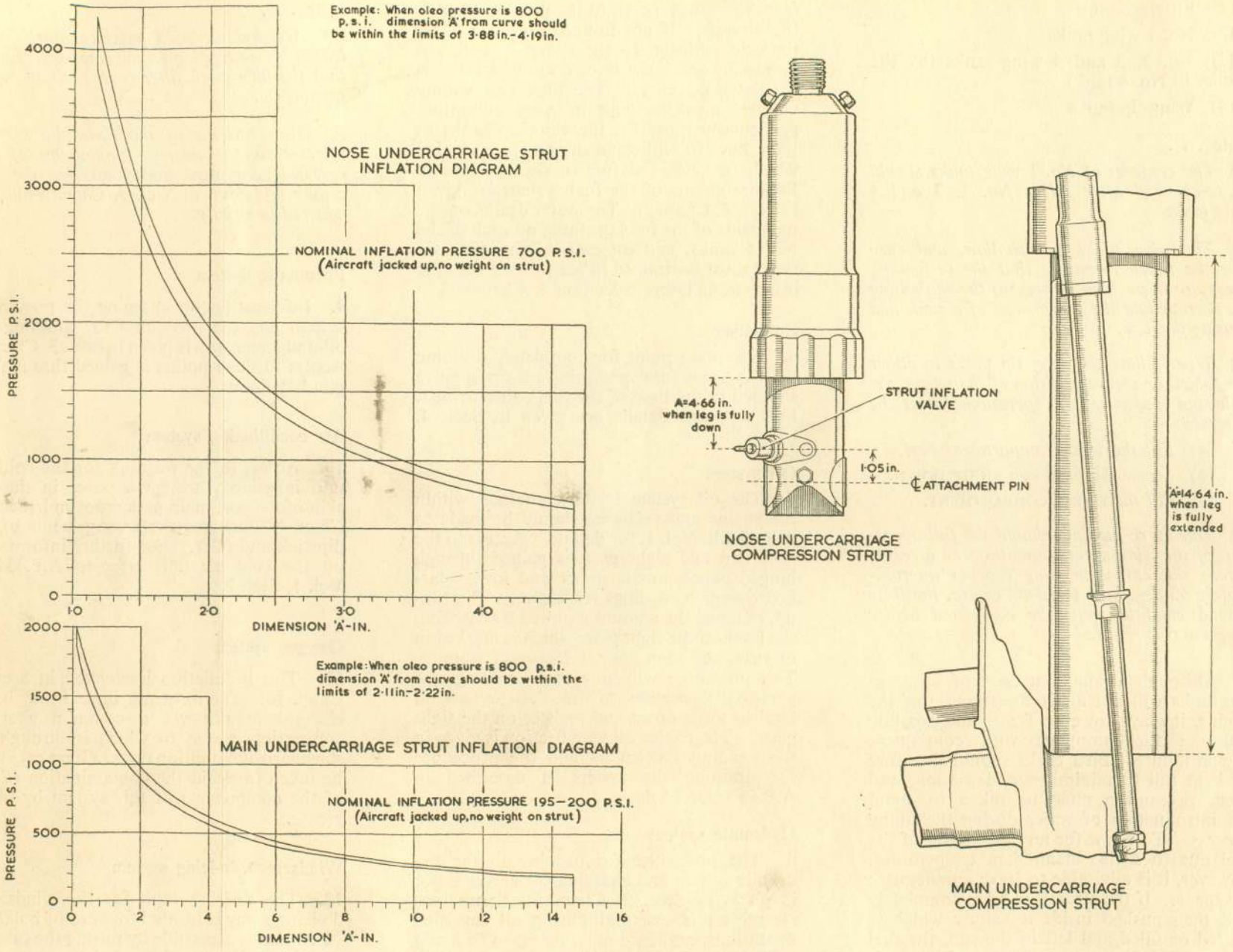

Fig. 2. Strut inflation diagrams

Alighting gear

13. The approximate locations of the main and nose undercarriage inflation valves are shown in fig. 1. Information on charging and inflating the shock absorbers is contained in A.P.1803C, Vol. 1, and the pressures are given in the Leading Particulars. Tyre pressures are given in Volume 4 of this Publication. Pressure extension curves are given in fig. 2. Prior to flight, the ground locking device (*Sect.* 2, *Chap.* 1) must be removed from the radius rod of each undercarriage unit. Red indicator flags are attached to these locks to draw attention to them.

Engine starter

14. The twin breeches of the Rotax turbo-starter are accessible through a panel in the port side of the forward engine cowling. A full description of the starter and its servicing is given in A.P.1181, Vol. 1 and 6, Part 1, Sect. 4, Chap. 2. Refer to the Leading Particulars for the type numbers of the starter and cartridges and to A.P.4320B, Vol. 1, Part 2, Chap. 2, for the loading and unloading procedures. Two spare cartridges are stowed in each flap bay.

B.P.C. line, water drain and air filter

15. The water trap in the barometric pressure control line must be drained at frequent intervals, as any excess of water in the drain may freeze and block the line with consequent serious effect on the engine performance. The air filter in the line must also be inspected and cleaned periodically. The units are on the starboard side of the engine bay just aft of the fireproof bulkhead. The air filter must be replaced with the *curved* end fitted to the B.P.C. unit connection.

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