

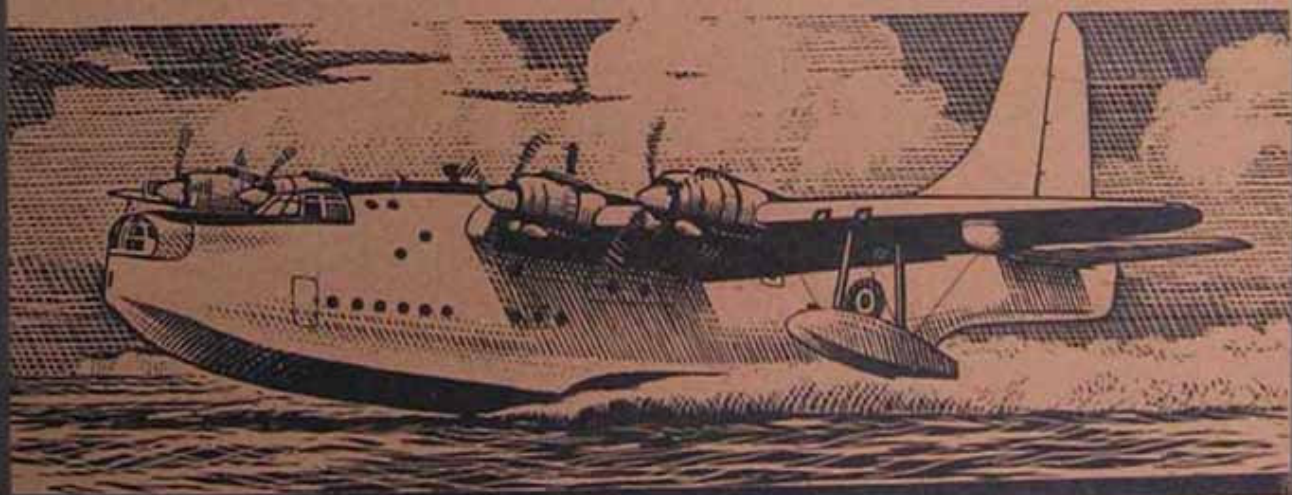
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AIR PUBLICATION

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VOLUME I

SEAFORD I

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AIR MINISTRY

PREPARED BY DIRECTION OF
THE MINISTRY OF AIRCRAFT
PRODUCTION

Howard Lat

PROMULGATED BY ORDER
OF THE AIR COUNCIL

[Signature]

CHAPTER 3

GENERAL SERVICING

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1. This Chapter describes the procedure for certain servicing operations and inspections, but does not cover all the operations that may be involved; it is intended only to implement the Inspection Schedule, Vol. II, Part 2, of this Publication. For information and servicing notes on equipment not dealt with in this Chapter, reference should be made to the relevant Air Publications, a list of which precedes the Leading Particulars. In armament publications, servicing notes are given in Vol. II and not Vol. I as for other publications. The location of inspection and servicing panels is given in fig. 1 and 2. Ground equipment available is illustrated in fig. 3.

EQUIPMENT

Maintenance cradles

2. For servicing engines and propellers, four cradles of tubular construction are provided

to fit on the main plane leading edge maintenance platforms. For access to the propellers and lower cylinders, extensions to carry light-alloy platforms can be fitted to the maintenance cradles. This equipment is illustrated in fig. 4.

Safety belt

3. Personnel working on engines and propellers should fit the safety belt (stowed on the bulkhead aft of the engineer's panel) to their person and attach the straps to eye-bolts provided on the engine cowling (fig. 4).

Jacking trestles

4. Fig. 5 illustrates one of the two hydraulic jacking trestles used for removing the beaching gear. The following should be observed when using the trestles:—

(i) *Warning.*—Only strengthened trestles incorporating Mods. 1032 and 1152 are to be used (see note on fig. 5).

(ii) The conditions of weight must be as defined in Sect. 4, Chap. 2

(iii) The port and starboard trestles must be operated simultaneously as far as possible, to keep the aircraft on an even keel

(iv) When attaching the beaching gear, the tail trolley must be fitted first and then the main struts

(v) When detaching the beaching gear, the main struts must be removed first and then the tail trolley.

Filling jacking trestle oil reservoir

5. With the hydraulic ram in the fully down position, fill the reservoir thus:—

(i) Open the tap at each end of the supply pipe

(ii) Open the release valve

(iii) Remove the vent plug from the side of the pump body

(iv) Remove the filler cap from the top of the reservoir and fill with oil, type 10HD (Stores Ref. 34A/161), until it exudes from the vent hole

(v) Replace the vent plug and then completely fill the reservoir

(vi) Replace the filler cap and screw home the release valve

The oil filter in the filler orifice can be removed for cleaning after detaching the trestle bracing member immediately above the filler cap.

Storage of jacking trestles

6. The taps in the oil pipe between the reservoir and the pump body should be closed when the trestles are in storage.

Fin maintenance ladder

7. Attachments are provided on the fin for fitting a tubular ladder to facilitate servicing operations. The method of fitting the ladder is shown in fig. 6.

JACKING AND TRESTLING

Jacking for symmetry checks

8. The method of jacking to bring the aircraft datum line horizontal for checking aerofoil settings, etc., is illustrated and described in fig. 7. In circumstances where jacking equipment is limited, the hull need not be set as shown in the fig, the alternative method is to first measure the attitude of the hull datum to the horizontal by means of straightedges placed on the datum brackets (fig. 7) and to add or subtract this angle to or from the applicable normal angles of incidence and dihedral given in fig. 9.

AIRFRAME

Checking symmetry

9. The symmetry of the main planes and tail planes about the hull can be checked by taking diagonal measurements as shown in fig. 8. The measurements should be within the limits given.

Checking aerofoils

10. The method of checking the setting and dihedral of the main planes and tail planes is illustrated in fig. 9.

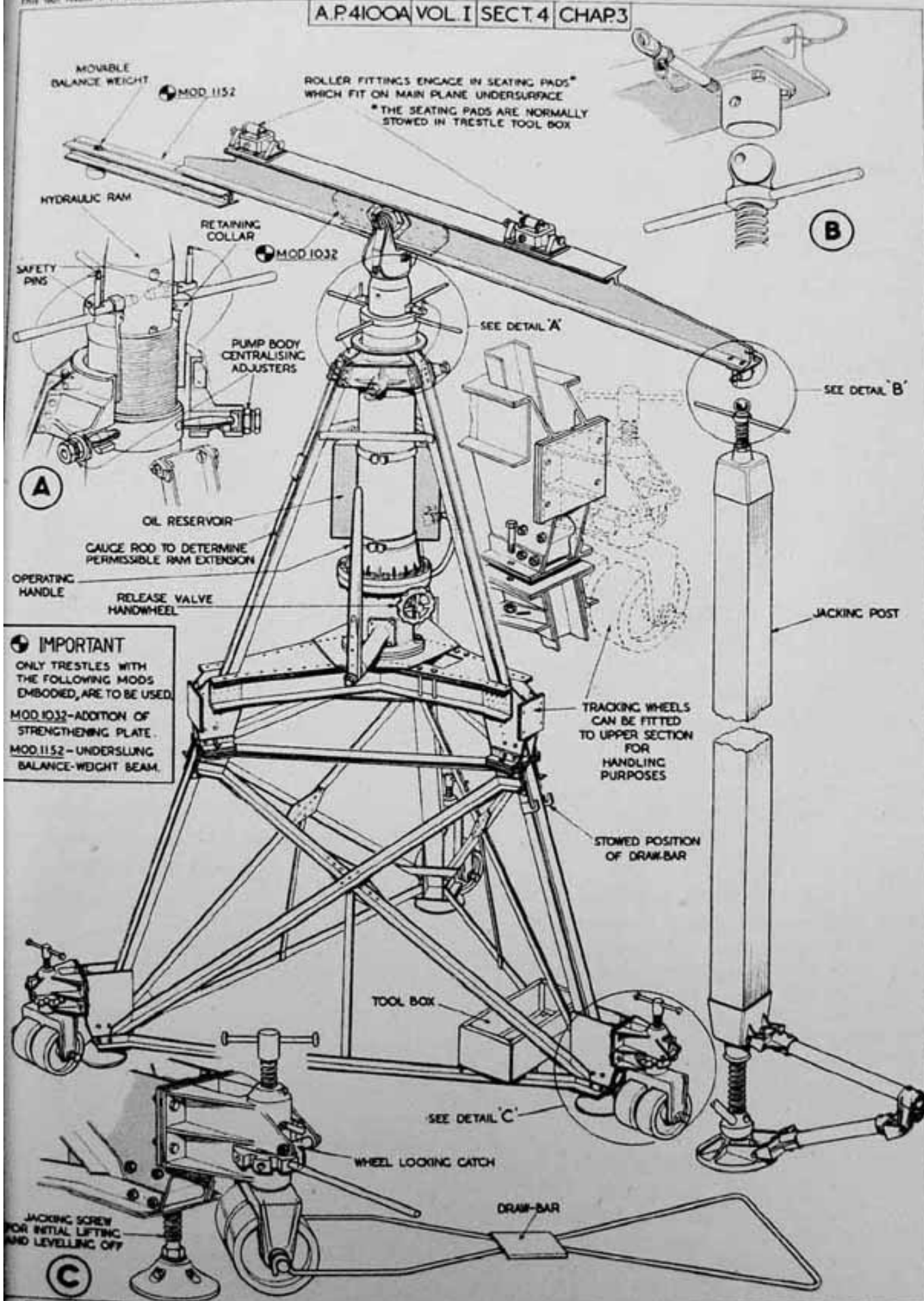
Checking flap movement

11. With the flap fully "in" set an inclinometer on a straight portion of the flap, and observe the angle. Fully extend the flap and again observe the angle, setting the inclinometer in the same position as for the first reading. The difference between the two readings should be within the limits given in fig. 10. If the combined angles are outside the capacity of the inclinometer it will be necessary to use the latter on a wedge-shaped board.

FLYING CONTROLS

Identification of control runs

12. To ensure the correct rigging of control runs, identification symbols are marked on all



JACKING TRESTLE

FIG. 5

CHAPTER 2

HANDLING AND PREPARATION FOR FLIGHT

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*To be issued later

1. This chapter gives information on handling the aircraft on the ground or in the water and on preparing it for flight. Equipment for handling and servicing is listed in the appropriate M leaflet of Vol. II, Part 1. Special gear and tools are included in the Schedule of Spare Parts, Vol. III of this publication.

Weight limits

2. When using the beaching gear or jacking trestles (the latter are dealt with in *Sect. 4, Chap. 3*) the following are the limiting conditions of the weight:—

- There must be no bombs on board.
- There must be no personal effects on board.
- Fuel must not exceed 1,100 gall.
- Personnel should be limited to one, but if it is essential that more than one person be on board, the quantity of fuel allowed in sub-para. (iii) must be reduced accordingly, i.e. 25 gall. per person.

Beaching gear

3. For beaching, the aircraft is supported amidships by two main struts, positioned under the main-plane front spar trusses and at the aft end of the planing bottom by a tail trolley. Fig. 1 and 2 illustrate the main struts and the tail trolley, respectively, and fig. 3 and 4 the method of attaching the gear to the aircraft.

Towing and side tracking

4. The aircraft should be towed to the slipway by means of a cable shackled to the eye at the rear step. This cable can then be used to haul the aircraft up the slipway, steering by the tail trolley when necessary. Fig. 5 and 6 illustrate the method of towing and side tracking, respectively, when on land.

Filling fuel tanks

General

5. The fuel system is described and illustrated in Sect. 8. For the specification of fuel to be used, reference should be made to the Leading Particulars. The individual tank cocks and the inter-engine balance cocks are operated from the engineer's station, while the inter-system balance cocks at the wing-roots are operated direct. The tanks can be filled by any one of the three methods described below, depending upon the equipment available. Access to the auxiliary power unit is described in Sect. 11.

Using the fuel pump in the A.P.U.

6. (i) Remove the cap from the inlet side of the fuel pump and connect up the supply pipe from the tanker.

(ii) Open the inter-engine balance cocks and ensure that the inter-system balance cocks are closed; open the isolating valve(s) on the A.P.U.

(iii) Open No. 1 tank cock(s) and commence filling, checking the contents periodically by means of the fuel gauges of the tanker.

(iv) Proceed as above for the other tanks, opening each cock just before closing the preceding tank cock. When the last tank is full, close the isolating valves on the A.P.U. and immediately afterwards disengage the drive to the pump.

(v) Stop the A.P.U., disconnect the tanker, and replace the cap on the inlet connection of the A.P.U.

Using the hand re-fuelling connection on the A.P.U.

7. This connection is fitted between the non-return valve in the fuel pump outlet, and the isolating valves. The cocks should be operated as in para. 6.

