Chapter 2 PREPARATION FOR FLIGHT

(completely revised)

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WARNING

The relevant safety precautions detailed on the LETHAL WARNING marker card must always be observed before entering the cockpit or performing any operations upon the aircraft.

Note...

The majority of the removable panels on the aircraft are classified as access panels and are identified by a system of numbers and suffix letters, which system is used for all panel references throughout the publication. Identification can be made by referring to the access panel diagrams, in conjunction with the key table (fig.1, 2 and Table 3 of Sect.2, Chap.4). All fuels, oils and fluids are specified in Leading Particulars.

Tools and equipment

1. For tools and equipment used in the following operations refer to Tables 1 and 2 in Chap.4.

Refuelling *(fig.1)*

Gravity

2. For gravity refuelling each main tank is provided with a refuelling cap, access panel 97P or 97S, in the upper surface of each main plane. This provision is intended for use only in the absence of the pressure refuelling facilities for which the aircraft is

designed, and it should be noted that, due to the fact that the refuelling caps are below the capacity fuel level, it is not possible to fill the tanks completely by this method.

Pressure

Note...

1. Before commencing to refuel, ensure that a serviceable battery is installed in the aircraft.

2. Select the BATTERY switch ON and the flight refuelling switch FL REFUEL for a period of 30 seconds, to allow ventral tank depressurization to take place. At the end of this period, select the flight refuelling switch NORMAL, and the BATTERY switch OFF.

3. To refuel the aircraft:-

(1) Connect a d.c. electrical supply to the aircraft, or alternatively, connect the aircraft battery to the distribution circuits through the BATTERY switch.

(2) Check the tank contents gauges.

(3) Open access panel 63P and, having ensured that the tanker is earthed, connect the tanker bonding lead to the earth point.

(4) Remove the refuelling adapter cap and connect the tanker hose to the refuelling adapter.

(5) Start the tanker pump to commence refuelling; delivery pressure must not be allowed to exceed 50 lb/in^2 or to fall below 35 lb/in^2.

(6) Stop the flow from the tanker when all five coloured indicator lamps above the refuelling panel are illuminated.

(7) Check that the aircraft fuel contents gauges confirm that the main and leading-edge tanks are full.

Note...

The ventral tank is not gauged, and although the cockpit gauges are scaled to include the content of the flap tanks this content is indicated only when fuel is transferring from the flaps to the main tanks. Illumination of the indicator lamps should, therefore, be accepted as evidence that the ventral and flap tanks are full.

TABLE 1

Defuelling cock settings

Tank to be defuelled		Port Defuelling Cock	Starboard Defuelling Cock
MAIN AND LEADING EDGE TANKS	PORT	defuel main tank	isolate wing tanks
	STARBOARD	isolate wing tanks	defuel main tank
	BOTH	defuel main tank	defuel main tank
FLAP TANKS	PORT	normal	isolate wing tanks
	STARBOARD	isolate wing tanks	normal
	BOTH	normal	normal
VENTRAL TANK		isolate wing tanks	isolate wing tanks

