

## Chapter 2                      PREPARATION FOR FLIGHT

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#### General

1. This chapter outlines the general points requiring attention prior to flight and gives cross references, where necessary, to the appropriate Sections and Chapters giving more detailed instructions. Fig. 1 gives the locations of the various filling and charging connections and the drain traps.

#### Refuelling

2. Using the ◀universal filler cap spanner▶ (Sect. 2, Chap. 4), the tanks should be refuelled in the following order :—

- (1) Fuselage tank
- (2) Inner wing tanks
- (3) Outer wing tanks
- (4) Drop tanks (if fitted)

#### Note . . .

- (a) *The outer wing tanks are shallow and care must be taken that the refuelling cages*

*are in position to prevent the refuelling nozzle touching the fabric wall of the tank.*

- (b) *The contents of the inner wing tanks should be re-checked after filling the outer wing tanks.*
- (c) *With full tanks, an increase in air temperature will expand the fuel and up to fifteen gallons may overflow through the vent pipe on to the ground beneath the aircraft. In addition to fire risk, the fuel will have a deleterious effect upon the tyres. When refuelling, adequate expansion space must, therefore, be left in the tanks to allow for fuel expansion.*

#### Fuel system water drains

3. The water drains on the underside of the fuselage tank, on each of the pylons, and the wing tip tanks must be drained in accordance with the directions given in

Chapter 4 of this Section. The water trap and air filter on the barometric pressure control line must also be inspected as detailed in the same chapter.

#### Oil system

4. The oil system is self-contained within the engine and a full description will be found in ◀A.P.4320A & C▶ Vol. 1. Access to the oil filler and sight glass (fig. 1) is gained through hinged panels in the upper and lower starboard engine cowlings respectively. When replenishing, the quantity of oil required to fill the sump can be estimated from the sight glass which is marked in QUARTS, with the "full" mark situated approximately  $\frac{1}{2}$  in. below the top of the glass. The exact amount should then be measured out and poured through the filler. Thus, it will not be necessary to wait for the new oil level to register on the sight glass which, in cold weather, may take some time, and it will also avoid any tendency to overfill.

Details of the various tank capacities and inflation pressures are tabulated in the Leading Particulars. Armament loading instructions are contained in Sect. 7.