Using the fillers in the top of the tanks

8. The combined spanner and filler extension (*Stores Ref. 26AL/6904*) is required; this is stowed in the tool locker in the aft compartment and a fuel funnel is stowed in the full roof at the centre-section.

(i) Remove the small cover plate from the tank lid (*see Chap. 3, fig. 1*). Each cover is held by a central screw.

(ii) Unscrew the filler cap and fit the filler extension. Fill the tank, checking from the contents gauge and the tanker.

Filling A.P.U. tank

9. The tank for the A.P.U. can be filled through the standard filler in the tank, or from the main fuel system by means of the starboard carburettor priming pump, an additional cock being fitted for the purpose.

Oil tanks

General

10. The oil system is described and illustrated in Sect. 8. For the specification of the oil to be used, refer to the Leading Particulars.

Filling tanks

11. The filler-cap key (*Stores Ref. 26AL/51188*) is stowed in the tool locker in the aft compartment. Two covers in the top of each nacelle give access to the filler cap and circulating chamber respectively; the latter should not be used for filling purposes.

Note . . . When filling a tank after a new engine has been installed, or the oil system has been drained, ensure that there is oil at the oil pump before the engine is started. The oil feed connection on the rear cover of the engine should be slackened off until oil exudes from this end of the pipe; the connection should then be tightened up and re-locked.

12. For the hydromatic propellers, an additional one gallon per tank should be added over and above the amount of oil calculated for a given range.

Filling A.P.U. engine-sump and gearbox

13. The sump filler and breather are located on the top of the engine, and the gearbox filler is on the rear of the crankcase.

Bomb loading

General

14. Bomb hoisting is effected by manually-operated winches fitted in the bomb carriages (*Sect. 11*). Reference should be made to Sect. 3, which deals with the manual operation of the traversing gear and the loading of stores to the carriages. The carriers employed are Universal type EM/EF—No. 1, Mk. I, and No. 2, Mk. I or Mk. III. They are used to carry the stores set out below:—

(i) No. 1 carrier:—

(a) One 8½ lb. practice bomb, Mk. I, smoke.

- (b) One 10 lb. practice bomb, Mk. III, flash.
- (c) One 10 lb. practice bomb, Mk. I, smoke.
- (d) One 11½ lb. practice bomb, Mk. I, smoke.
- (e) One 11½ lb. practice bomb, Mk. I, flash.
- (f) One 100 lb. A.S.
- (g) One 100 lb. smoke, Mk. I or Mk. II.
- (h) One 250 lb. A.S., G.P., S.A.P., or B., Mk. III.
- (j) One 250 lb. depth charge, Mk. XI.
- (k) One 250 lb. small bomb container, Mk. IA.
- (l) One supply dropping apparatus.

(ii) No. 2 carrier.—In addition to those for the No. 1 carrier the following stores can be carried:—

- (m) One 500 lb. A.S., G.P., S.A.P.
- (n) One 600 lb. A.S.

(iii) Mk. III carrier.—This will carry any of the stores set out for the No. 1 and the No. 2 carriers.

Bomb loading is described and illustrated in fig. 7.

Moisture drain cocks

15. A moisture drain pipe and cock is fitted to each fuel tank sump (*see fig. 8 and 9*). The cocks for No. 1 and No. 6 tanks are operated from the hull centre-section but the remainder are remotely controlled by cables from the maintenance platforms. All controls are spring-loaded to the OFF position.

Bilging hull

16. The A.P.U. can be employed to remove bilge water from the watertight compartments in the planing bottom by means of a flexible

hose (*see fig. 10*). The hose, stowed on the starboard side of the bomb compartments rear bulkhead, connects to a twin filter unit below the upper deck at the starboard side of the galley. Provision is also made for hand bilging with a portable bilge pump which is stowed at the starboard side of the bomb compartment. The discharge hose fits a connection on the starboard side.

Bilging wing-tip floats

17. Bilge water can be removed from the floats by means of the hand pump (*see fig. 10*). Pipes from the watertight compartments are carried up through the float struts to connections in the main-plane upper surface.

Flying controls locking gear

18. When the aircraft is moored, the controls should be locked, with the ailerons and rudder normal and the elevators down. The locking gear (*see fig. 11*) consists of a handle with six projecting pins. To lock the controls, the handle is fitted into the sockets situated in the floor forward of the radio bulkhead to engage eye-links interposed in the control runs. A tube, fitted to the handle extends forward into the first pilot's seat, access to the latter being impossible until the gear is removed. The gear is stowed at the starboard side of the cockpit floor.

Awnings and covers

19. Fig. 12 illustrates and references the awnings for the hull roof, covers for the coupe, engines, propeller spinners, pressure head and gun turrets.

Note . . . The roof awnings are supplied to special order only.

Picketing

20. (*This para. to be issued later.*)

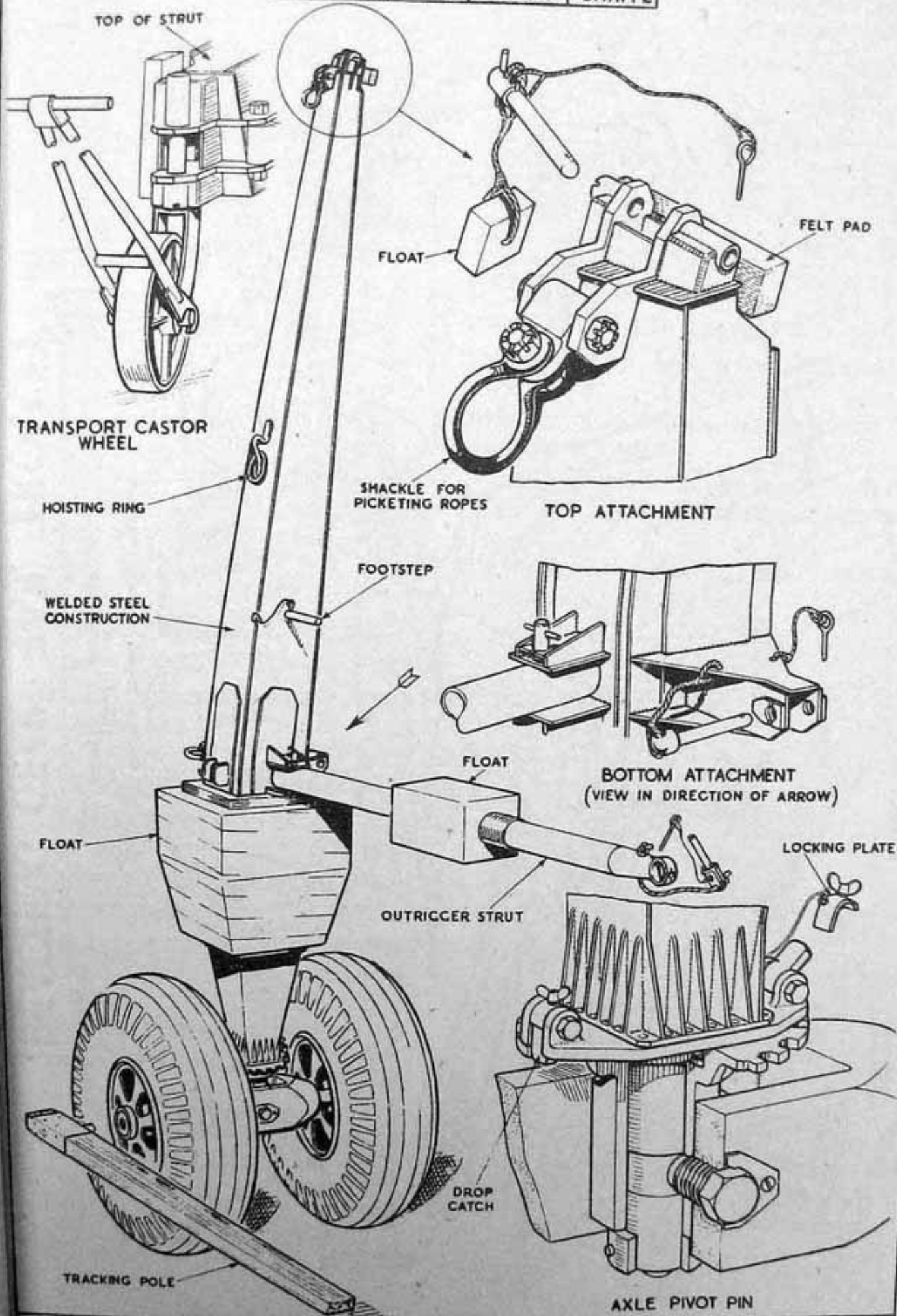
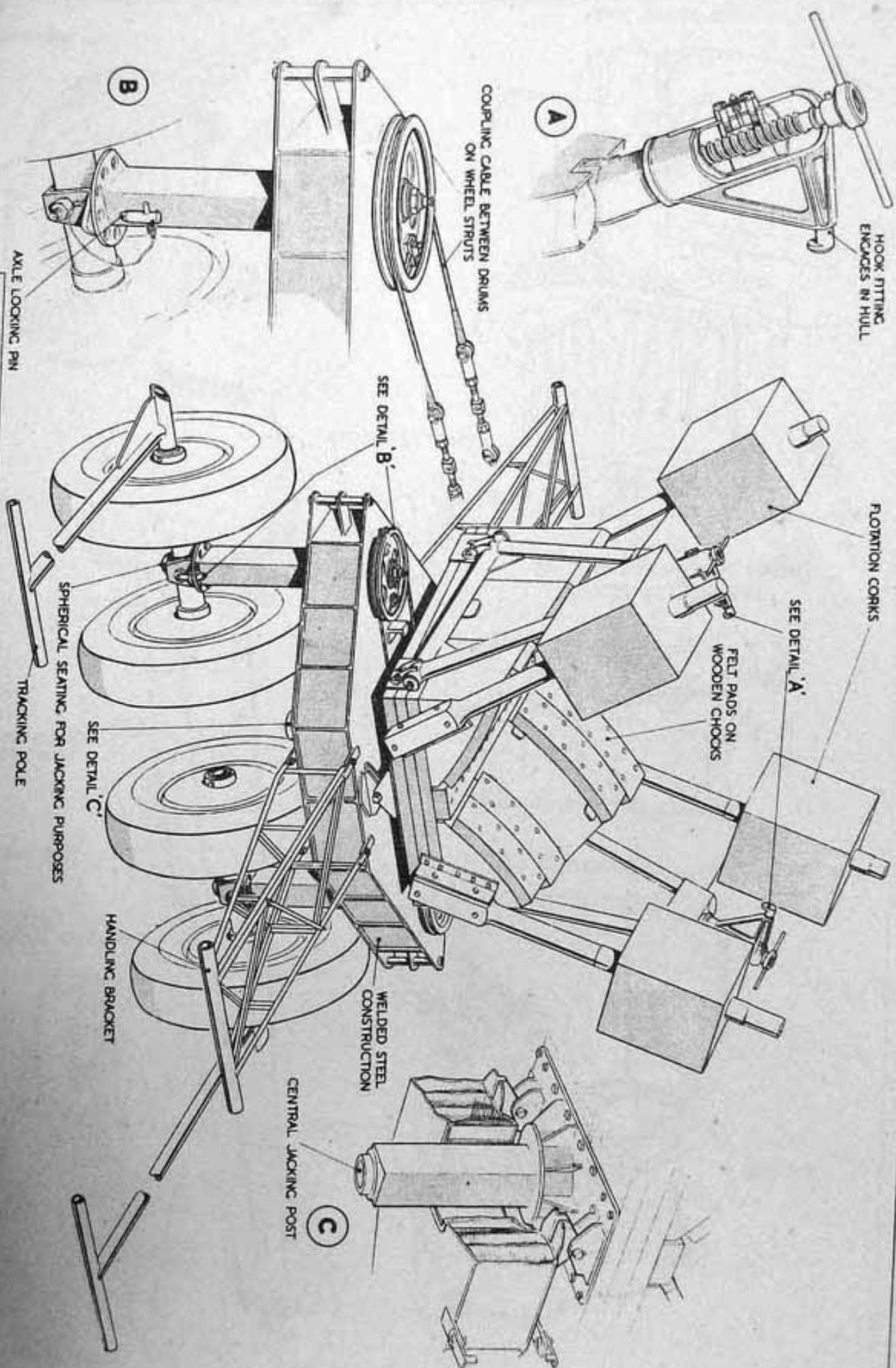