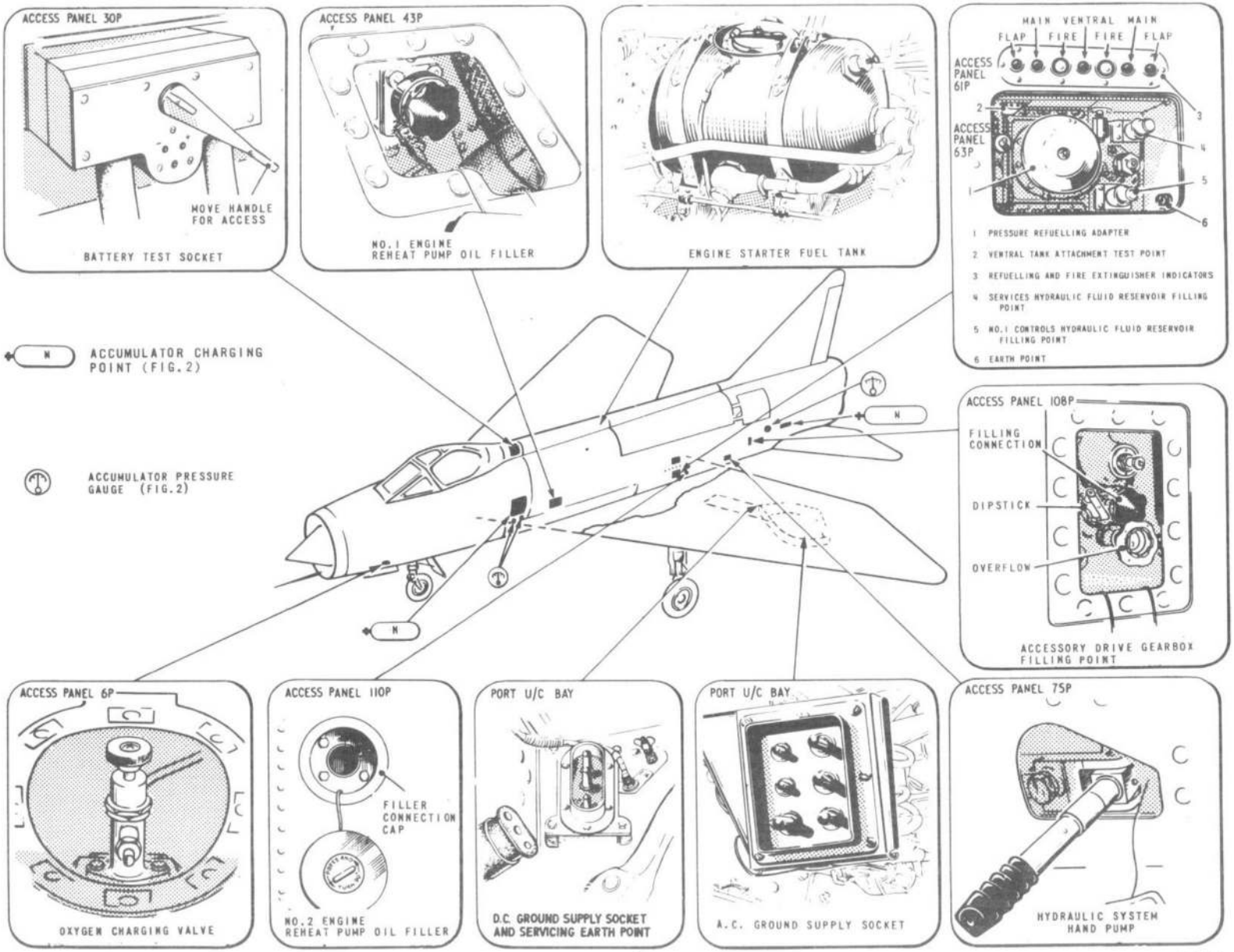


FIG.1. SERVICING POINTS (1)