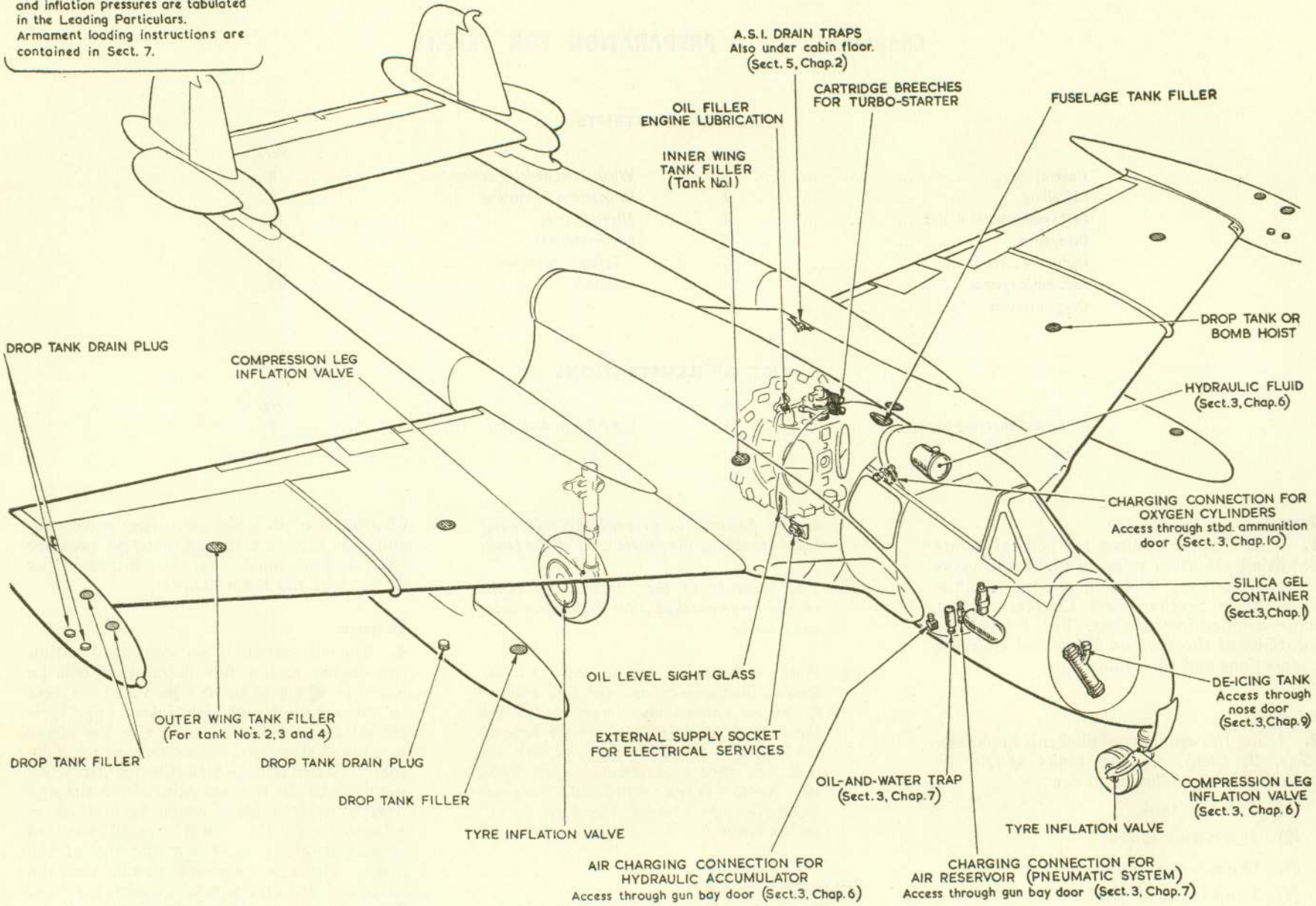


Fig. 1. Filling and charging points

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The specification of the engine oil is given in the Leading Particulars and the procedure for draining the system is described in ◀A.P.4320A & C▶ Vol. 1.

#### Hydraulic system

**5.** The specification of the fluid used in the system which, it should be noted, differs from that used in the alighting gear shock-absorber struts, is given in the Leading Particulars. Full details of the procedures for topping-up the reservoir and charging the accumulator are given in Sect. 3, Chap. 6. Scrupulous cleanliness is essential during all servicing operations on the hydraulic system, and care must be taken to avoid spilling or splashing of the fluid which has a deleterious effect on most aircraft materials.

#### Note . . .

*It is important to release the fluid pressure from the accumulators before topping-up the reservoir, and to "top-up" only when the filter is in position in the filler neck.*

#### Pneumatic system

**6.** Information on the charging procedure, together with the procedure for draining the oil-and-water trap, will be found in Sect. 3, Chap. 7. Access to this equipment is through the gun bay doors.

#### Oxygen system

**7.** The oxygen cylinders may be charged *in situ* through the charging connection shown in fig. 1, access to which is through the starboard ammunition loading door. *Care must be taken to avoid oil or grease contaminating any of the components of this system.* The installation is fully described in Sect. 3, Chap. 10.

#### Windscreen de-icing system

**8.** The small fluid container for the windscreen de-icing spray is located on the forward face of No. 1 bulkhead and is accessible through the upper nose cowlings. Details of the system will be found in Sect. 3,

Chap. 9, and the specification of the fluid to be used is given in the Leading Particulars.

#### Windscreen de-misting

**9.** The crystals, which may be observed through an inspection window in the drier or silica gel container (*fig. 1*) fitted behind the right-hand instrument panel, are blue when dry, and should be changed whenever they change colour to pink which indicates saturation. The functioning and servicing of the drier is fully described and illustrated in Sect. 3, Chap. 1.

#### Alighting gear

**10.** The locations of the main and nose inflation valves for the shock-absorber struts are shown in fig. 1 and information on the charging and inflating of the legs is given in fig. 2 and Sect. 3, Chap. 5. The tyre pressures are given in Volume 4 of this Air Publication. Prior to flight, the ground locking device must be removed from the radius rod of each main undercarriage unit; red indicator flags are attached to these locks, which are illustrated in Chap. 1 of this Section.