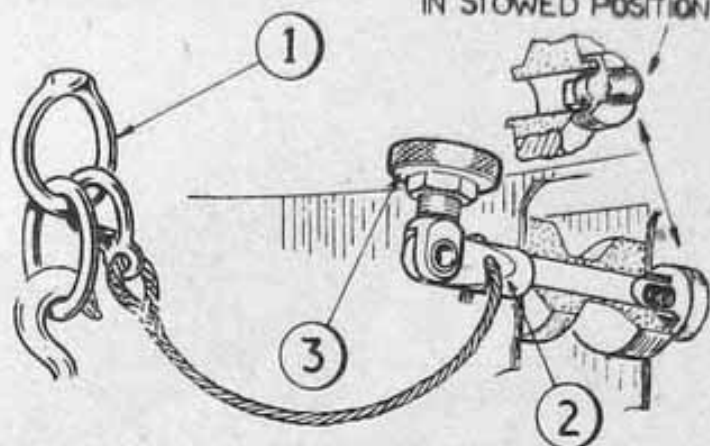
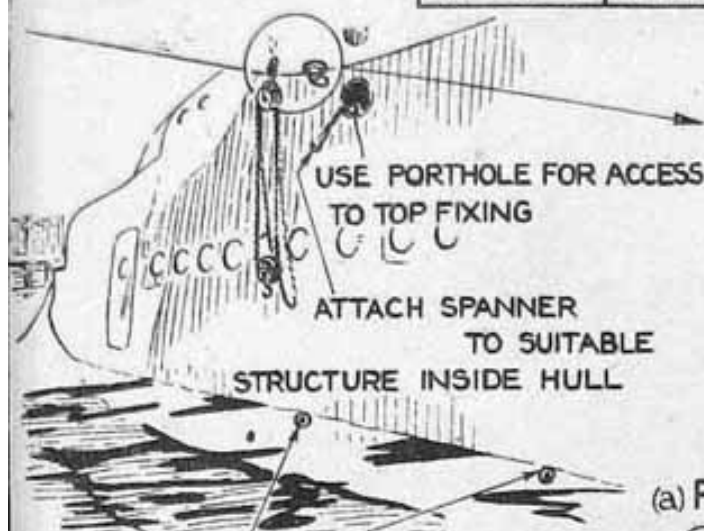
FIG. 1

BEACHING GEAR MAIN STRUT

FIG. 1



BEACHING GEAR TAIL TROLLEY



(a) PREPARATION OF AIRCRAFT

- ① FIT RING BOLT, AND ATTACH BLOCK AND TACKLE
- ② INSERT FIXING PIN, AND SECURE WITH REVERSIBLE NUT
- ③ SCREW UP KNURLED CAP AGAINST UNDER-SURFACE OF THE MAIN PLANE (HAND-TIGHT)
- ④ SCREW OUT THE ATTACHMENT LUGS TO THEIR FULLEST EXTENT

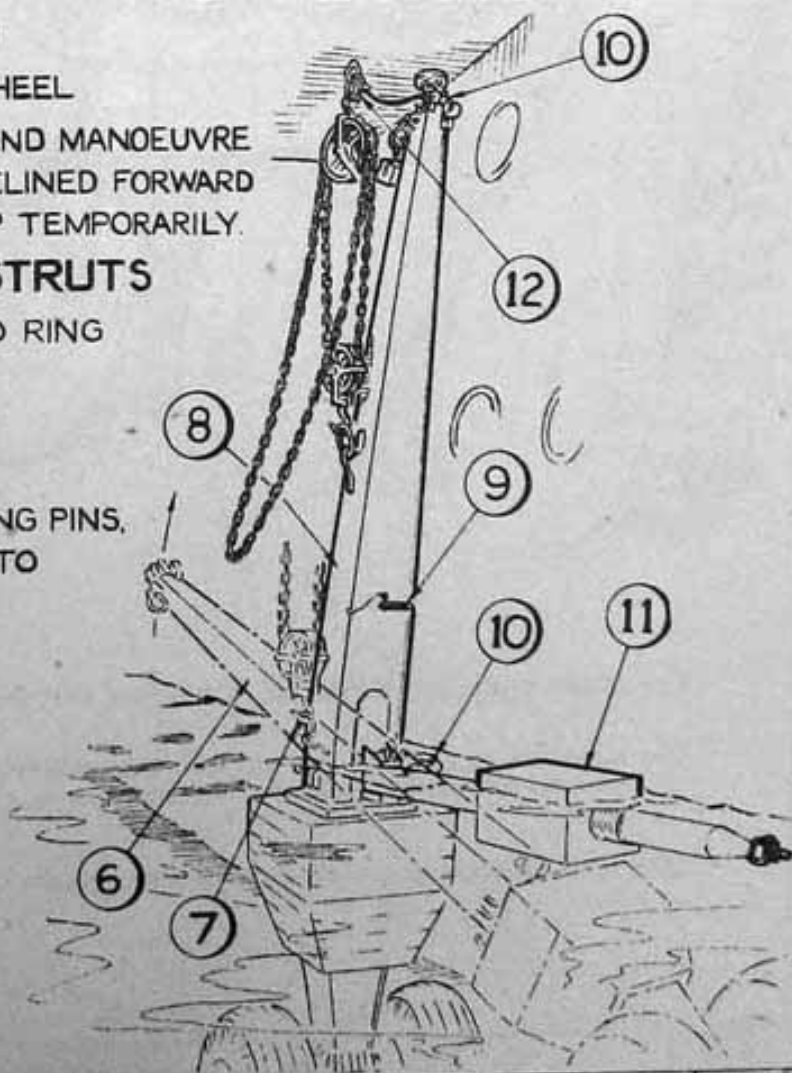
(b) PREPARATION OF CHASSIS

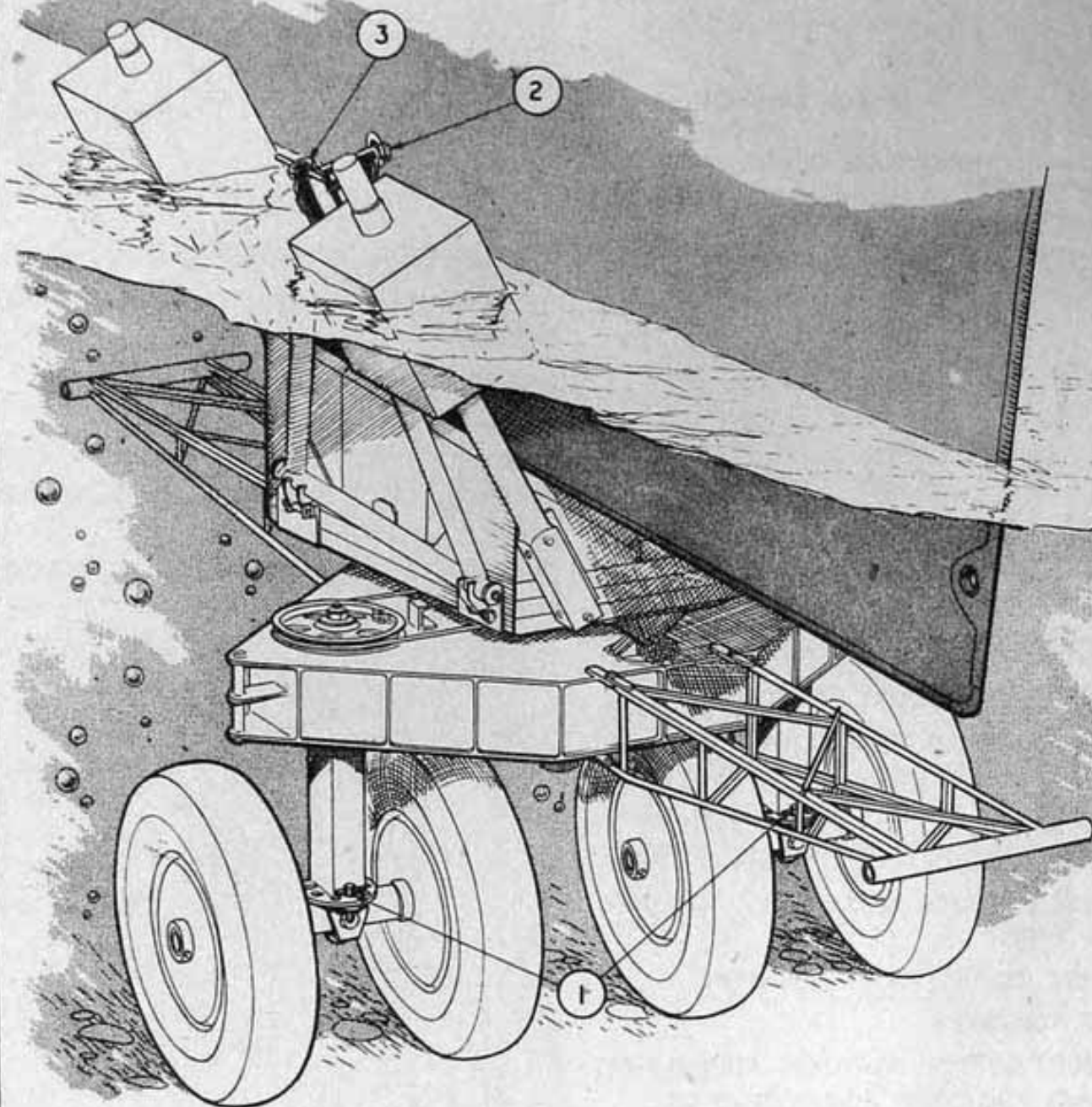
5 REMOVE TRANSPORT CASTOR WHEEL

⑥ FLOAT CHASSIS TO AIRCRAFT, AND MANOEUVRE IT ALONGSIDE WITH STRUT INCLINED FORWARD AS SHOWN, REMOVE FOOTSTEP TEMPORARILY.

(c) ATTACHMENT OF MAIN STRUTS

- ⑦ COUPLE BLOCK AND TACKLE TO RING ON STRUT
- ⑧ HOIST TO VERTICAL POSITION
- ⑨ FIT FOOTSTEP
- ⑩ INSERT BOTTOM AND TOP FIXING PINS, USING FOOTSTEP FOR ACCESS TO LATTER
- ⑪ ATTACH OUTRIGGER STRUT.
- ⑫ REMOVE BLOCK AND TACKLE

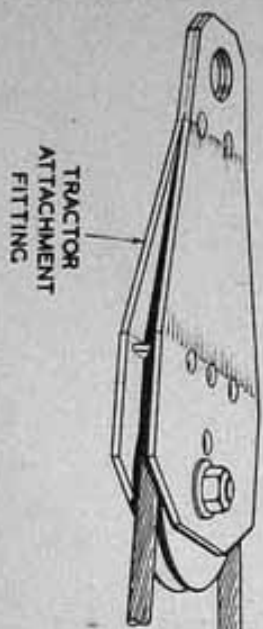
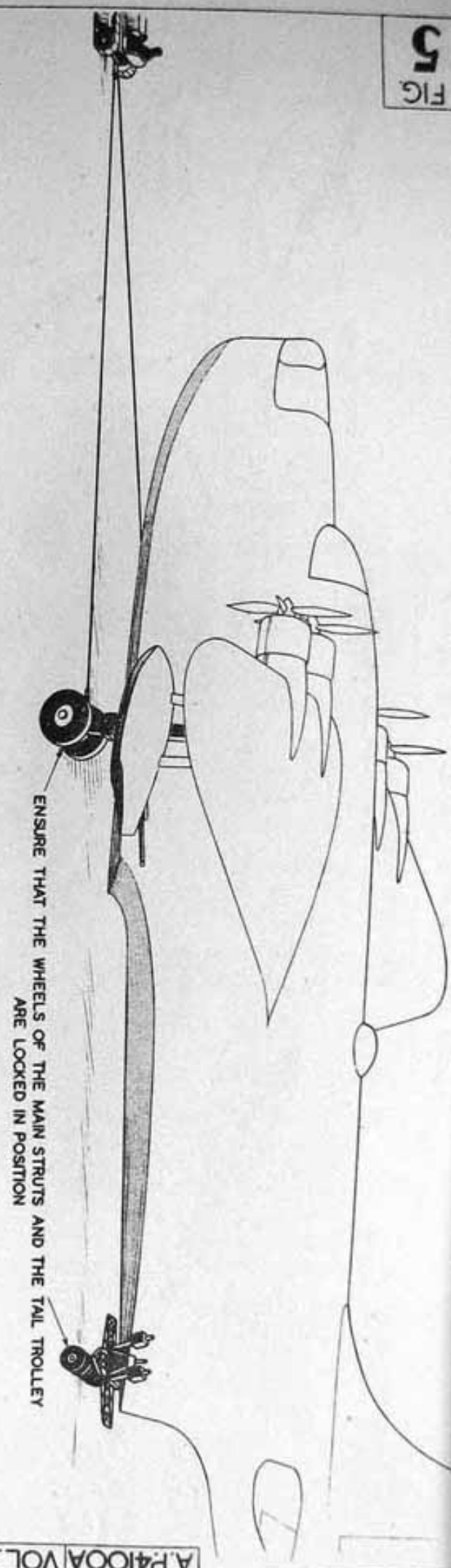




- ①— ENSURE THAT LOCKING PINS ARE IN POSITION WITH THE WHEELS FORE-AND-AFT
- ②— FLOAT THE TROLLEY TO THE AIRCRAFT AND MANŒUVRE IT UNDER THE REAR STEP SO THAT THE HOOK ATTACHMENT FITTINGS CAN BE ENGAGED IN THE EYES IN THE HULL
- ③— TURN HANDSCREWS CLOCKWISE TO SECURE TROLLEY

5

FIG.