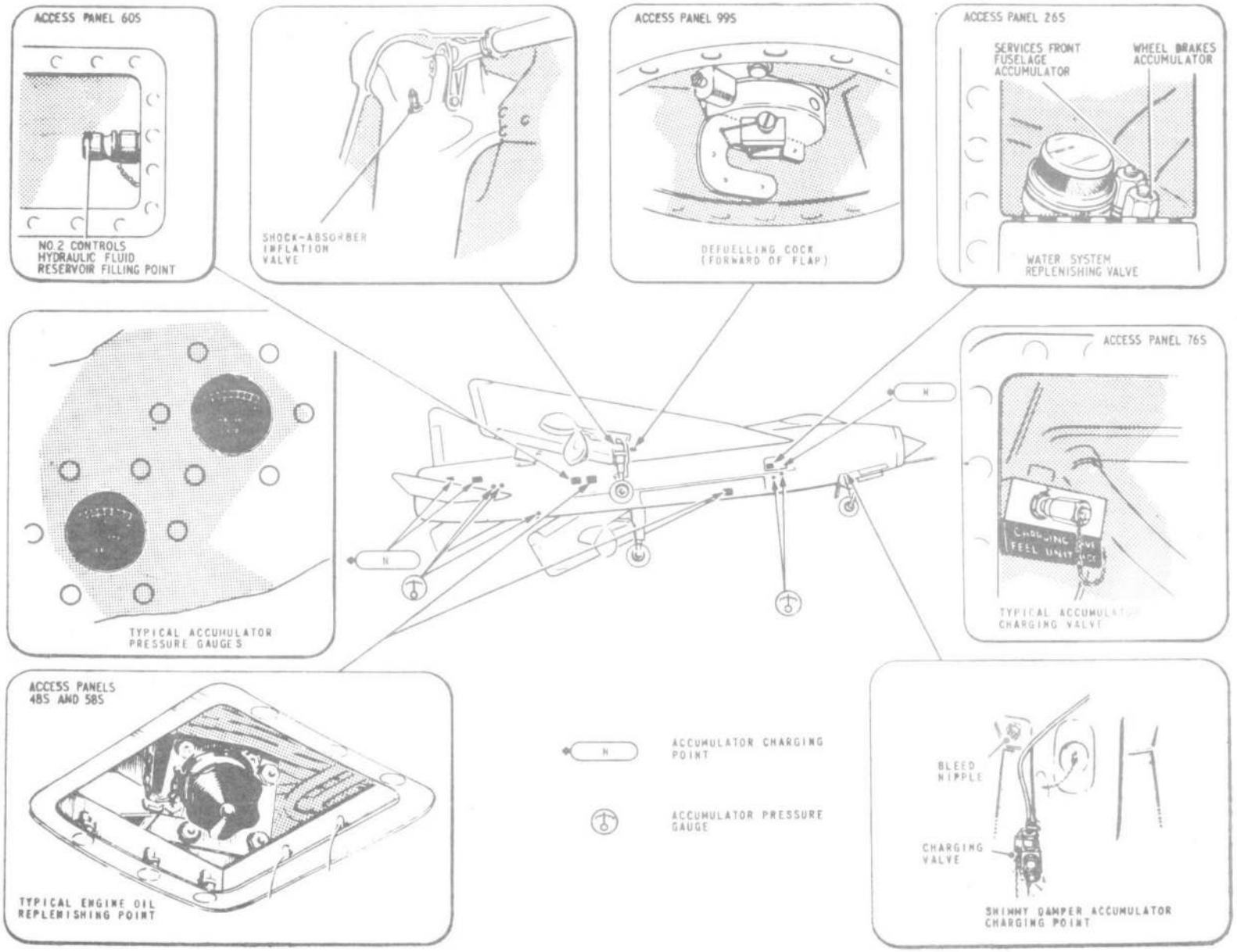


FIG.2. SERVICING POINTS (2)

(8) Close the tanker delivery cock, disconnect the hose and bonding lead, refit the refuelling adapter cap and close the access panels.

(9) Check that the 'tank full' indicator lamps are extinguished.

Defuelling

4. The aircraft is defuelled by applying suction at the refuelling adapter (access panel 63P), using a refuelling tanker on which the cocks have been set to permit flow from the aircraft to the tanker; defuelling depression must not exceed 11 lb/in^2. Prior to defuelling, all d.c. electrical supplies must be disconnected, and the engine H.P. cocks closed. The tanks may be defuelled individually or in similar pairs by appropriate selection *(Table 1)* of the two defuelling cocks *(fig.2)*. Access to the cocks is gained through circular panels in access panels 99P and 99S; the panels can be fitted only when the cocks are at NORMAL, i.e. in the flight position and, with the panels in position, the cocks are locked.

Replenishing

Engine oil sumps

5. Oil is added to the engine sumps through a self-sealing coupling on each engine, using a fluid replenishing can. No.1 engine filler is behind access panel 48S and its sight glass is visible when access panel 44S is removed; No.2 engine filler and sight glass are both behind access panel 58S.

Accessory drive oil sump

Note...

It is important that the sump is checked and replenished immediately after run-down of the turbine, either after flight or after an engine ground run.

6. To replenish the sump:-

(1) Check the oil level with the dipstick (access panel 108P).

(2) Remove the blank from the oil overflow union.

(3) Fit the drain and overflow connector.

(4) Connect a fluid replenishing can to the filler.

(5) Fill until oil appears at the overflow.

(6) Remove the replenishing can and refit the filler cap.

(7) Remove the drain and overflow connector.

(8) Refit and wire-lock the overflow blank.

Reheat pump oil reservoirs

7. The reservoirs are filled through self-sealing couplings behind access panels 43P (No.1 engine) and 110P (No.2 engine). Using a fluid replenishing can, fill until excess oil flows from the appropriate skin drain.

Engine starter fuel tank

8. The tank is exposed by opening the hinged section of spine fairing forward of No.2 engine hatch. To assist venting whilst filling, displace the inward vent valve from its seating by depressing a spring-loaded plunger in the banjo bolt at the aft end of the tank.

Oxygen cylinders

9. The charging valve is situated behind access panel 6P. For charging instructions refer to A.P.1275G, Vol.1. Sect.1, Chap.2 and 4 or A.P.107D-0001-1, Chap.4.

Water boiler and header tank

10. To replenish the system:-

(1) Drain off the contents of the water boiler. Indication that the boiler is empty is given when the initial 'full bore' flow changes to a trickle. Close the valve immediately this occurs, to avoid emptying the header tank.

(2) Remove access panel 27S.

Note...

To open the drain valve, apply a screwdriver to the slots in the port, press the port inward, and rotate it clockwise through 120 deg before releasing the pressure on the screwdriver. To close the valve reverse the operation.