#### Engine starting

##### Safety precautions

**11.** Before running the engine, care should be taken in choosing a suitable position and attitude for the aircraft in relation to other aircraft and to neighbouring buildings. An unobstructed clearance for 100 yards should be maintained behind the jet pipe. Due to the great quantities of air drawn into the air-intakes, no individual should approach within a distance of 4 yards, and the ground in the vicinity of the intakes should be free from rags, paper, light pieces of wood etc., since these may easily be sucked through the ducts. The control column must be held right back during an engine run to protect the elevator against the effect of the jet stream.

**12.** The intake guards (*Sect. 2, Chap. 4*), should *always* be in position for ground running; they will not impair the efficiency of the engine. It is advisable to run the

engine with the aircraft nose into wind as a safeguard in the event of a wet start and subsequent fire. After any failure to start, particularly after failure to light up, consideration must be given to the fire hazard incurred by the fuel which may have drained to the ground beneath the engine and, should this occur, it is recommended that the aircraft be moved to a new location before attempting to re-start. The air-intake and jet pipe blanking boards (*Sect. 2, Chap. 4*), must be in position whenever the engine is stationary. To prevent seepage of fuel, the low-pressure fuel cock must always be turned OFF after an engine run.

#### Note . . .

*Cases have occurred when the air intake guards have iced up, causing damage to the airframe and engine. Ground running should therefore be avoided under conditions likely to cause icing, e.g., fog when the temperature is at or near freezing point.*

#### Starter

**13.** The twin breeches of the Rotax turbo-starter, are accessible through the panel in the port side of the forward engine cowling (*fig. 1*). A full description of the starter, the servicing (including a fault diagnosis chart) and the procedure for loading the cartridges, is given in A.P.1181, Vol. 1 and 6, Part 1, Sect. 4, Chap. 2, and detailed information on the cartridges is given in A.P.1661F, Vol. 1, Sect. 2, Chap. 2. Provision is made to store four spare cartridges in the port flap shroud and two replacement starter bursting discs are stowed on the breech access panel on the port side. If the engine has not been run for some days, the clutch and reduction gear must be primed with oil as directed in ◀A.P.4320A & C▶ Vol. 1. When ground running under very low temperature conditions, it is recommended that the breeches of the turbo-starter are cleaned immediately the engine is shut down. Excessive moisture tends to accumulate in the breeches under freezing conditions and cleaning is more easily performed while the breeches are still warm.