TO STROP ROUND
STARBOARD MAIN STRUT

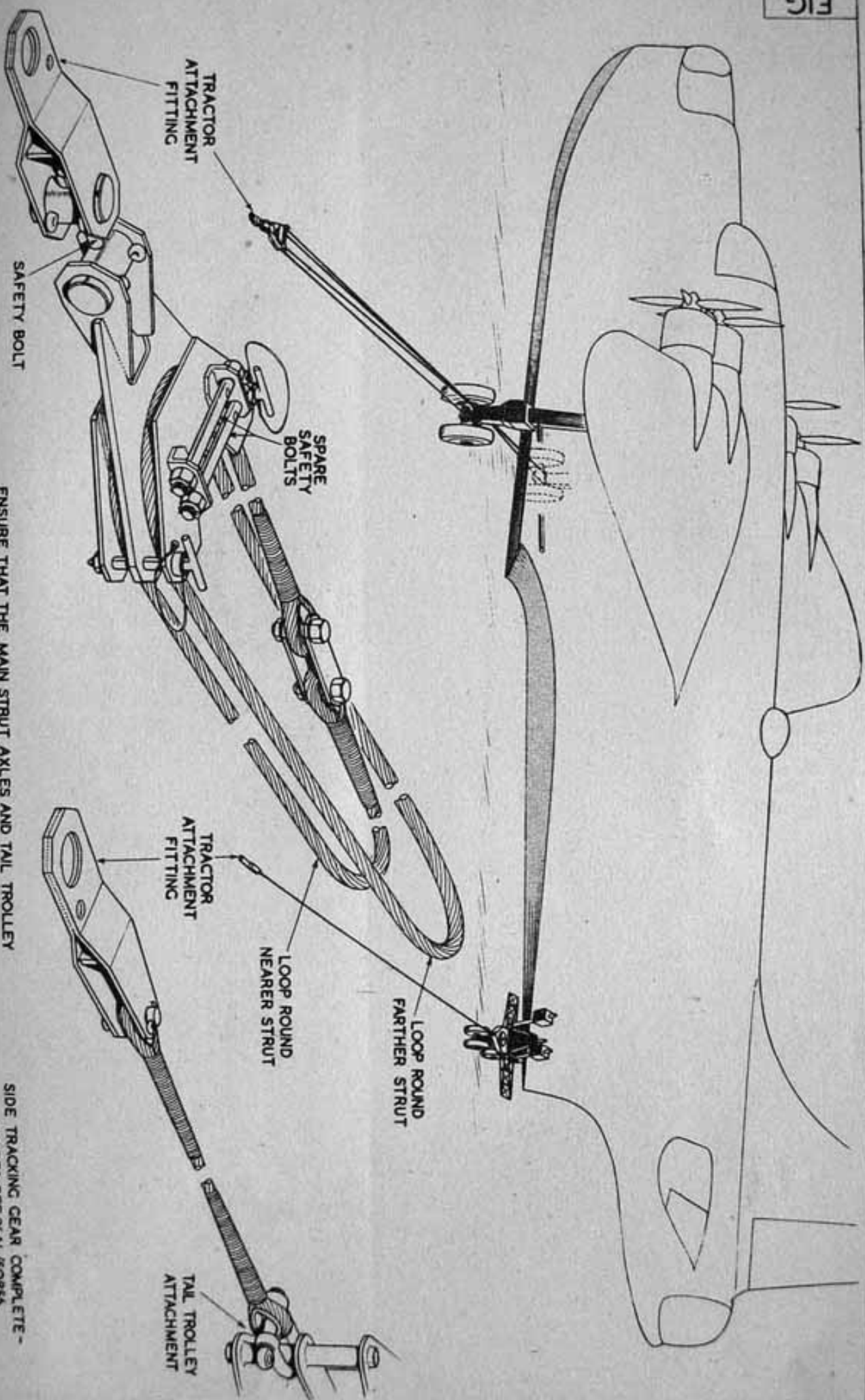
TOWING GEAR COMPLETE -
STORES REF. 26AL/50855

5

FIG.

TOWING

FIG. 6



ENSURE THAT THE MAIN STRUT AXLES AND TAIL TROLLEY AXLES ARE LOCKED IN POSITION

SIDE TRACKING GEAR COMPLETE - STORES REF 204L/30855

SIDE TRACKING

FIG. 6

LOADING STORES INTO HULL.

- i OPEN THE THERMAL TRIP SWITCHES - FOR THE PORT AND STARBOARD MOTORS ON PANEL 1 C. AND FOR THE STARBOARD MOTOR.

WARNING.

FAILURE TO CARRY OUT THE ABOVE OPERATIONS FOR THE NEXT OPERATION, RESULT IN THE CARRIAGES AUTOMATICALLY MOVING TO THE RELEASE POSITION.

- ii LOWER THE BOMB DOORS BY PRESSING THE RELEASE PLUNGER ON THE E.M. UNIT HAVING ELASTIC CORDS FROM PULLEYS AT ENDS OF BEAMS. CARRIAGE OUTBOARD SO THAT THE OUTER ADAPTER BEAM CLEARS THE HULL SIDE; THE POSITION SHOULD BE SUCH THAT THE CATCH ON THE ADAPTER BEAM ALSO THUS CAN BE REACHED FROM INSIDE THE HULL.
- iii LOAD THE OUTER ADAPTER BEAM (SEE SECT. 3) ON THE CARRIAGE OUT SO THAT THE INNER ADAPTER BEAM IS ON THE HULL SIDE AND LOAD IN A SIMILAR MANNER.
- iv MOVE THE CARRIAGE TO THE STOWED POSITION BY PULLING BACK THE PLATFORM (A) DIRECTLY BELOW.
- v REMOVE THE CLAMPS (B) FROM THE STOWAGE PLACE. PLACE THE CRUTCHES (C) IN POSITION TO SUIT THE STORES BEING LOADED.
- vi LOWER THE STORES INTO THE CRUTCHES AND THE CARRIAGES; REPLACE THE CLAMPS AND TIGHTEN THE SCREWS UNTIL THE FORMER REGISTER FIRMLY WITH THE STORES.
- vii HOIST THE ADAPTER BEAMS TO THE CARRIAGES BY PULLING UP THE HINGED PLATFORM.

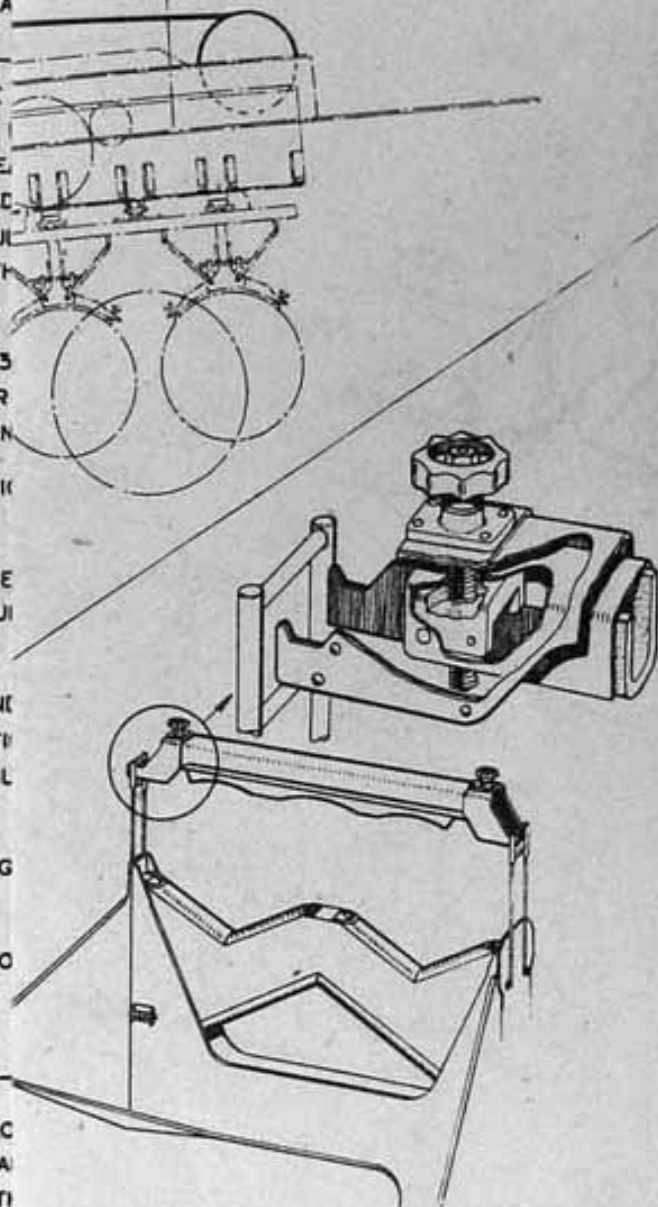
REPEAT THE FOREGOING OPERATIONS TO LOAD STORES ON THE OTHER SIDE OF THE HULL.

WARNING.

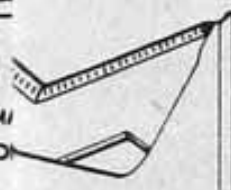
WHEN THE STOWAGE CRADLES HAVE BEEN LOADED, THE CARRIAGES CAN ALSO BE LOADED AS ALREADY DESCRIBED. RETURNED TO THE STOWED POSITIONS, AND THEN CLOSED. CLOSE THE THERMAL TRIP SWITCHES.

LOADING STORES TO CARRIAGES.

ENSURE THAT BEFORE CLOSING THE THERMAL TRIP SWITCHES THE CARRIAGES ARE IN THE STOWED POSITION AND THE DOORS CLOSED AND SECURED.



CRUTCH IN POSITION FOR TWO 250 LB. BOMBS.



POSITION FOR 500 LB. SAP BOMB

LOADING STORES INTO HULL.

- I OPEN THE THERMAL TRIP SWITCHES - FOR THE PORT MOTOR ON PANEL 1 C, AND FOR THE STARBOARD MOTOR ON PANEL 2 C.

WARNING

FAILURE TO CARRY OUT THE ABOVE OPERATION MAY ON THE NEXT OPERATION, RESULT IN THE CARRIAGES AUTOMATICALLY MOVING TO THE RELEASE POSITION.

- II LOWER THE BOMB DOORS BY PRESSING THE MECHANICAL RELEASE PLUNGER ON THE EM UNIT HAVING FIRST REMOVED CLASTIC CORDS FROM PALLETS AT ENDS OF BEAM. MOVE THE CARRIAGE OUTBOARD SO THAT THE OUTER ADAPTER BEAM JUST CLEARS THE HULL SIDE. THE POSITION SHOULD BE SUCH THAT THE CATCH ON THE ADAPTER BEAM ALSO THE STAY-PAWS CAN BE REACHED FROM INSIDE THE HULL.
 - III LOAD THE OUTER ADAPTER BEAM (SEE SECT 3) THEN MOVE THE CARRIAGE OUT SO THAT THE INNER ADAPTER BEAM JUST CLEARS THE HULL SIDE AND LOAD IN A SIMILAR MANNER.
 - IV MOVE THE CARRIAGE TO THE STORED POSITION AND HINGE BACK THE PLATFORM(A) DIRECTLY BELOW.
 - V REMOVE THE CLAMPS(B) FROM THE STORAGE CRACKLES AND PLACE THE CRUTCHES(C) IN POSITION TO SUIT THE TYPE OF STORES BEING LOADED.
 - VI LOWER THE STORES INTO THE CRUTCHES AND THEN DETACH THE CARRIERS. REPLACE THE CLAMPS AND TIGHTEN THE DOWNLED SCREWS UNTIL THE FORMER REGISTER FINALLY AGAINST THE STORES.
 - VII HOIST THE ADAPTER BEAMS TO THE CARRIAGE AND REPLACE THE HINGED PLATFORM.
- REPEAT THE FOREGOING OPERATIONS TO LOAD STORES IN THE CRACKLES ON THE OTHER SIDE OF THE HULL.