(3) Remove the blanking cap from the filler and connect a fluid replenishing can, fitted with an adapter, to the filler.

(4) Introduce fluid at a pressure not exceeding 11 lb/in^2. until excess fluid appears at the overflow pipe forward of the drain valve.

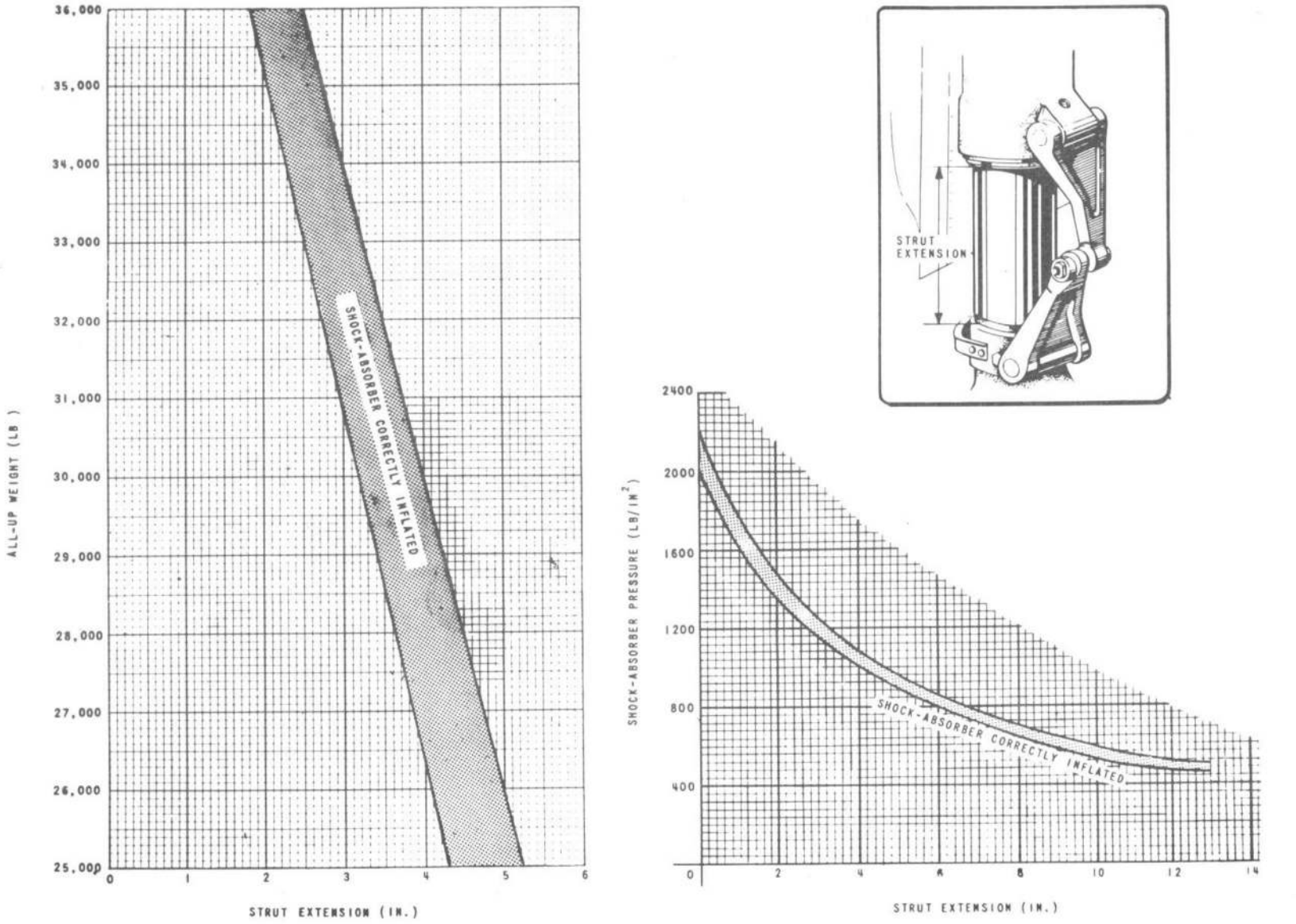


FIG. 3. MAIN UNDERCARRIAGE SHOCK ABSORBER PRESSURE AND EXTENTSION

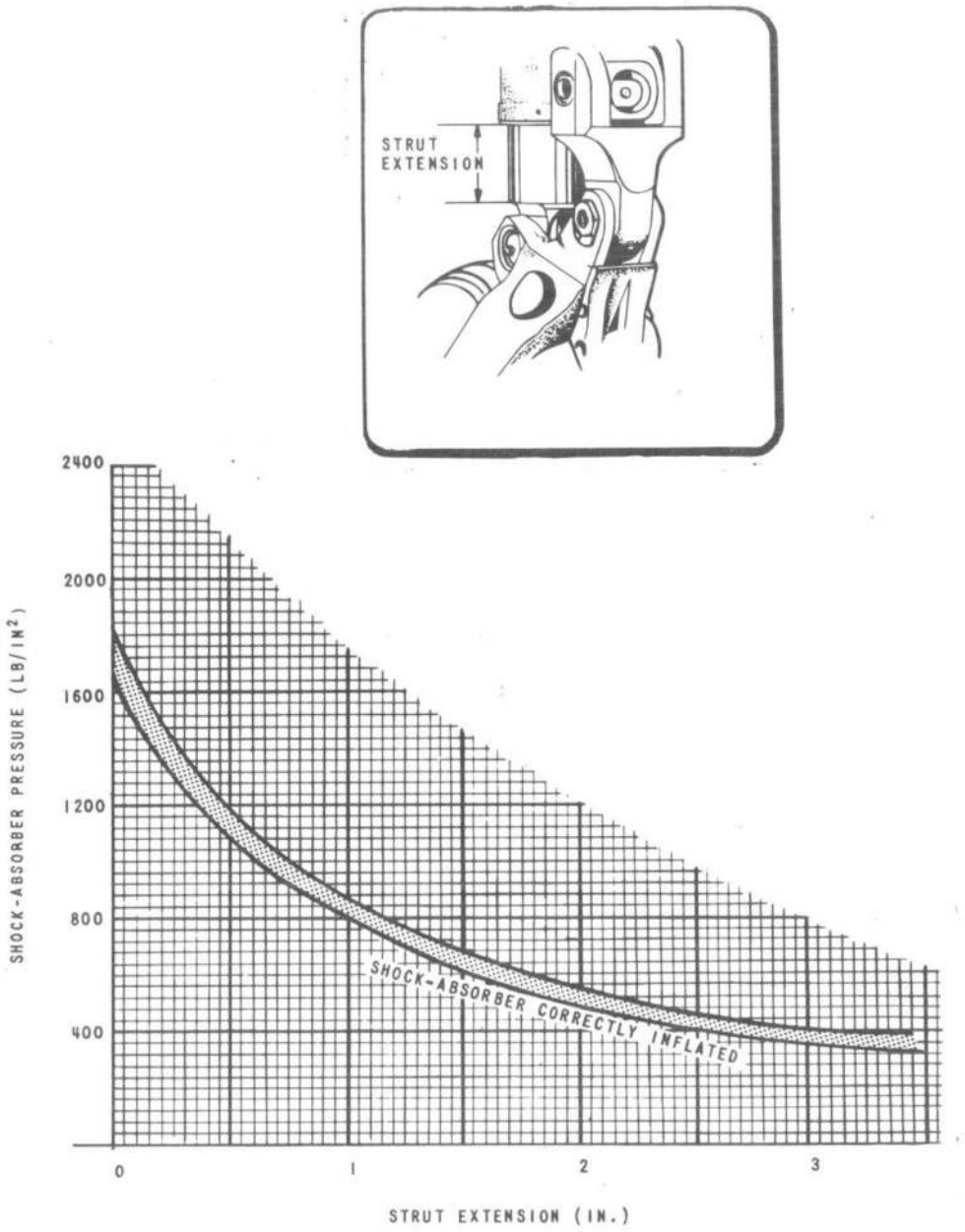


Fig.4. Nose undercarriage shock-absorber pressure and extension

(5) Disconnect the replenishing can, and refit the filler cap and the access panel.

Hydraulic fluid reservoirs

11. To replenish the reservoirs:-

The procedure to be adopted, and the precautions to be taken, when filling the services and controls systems reservoirs are detailed in Sect.3, Chap.6.

Checking the main battery voltage

12. To check the voltage:-

(1) Ensure that both engine control handles are in the H.P. COCKS CLOSED position.

(2) Select the BATTERY switch ON and one D.C. FUEL PUMPS switch ON.

(3) Note the voltage reading on the voltmeter *(Sect.1, Chap.1, Fig.11 and 12)* and return the switches to OFF immediately.

(4) Note the voltmeter reading in the off-load vondition; the reading is satisfactory if it is between 25.1 and 25.8 volts. The reading taken in (3) is satisfactory if it is not more than 1.0 volt below this reading.

Note...