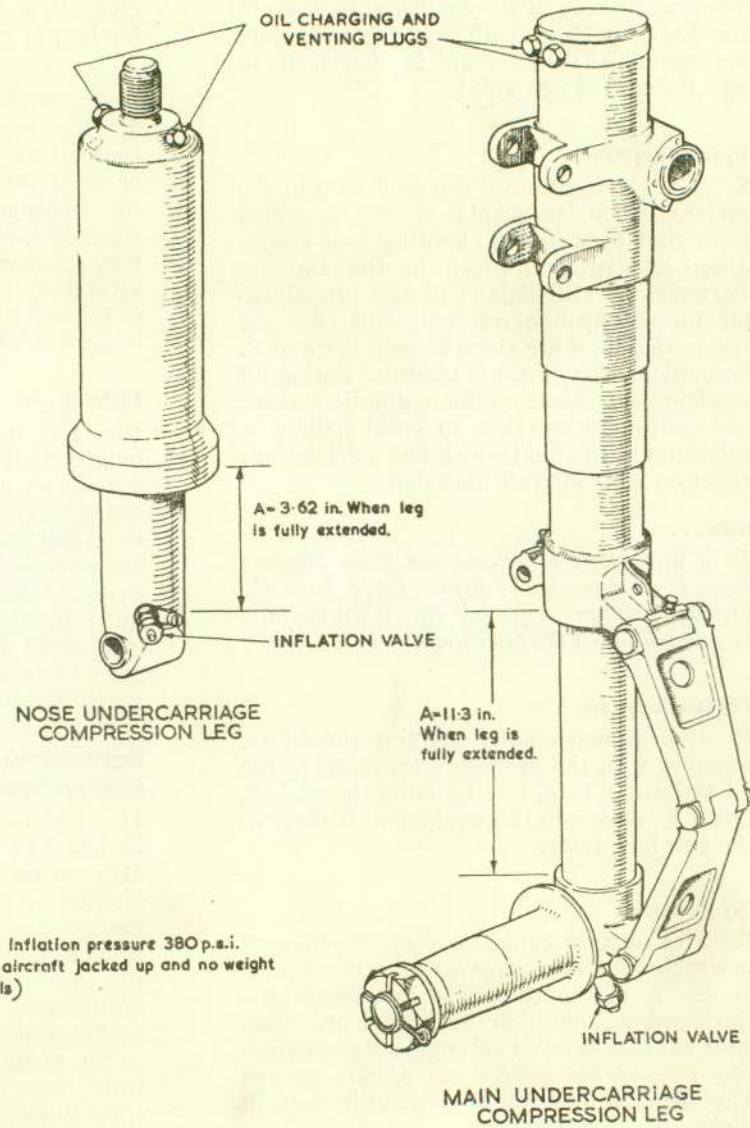
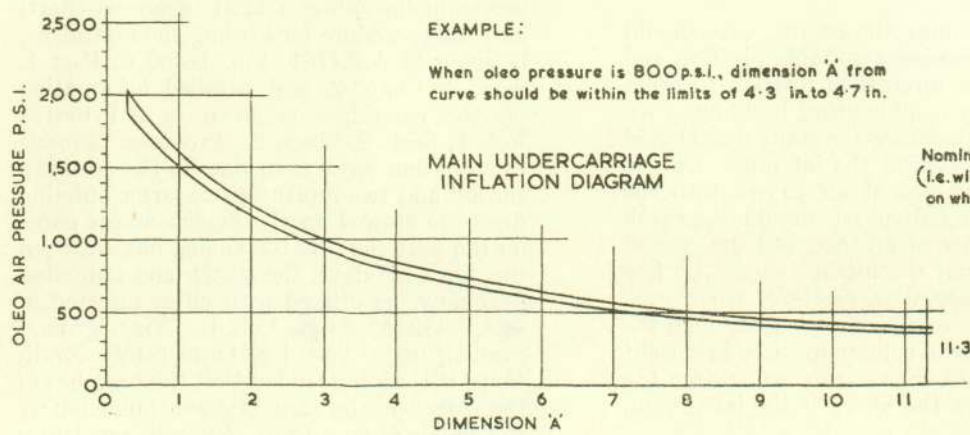
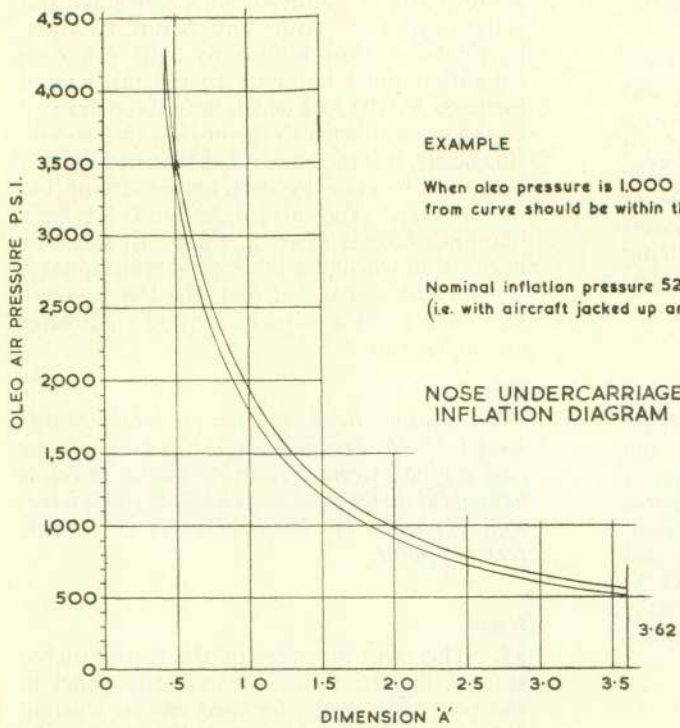


Fig. 2. Leg inflation diagrams

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