WARNING

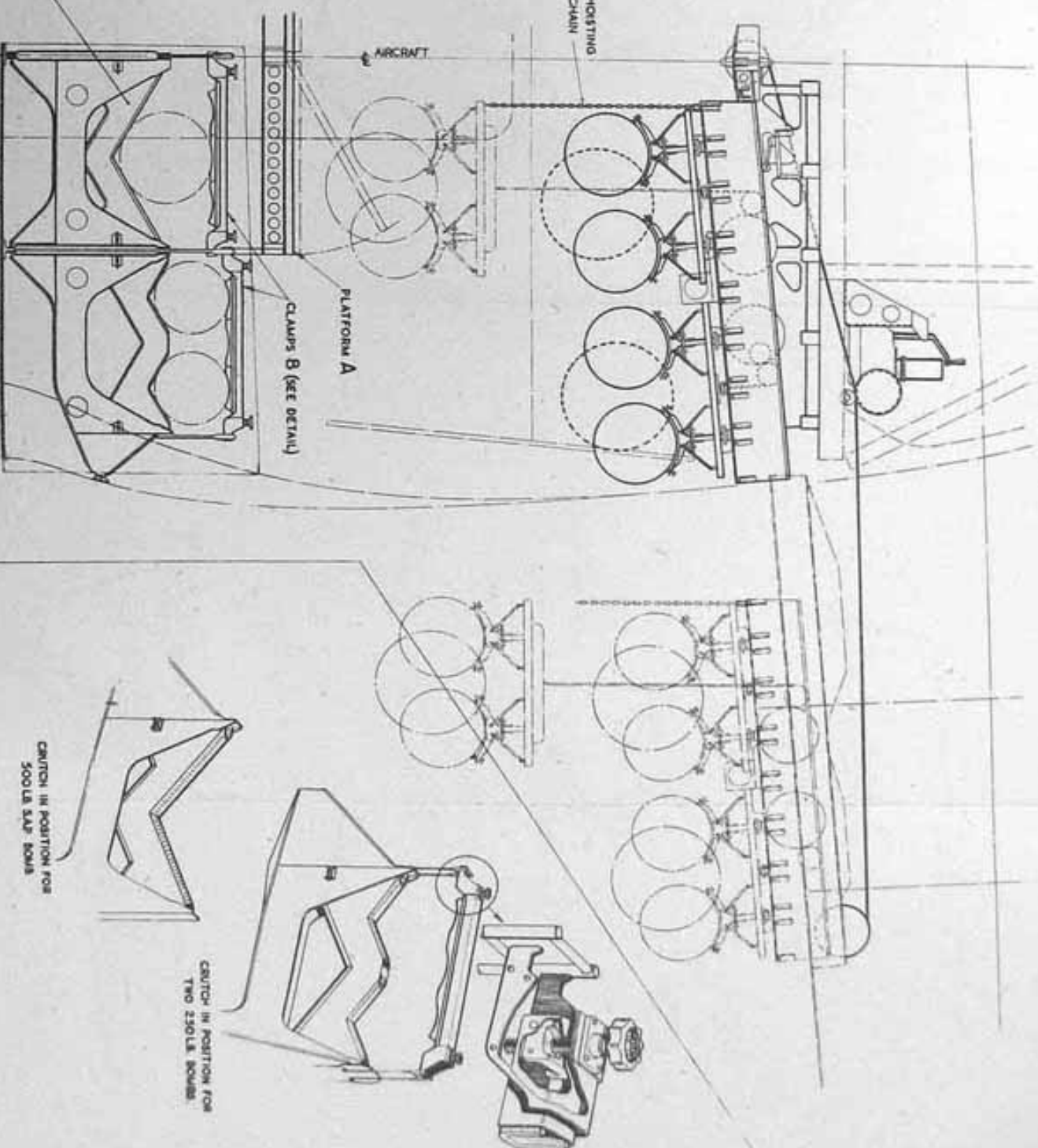
WHEN THE STORAGE CRACKLES HAVE BEEN LOADED THE CARRIAGES CAN ALSO BE LOADED AS ALREADY DESCRIBED, RETURNED TO THE STORED POSITION, AND THE BOMB DOORS CLOSED. CLOSE THE THERMAL TRIP SWITCHES.

LOADING STORES TO CARRIAGES.

ENSURE THAT BEFORE CLOSING THE THERMAL TRIP SWITCHES THE CARRIAGES ARE IN THE STORED POSITION AND BOMB DOORS CLOSED AND SECURED.

CRUTCHES C
SEE DETAILS

VIEW LOOKING AFT ON PORT SIDE
(STARBOARD SIDE SIMILAR)



BOMB LOADING

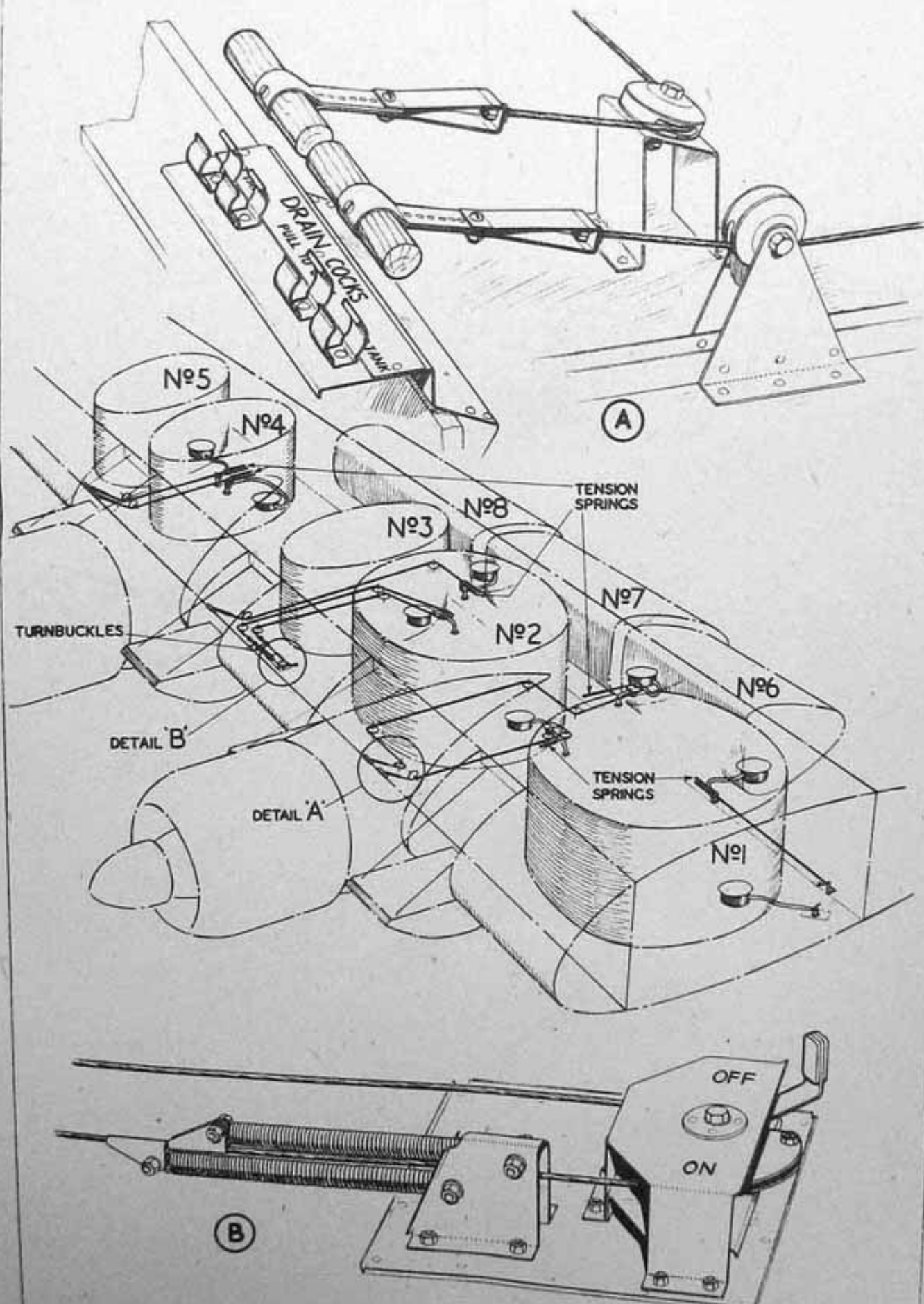
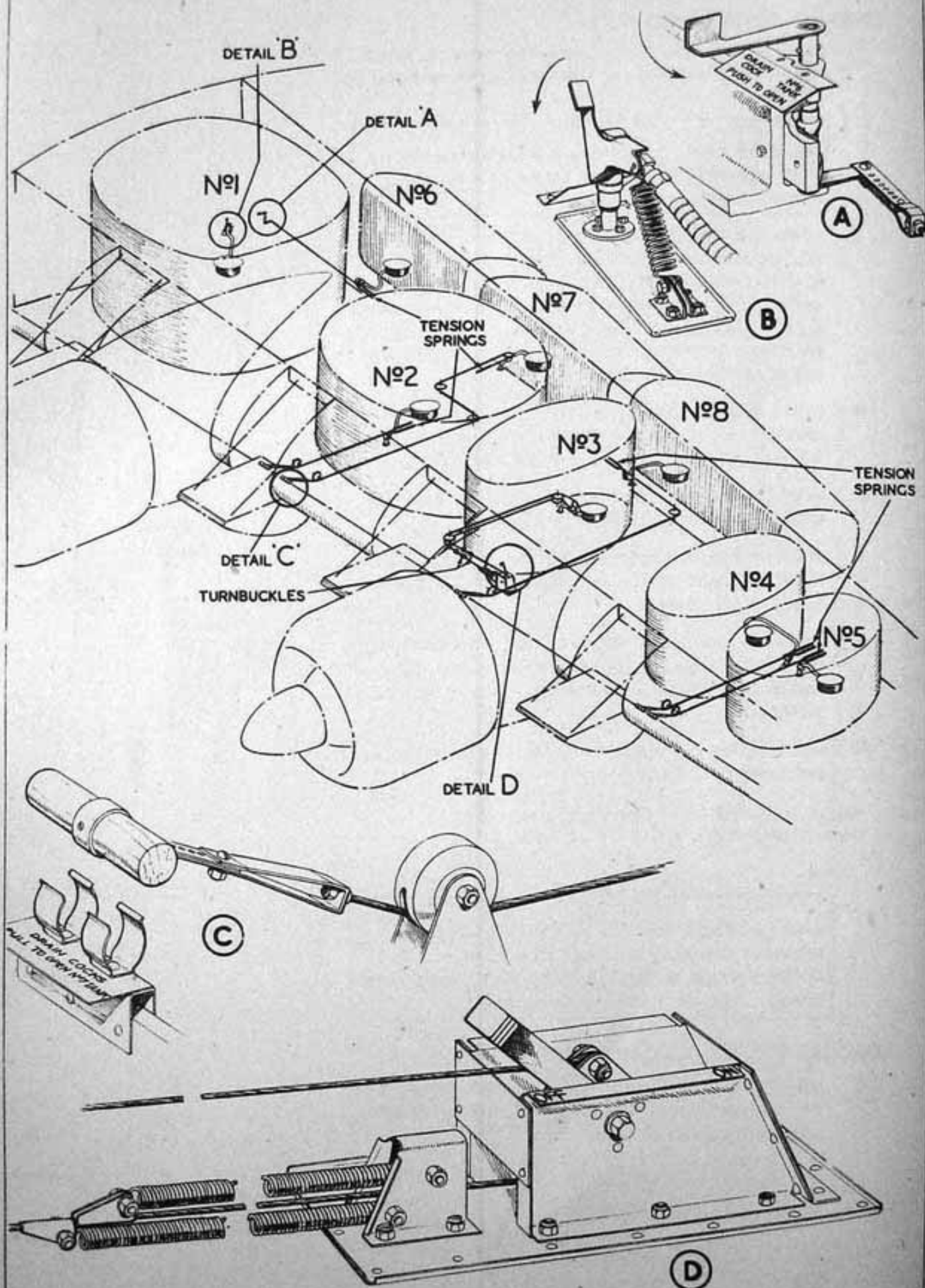
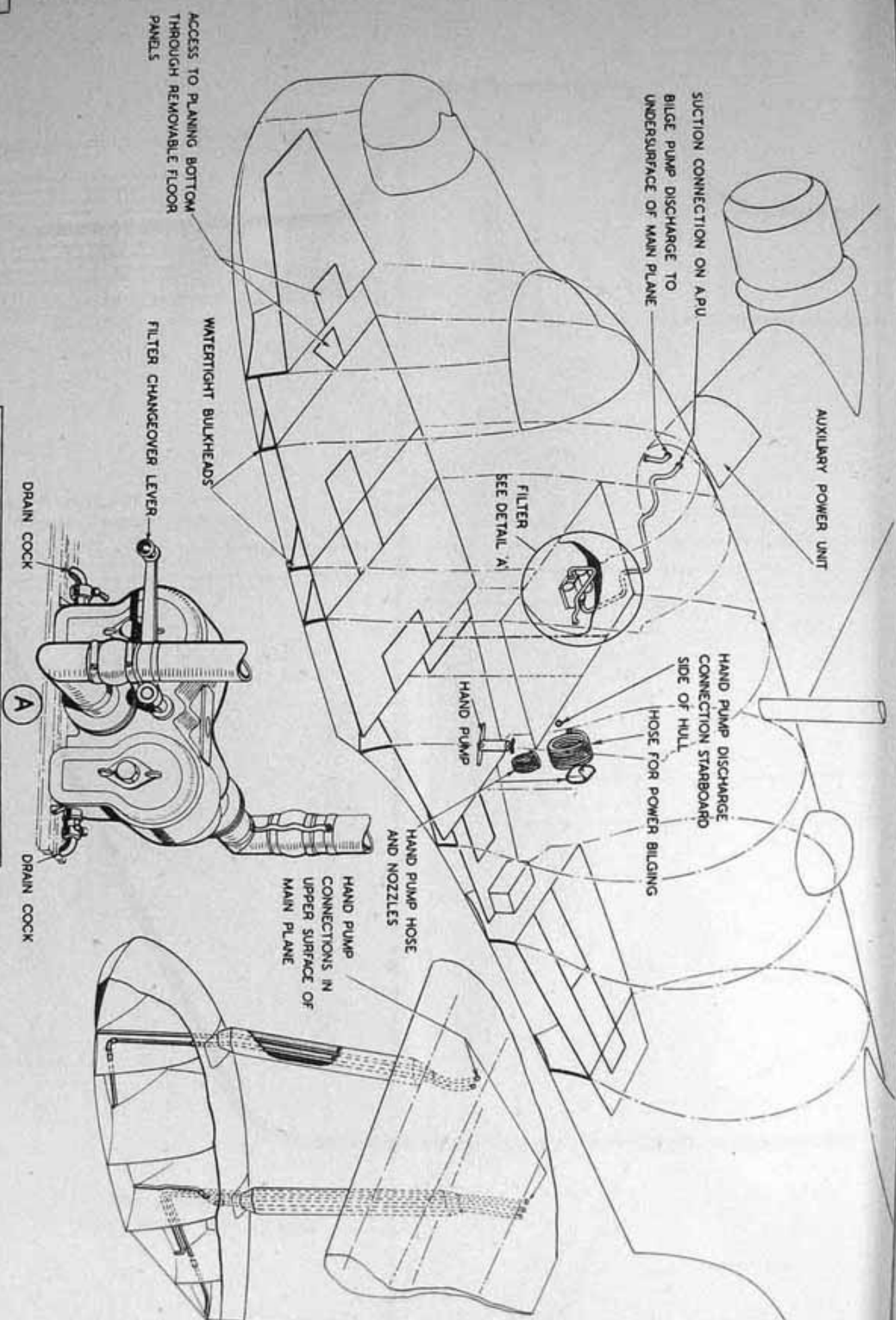