Refer to A.P.4343A, Vol.1, Sect.11, Chap.3 or A.P.113C-0202-1 for battery servicing instructions.

Alighting-gear shock absorber inflation pressures *(fig.3 and 4)*

13. The inflation pressures for fully-

extended main and nose undercarriage shock-absorber struts are 475 ± 25 lb/in² and 335 ± 15 lb/in² respectively, irrespective of all-up weight. The inflation pressure of a main strut can be checked with the wheels on the ground by measuring the extension of the strut and the pressure of the compressed shock-absorber *(fig.3, right-hand graph)* or, if the all-up weight is known, simply by measuring the strut extension *(fig.3, left-hand graph)*. Because of variations in the c.g. of the aircraft a curve which relates strut extension to all-up weight cannot be plotted for the nose undercarriage; with the wheels on the ground, therefore, the inflation pressure can only be checked by measuring the extension of the strut and the pressure of the compressed shock-absorber *(fig.4)*. Pressures are measured with an inflation adapter and a pressure gauge. The method of filling with oil and inflating is described in Sect.3, Chap.5.

Note...

Before measuring pressures or extensions rock the aircraft to allow the struts to assume their correct static position.

Checking the nose wheel shimmy-damper accumulator

14. The accumulator is located on the nose wheel port beam aft of the downlock bracket. It incorporates a grooved indicator rod which protrudes upward, and is correctly charged when the groove coincides with a metal pointer on the top of the accumulator, with the nose wheel centralized. For the method of charging refer to Sect.3, Chap.6.

Tyre pressures

15. Refer to A.P.101B-1001-5B.

Charging hydraulic system accumulators

16. The nitrogen pressure in the hydraulic accumulators is indicated by pressure gauges which are flush with the skin *(fig.1 and 2)*. Before the gauges are read all hydraulic pressure in the accumulators must be exhausted. Refer to Sect.3, Chap.6.

Positioning the aircraft for ground running *(fig.5 and 6)*

Note...

Ground running is permissable with one engine hatch and the armament pack removed but the consequent shift of c.g. must be taken into consideration when handling the aircraft.