FIG
8

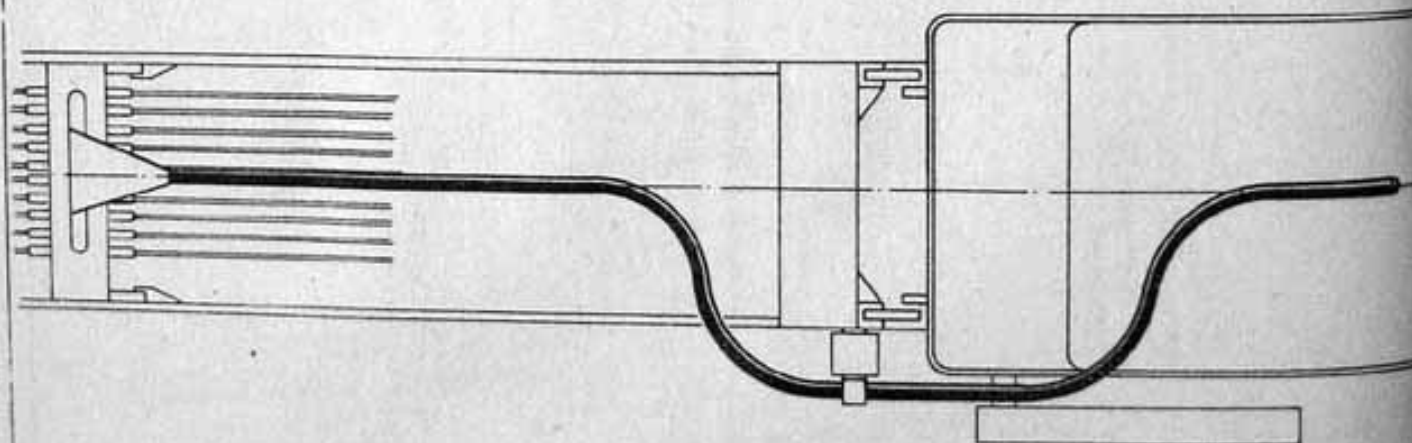
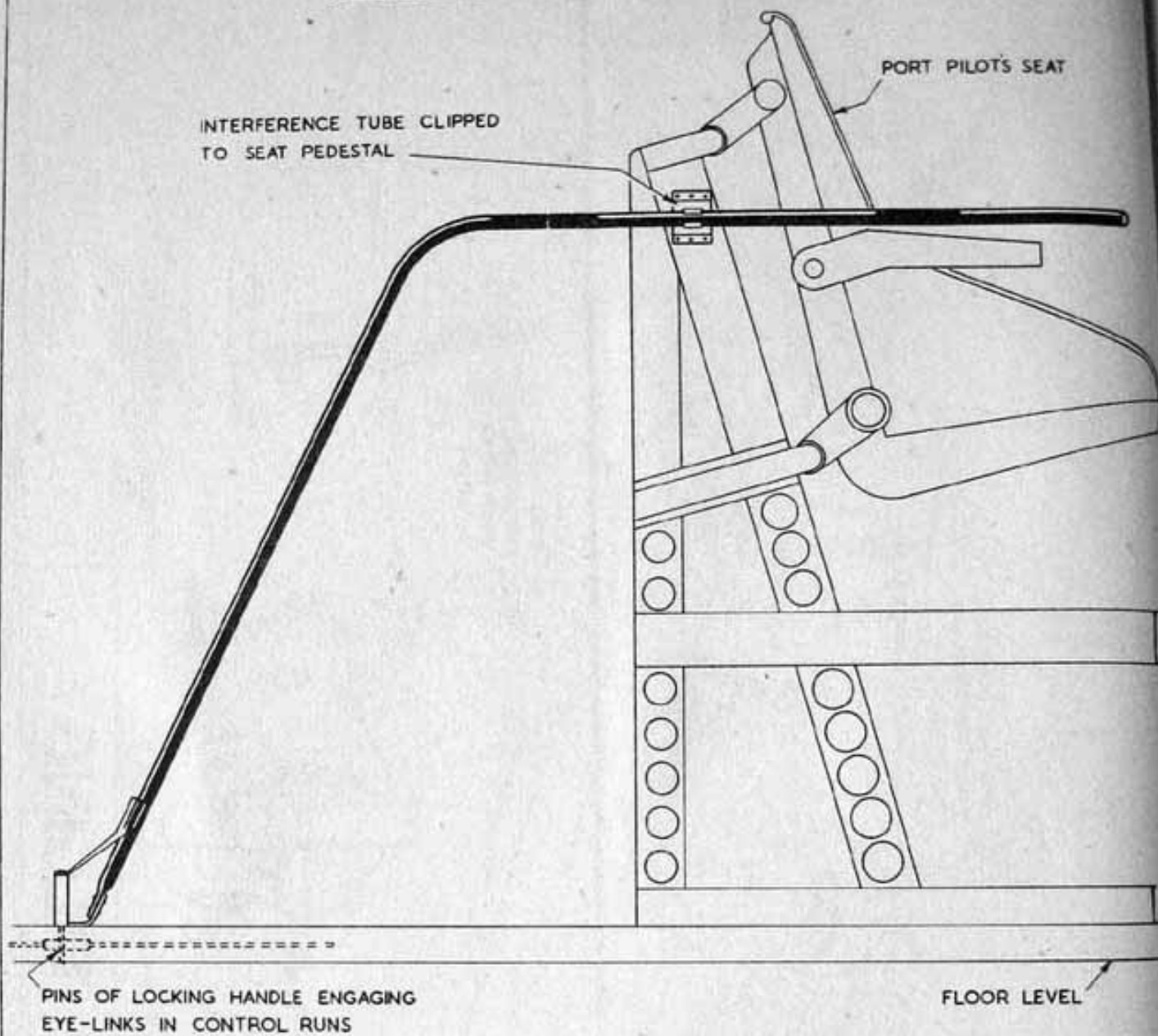
MOISTURE DRAIN CONTROLS (STBD)

FIG
8





BILGING



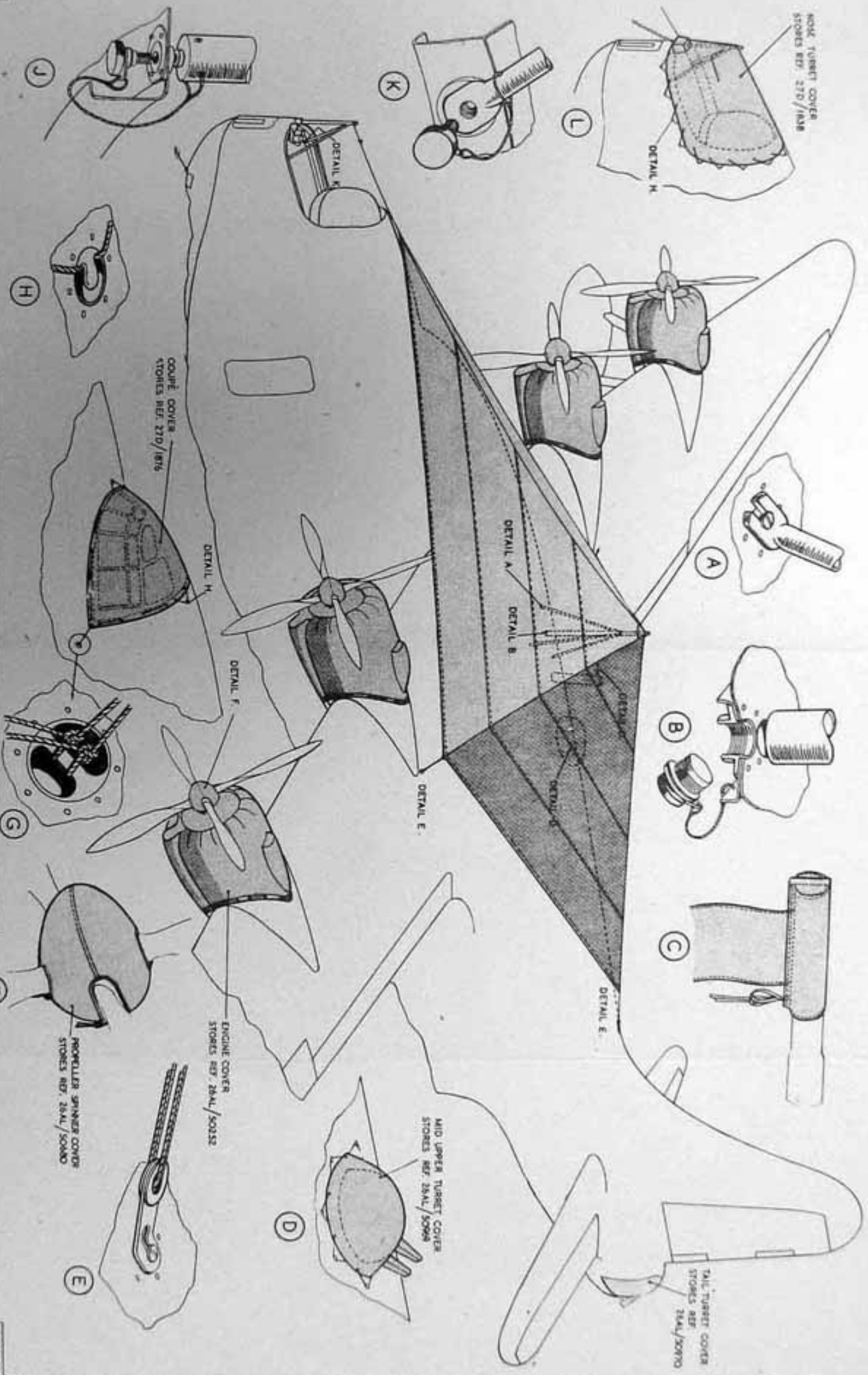


FIG 12

AWNINGS AND COVERS

FIG 12

SECTION 2

EMERGENCY CONTROLS, EQUIPMENT AND EXITS

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1. This Section describes the emergency controls, equipment and exits (*see fig. 1*) and the methods of use. For additional information, reference should be made to the List of Associated Air Publications which precedes the Leading Particulars. Emergency drills are given in the Pilots' Notes and certain Air Diagrams.

CONTROLS

Isolation of engines

2. To isolate any engine quickly, pull back to OFF the appropriate CARBURETTOR COCK control lever in the cockpit roof (*see Sect. 1*).

Fuel jettisoning

3. Fuel can be jettisoned from No. 1 tanks only, port and starboard. Fig. 2 illustrates the system and gives the method of operation.

Propeller feathering

4. The feathering buttons are fitted at the lower centre of the pilots' instrument panel. To feather:—

Press the appropriate button(s), then immediately close the throttle(s), and if necessary cut off fuel and switch off ignition.

Manual operation of flaps

5. If the electrical system fails, the flaps can be operated manually as follows:—

- Disengage the motor by pulling the knurled barrel (on the port shaft) away from the gearbox and rotating the top of the barrel aft.
- Fit the operating handle (stowed on the starboard side near the gearbox) on the squared shaft provided, and turn as required; e.g., clockwise to wind the flaps IN.

Manual operation of bomb carriage

6. If the electrical system fails, the bomb carriages can be traversed manually in the following manner:—

- Disengage the motor by setting the clutch lever on the gearbox to DISENGAGED.
- Fit the winding handle (stowed on the starboard side nearby) to the square-ended shaft at the top of the gearbox and wind anti-clockwise to move the carriage out.

Bomb jettisoning

7. When a mixed load of bombs and containers is carried, the containers should be jettisoned first, by closing the type-H switch fitted beside the selector switchbox. The main bomb load can be jettisoned by pressing the switch at the forward end of the selector switchbox (*see Sect. 1*).

EQUIPMENT

Fire extinguisher systems

8. Fig. 3 illustrates the Graviner systems fitted in the port inner engine nacelle which is typical of all four engines. When any one of the four fire warning lamps on the pilots' instrument panel lights, and it is required to feather the propeller, press the appropriate button. If it is not required to feather the propeller, bottles 1, 2 and 3 can be discharged simultaneously by pressing the extinguisher switches; they are also discharged automatically, on a crash landing, by an impact switch fitted on the port side of the rear bulkhead in the galley. The No. 4 bottle (carburettor air intake) is operated automatically by either of two thermostatic switches fitted in the intake. A lamp on the engineer's panel indicates when the No. 4 bottle at any one of the four engines has been operated, and remains ON until the relay switch, controlling the lamp, is reset (*see Sect. 3*).

Hand fire extinguishers

9. The positions of the hand fire extinguishers are shown in fig. 1.

Signal pistol

10. The pistol is stowed at the top of the 2nd pilot's seat, and the firing sleeve is fitted in the roof just aft of the 1st pilot's seat (*fig. 1*). Cartridges are provided as follows:—

- (i) 20 signal and 8 illuminating, stowed on the back of the 2nd pilot's seat.
- (ii) 2 illuminating, stowed on the starboard side of the cockpit.

Distress signals

11. Three distress signals are stowed—two at the starboard side just aft of the rear entrance door, and one high up on the port side at the wireless operator's station.

First-aid outfits

12. Three first-aid outfits are stowed on the port side of the hull opposite the engineer's station.

Crash axe

13. This is stowed in the roof at the front spar frame, just aft of the wireless operator's station.

Radio demolition

14. Provision is made for the demolition of A.R.I.5025/A. Two push switches, which must be operated together, are fitted under a spring-loaded cover, on a panel at the port side of the cockpit. The system is also operated automatically, upon a heavy or crash landing, by an inertia switch fitted on the starboard side above the upper deck aft of the centre-section.

Aircraft demolition

15. Two incendiary bombs are stowed high up on the port side at the wireless operator's station.

Dinghies

16. On early aircraft, a "J" type dinghy is carried in a blow-out stowage near the trailing edge of the starboard wing, and a "D" type dinghy, emergency packs, and a projectible kite for a dinghy radio are stowed on the starboard side aft of the rear entrance door. Oars, foot bellows, and radio for the "D" type dinghy are stowed on the port side opposite. The "J" type dinghy can be released, either electrically from a switch on the 1st pilot's electrical panel, or manually by cable from a hand grip fitted in the roof at the starboard side of the hatch forward of the centre section. The handgrip is also accessible from outside after removing a transparent cover.

17. On later aircraft a "J" type dinghy is fitted in each wing. The starboard dinghy carries a type 7 pack and a T.3180 oscillator, the port dinghy carries a type 7 and type 4 pack and a radio transmitter with aerial kites. The release handgrips are fitted one on each side of the hatch in the hull roof, and the release switches are fitted on the 1st pilot's electrical panel, together with a test socket.

Leak stopping

18. A box of hull leak stoppers is stowed below the floor at the rear entrance door. Should the hull be badly holed, the output of the A.P.U. bilge pump can be increased by removing the pin and sealing wire from the engine control quadrant and moving the control lever to the FULL position.

Lighting

19. The cockpit emergency lamp on the instrument panel screen (*see Sect. 1*) is controlled from a switch at the port side of the panel. Current is supplied by a 2.4 volt accumulator stowed at the port side forward of the pilots' instrument panel.

EXITS

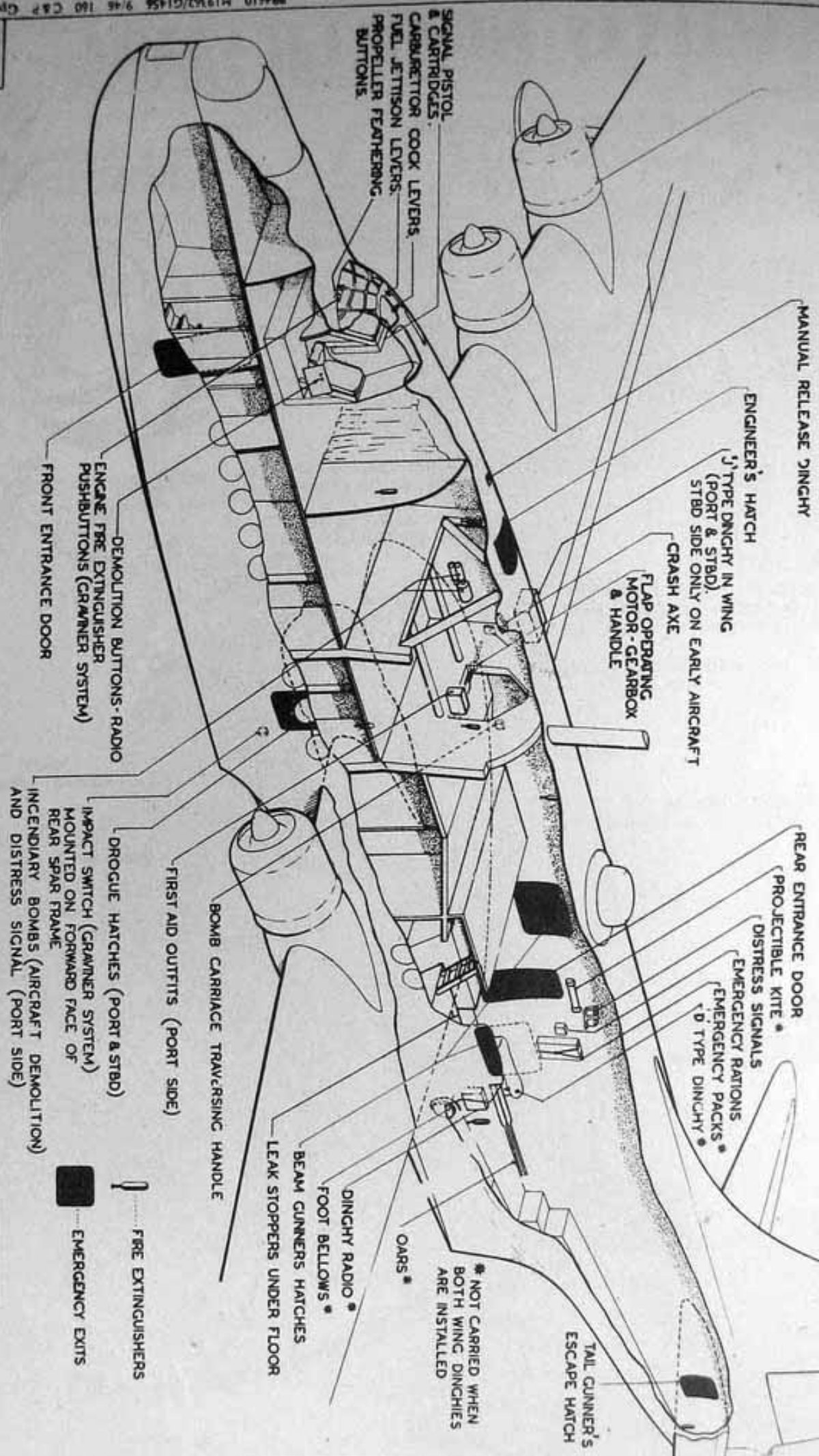
Location and operation

20. Fig. 1 gives the location of the emergency exits which are opened as follows:—

- (i) Front and rear entrance doors, opening inwards.
Release three clamps and door latch.

- (ii) Drogue hatches, hinged at the top, opening inwards.
Release two catches.
- (iii) Beam gunners' hatches, hinged at the top, opening inwards.
Release two catches.
- (iv) Tail gunner's hatch, hinged at the bottom, opening inwards.
Operate central release bar.
- (v) Engineer's hatch, opening inwards.
Release four clamps.

FLAME SWITCHES (GRAVNER SYSTEM)



EMERGENCY CONTROLS, EQUIPMENT AND EXITS

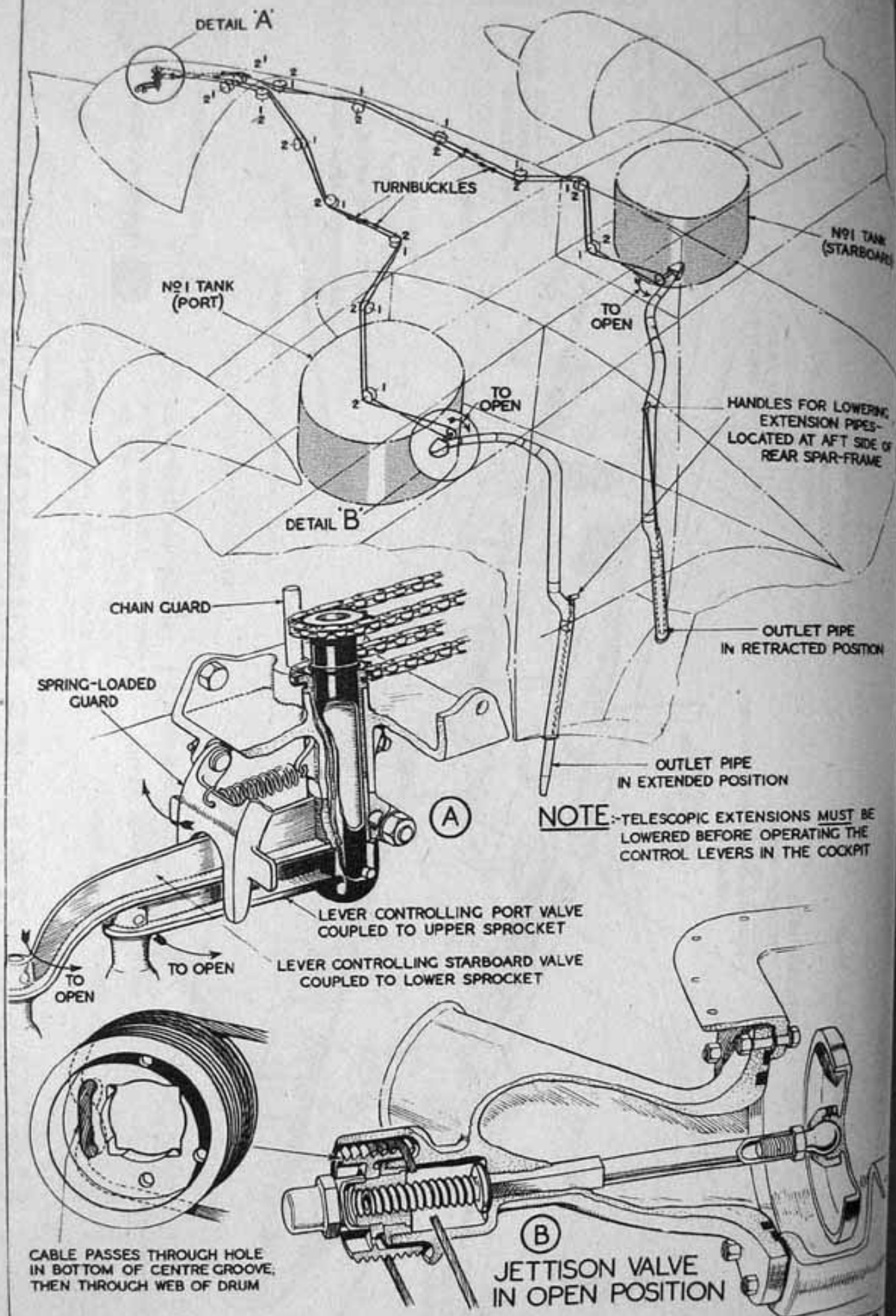


FIG. 2

FUEL JETTISON SYSTEM

- (A) FLAME SWITCHES (FOUR) ON FORWARD FACE OF FIREWALL
- (B) AIR PIPE CONNECTION FOR CLEANING PURPOSES
- (C) FLAME SWITCHES (FIVE) IN NOSE OF NACELLE
- (D) THERMOSTATIC SWITCHES IN AIR INTAKE
- (E) NOZZLE IN CARBURETTOR AIR INTAKE
- (F) NOZZLE IN BASE OF CARBURETTOR
- (G) DISCHARGE INDICATOR