Non-reheat running

17. For ground running of the engines

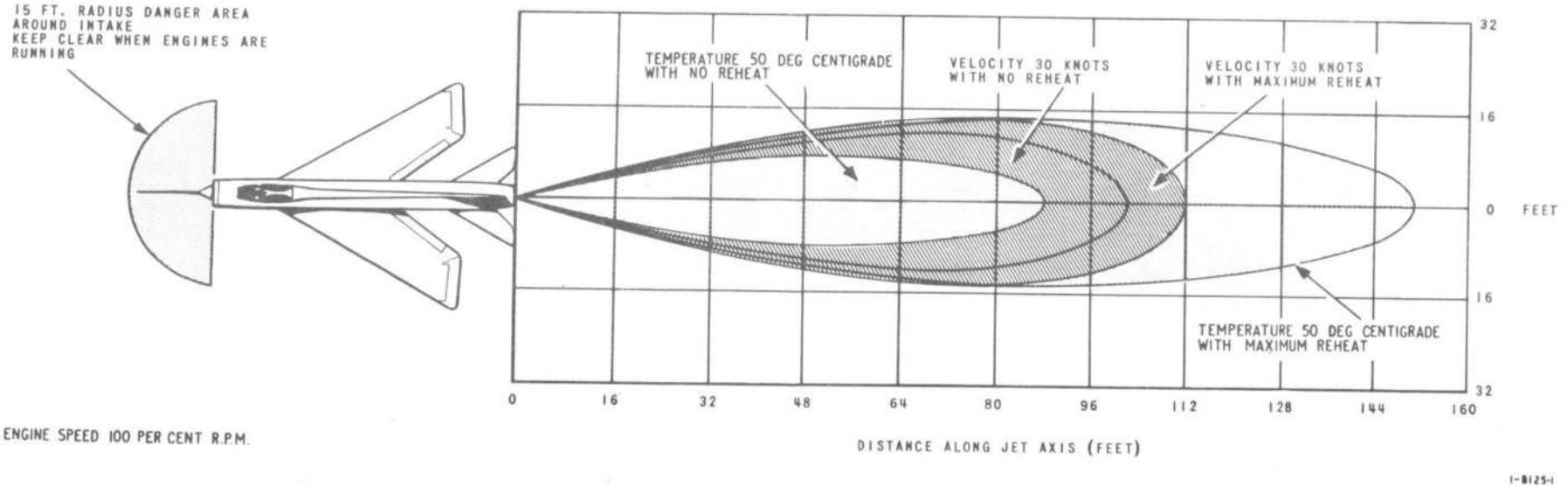


Fig.5. Danger areas during engine running

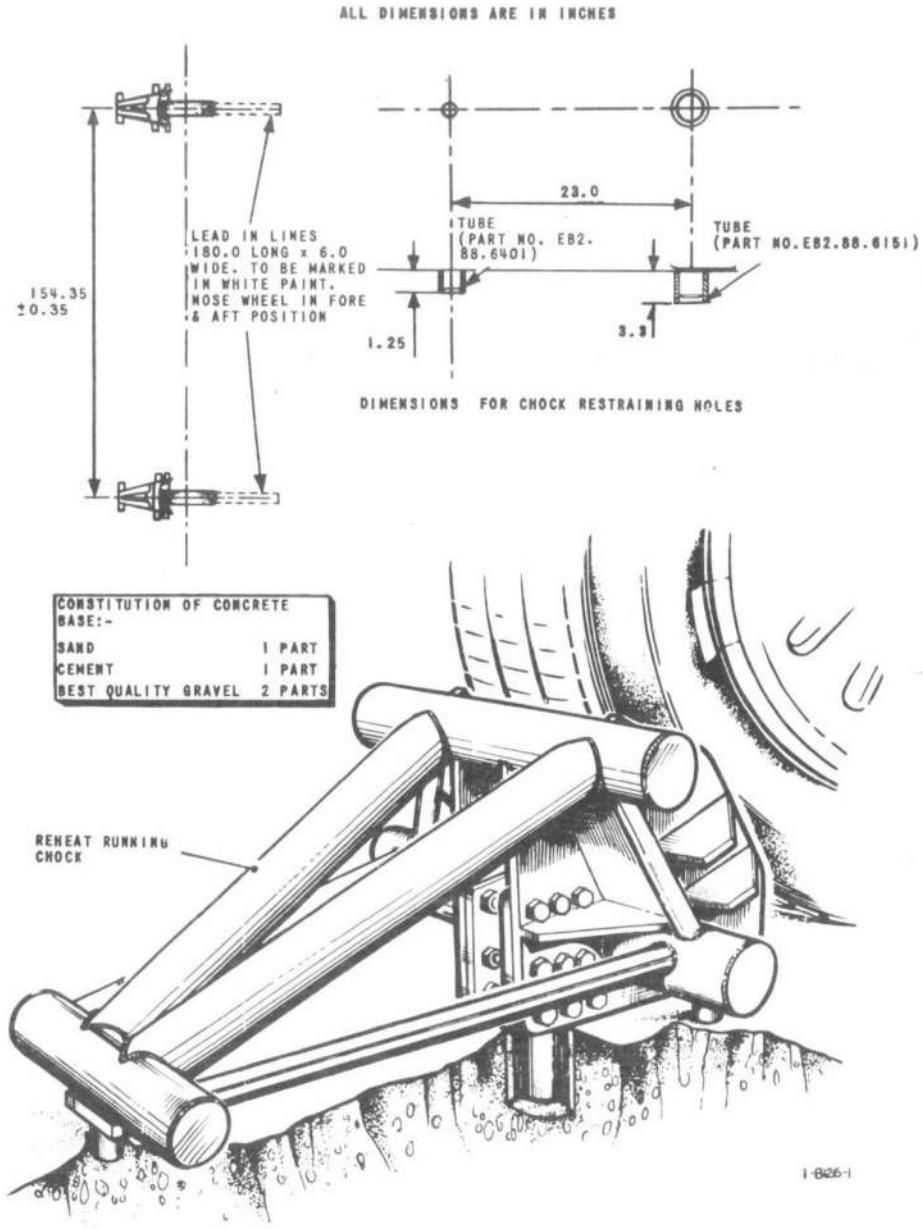


Fig.6. Wheel chocks for reheat ground running

the aircraft should be standing on concrete or grass, nose to wind, and well clear of other aircraft or buildings. Debris guards must be fitted over the main air-intake and the auxiliary intake ducts in the fuselage sides; all small loose objects must be removed from the vicinity of the air intake. Brakes must be applied and chocks positioned at all wheels.

Reheat running (fig.6)

18. When running the engines on the ground in reheat thrust, the aircraft must be restrained with the special-to-type chocks. When using the chocks, maximum thrust limitations are as follows:-

No.1 engine - FULL REHEAT

No.2 engine - 50 per cent rev/min (cold thrust)

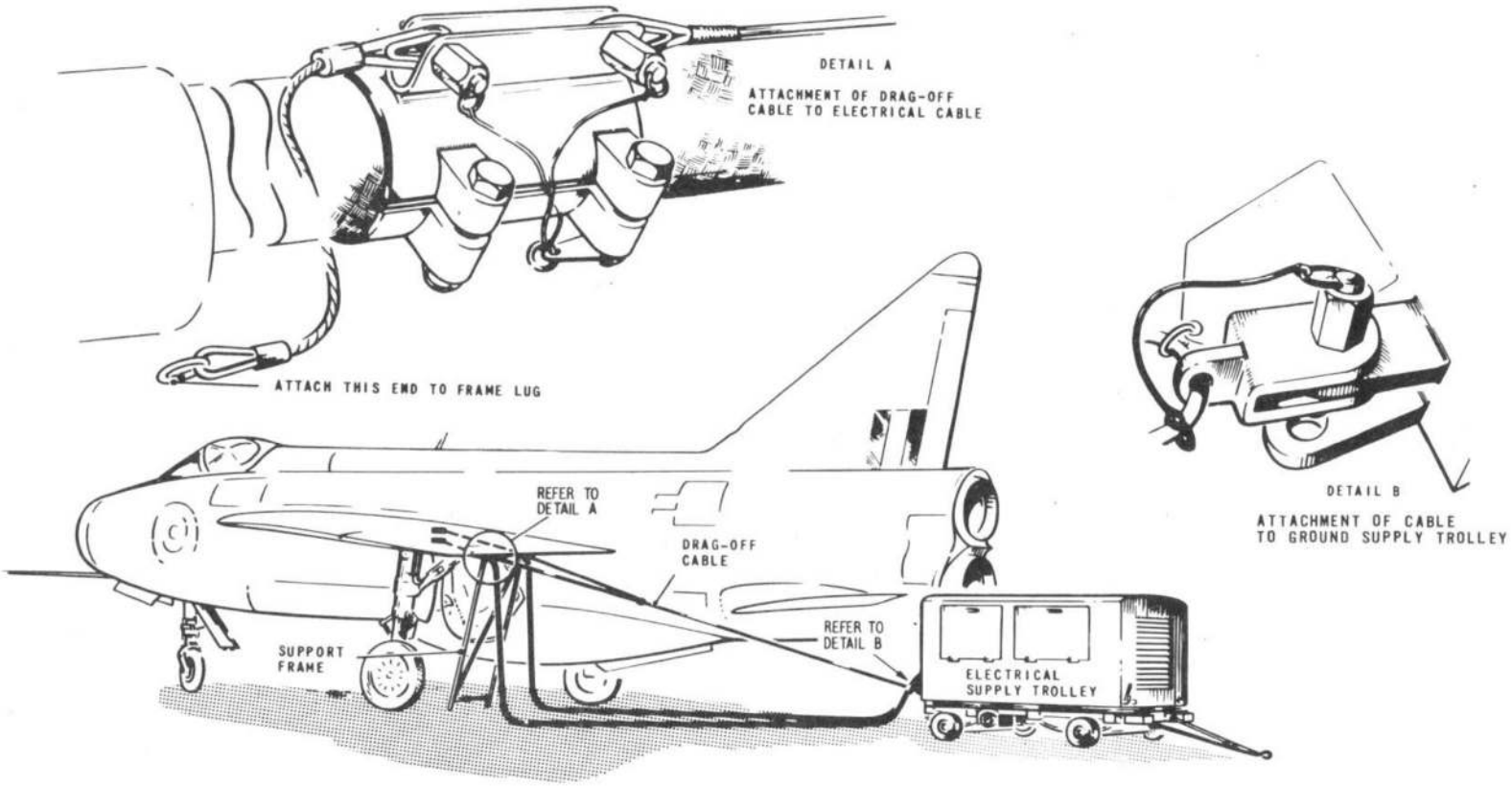
or vice versa.

Ground electrical supply connections

19. Two multi-pin sockets, one for a.c. and one for d.c. are located on main plane ribs in the port undercarriage well *(fig.1)*. For quick disconnecting purposes, when the aircraft is positioned on the I.R.P., the cables of the 15kVA electrical ground starting trolley can be supported by a frame; refer to fig.7, for the method of attachment.

Braking parachute installation

20. The procedure for removing and installing the braking parachute is described in Sect.3, Chap.13.



NOTE
WHEN USING THE VERNON TROLLEY A LOCALLY MANUFACTURED ADAPTER PLATE IS REQUIRED FOR ATTACHING THE DRAG OFF CABLE

FIG. 7. QUICK-DISCONNECT - GROUND ELECTRICAL SUPPLY TROLLEY

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