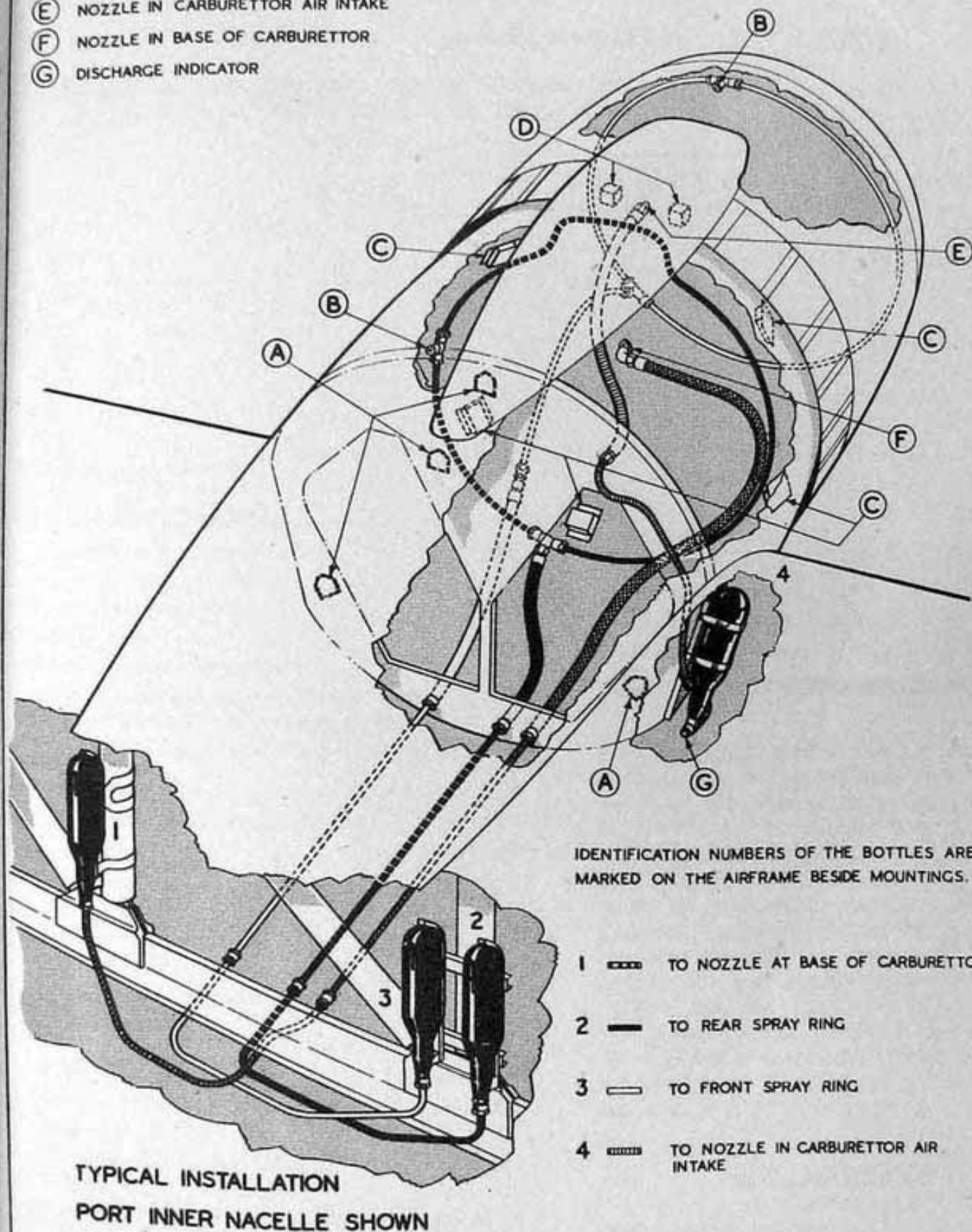


FIG.
3

FIRE EXTINGUISHER SYSTEMS

FIG.
3

CHAPTER 3

GENERAL SERVICING

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1. This Chapter describes the procedure for certain servicing operations and inspections, but does not cover all the operations that may be involved; it is intended only to implement the Inspection Schedule, Vol. II, Part 2, of this Publication. For information and servicing notes on equipment not dealt with in this Chapter, reference should be made to the relevant Air Publications, a list of which precedes the Leading Particulars. In armament publications, servicing notes are given in Vol. II and not Vol. I as for other publications. The location of inspection and servicing panels is given in fig. 1 and 2. Ground equipment available is illustrated in fig. 3.

EQUIPMENT

Maintenance cradles

2. For servicing engines and propellers, four cradles of tubular construction are provided

to fit on the main plane leading edge maintenance platforms. For access to the propellers and lower cylinders, extensions to carry light-alloy platforms can be fitted to the maintenance cradles. This equipment is illustrated in fig. 4.

Safety belt

3. Personnel working on engines and propellers should fit the safety belt (stowed on the bulkhead aft of the engineer's panel) to their person and attach the straps to eye-bolts provided on the engine cowling (fig. 4).

Jacking trestles

4. Fig. 5 illustrates one of the two hydraulic jacking trestles used for removing the beaching gear. The following should be observed when using the trestles:—

(i) The conditions of weight must be as defined in Sect. 4, Chap. 2

(ii) The port and starboard trestles must be operated simultaneously as far as possible, to keep the aircraft on an even keel

(iii) When attaching the beaching gear, the tail trolley must be fitted first and then the main struts

(iv) When detaching the beaching gear, the main struts must be removed first and then the tail trolley.

Filling jacking trestle oil reservoir

5. With the hydraulic ram in the fully down position, fill the reservoir thus:—

(i) Open the tap at each end of the supply pipe

(ii) Open the release valve

(iii) Remove the vent plug from the side of the pump body

(iv) Remove the filler cap from the top of the reservoir and fill with oil, type 10HD (Stores Ref. 34A/161), until it exudes from the vent hole

(v) Replace the vent plug and then completely fill the reservoir

(vi) Replace the filler cap and screw home the release valve

The oil filter in the filler orifice can be removed for cleaning after detaching the trestle bracing member immediately above the filler cap.

Storage of jacking trestles

6. The taps in the oil pipe between the reservoir and the pump body should be closed when the trestles are in storage.

Fin maintenance ladder

7. Attachments are provided on the fin for fitting a tubular ladder to facilitate servicing operations. The method of fitting the ladder is shown in fig. 6.

JACKING AND TRESTLING

Jacking for symmetry checks

8. The method of jacking to bring the aircraft datum line horizontal for checking aerofoil settings, etc., is illustrated and described in fig. 7. In circumstances where jacking equipment is limited, the hull need not be set as shown in the fig, the alternative method is to first measure the attitude of the hull datum to the horizontal by means of straightedges placed on the datum brackets (fig. 7) and to add or subtract this angle to or from the applicable normal angles of incidence and dihedral given in fig. 9.

AIRFRAME

Checking symmetry

9. The symmetry of the main planes and tail planes about the hull can be checked by taking diagonal measurements as shown in fig. 8. The measurements should be within the limits given.

Checking aerofoils

10. The method of checking the setting and dihedral of the main planes and tail planes is illustrated in fig. 9.

Checking flap movement

11. With the flap fully "in" set an inclinometer on a straight portion of the flap, and observe the angle. Fully extend the flap and again observe the angle, setting the inclinometer in the same position as for the first reading. The difference between the two readings should be within the limits given in fig. 10. If the combined angles are outside the capacity of the inclinometer it will be necessary to use the latter on a wedge-shaped board.

FLYING CONTROLS

Identification of control runs

12. To ensure the correct rigging of control runs, identification symbols are marked on all

levers and adjacent to all pulleys and sprockets, the following code being used:—

- Aileron control A.1 and A.2
- Elevator control E.1 and E.2
- Rudder control R.1 and R.2
- Elevator tab control ET.1 and ET.2
- Rudder tab control RT.1 and RT.2

Control surface settings

13. The settings and range of movement of the flying control surfaces are given in fig. 10. Notes on setting the controls and the automatic controls in conjunction with them are given in the following paragraphs. With the control locking handle in position (*Sect. 4, Chap. 2*) the control surfaces are in the neutral position.

Auto-control couplings

14. The stops on the servo motors must always come into operation before the main stops. Adjustment to the flying controls should be made aft of the main stops if possible, but if adjustment has been made forward it should be checked that the coupling of the automatic controls to the main controls has not been disturbed (*fig. 11*). If the coupling has been altered, it should be re-set by slackening one adjuster and tensioning the other.

Setting aileron

15. The method of setting the aileron is as follows:—

- (i) Move the main plane flap out one complete turn of the hand winding gear.
- (ii) With the control locking handle in position, adjust the aileron control runs so that the trailing edge of the aileron, at the inboard end rib, is $\frac{1}{4}$ in. above the upper surface of the flap.
- (iii) Return the flap to the "in" position.

Setting aileron trimming tabs

16. The trimming tabs are set at flight trials and should normally need no further adjustment. For the first test flight after fitting an aileron or ailerons, the trimming tabs of both ailerons should be set in the neutral position. If the test flight shows that the aircraft is flying one wing low, the inner tab on that wing should be set upwards an arbitrary amount; after further trials the setting should be increased or decreased as necessary until level flight is obtained.

WARNING

In no circumstances is downward droop permissible.

After the original setting, the inner tabs should not be altered (unless an aileron is changed), all incidental trimming being carried out with the outer tabs.

Setting rudder and elevator trimming tabs

17. The settings of these tabs are individual for each aircraft and are recorded in the log book, to which reference should be made. Provided the elevator or rudder has not been changed, the following is the method of checking and setting the tabs. The same instructions also apply when fitting a new tab:—

- (i) Set the appropriate indicator in the cockpit to zero
- (ii) Measure the angle of the tab

Note . . . An alternative method of checking the setting is to wind the control handle until the tab is in line with the control surface and then take the indicator reading.

(iii) If the setting angle thus found is different from that given in the log book (it should *not* be unless the adjustment of the tab push-rod has been disturbed), adjust the tab push-rod until the correct angle is obtained.

18. Before attempting to set the tabs when a new rudder or elevator has been fitted, it should first be checked that, when the indicators in the cockpit are set to zero, the control runs are rigged so that the tab actuating worm gear is in the mid-position. The tab should then be set to the "old" angle given in the log book, by adjusting the push-rod, and the aircraft flown under the following conditions:—

- (i) All-up weight ... 53,000 to 57,000 lb.
- (ii) C.G. position ... $2\frac{1}{2}$ in. to 5 in. forward of datum
- (iii) Altitude ... 500 to 5,000 ft.
- (iv) Engine speed ... 2,000 r.p.m.
- (v) Boost pressure ... zero

Ensure that the engines are synchronised, trim the aircraft to straight and level flight (feet off rudder pedals), and note the readings on the tab position indicators. Each reading will be the difference between the "old" and the required "new" setting angle, and should be added to or subtracted from the "old" angle, dependent on the conditions

found during flight. If this "new" setting angle is outside the limits given in fig. 10, the rigging of the rudder or elevator should be checked and, if necessary, a new rudder or elevator fitted and the test repeated. The tab should then be set to the resultant "new" angle, and the angle recorded in the log book.

Tensioning rudder and elevator controls

19. Adjustment is provided in the fork joints at the ends of each tie-rod in the circuits. If available, an S.M.E.-type tension meter (Stores Ref. 1.C/6136) should be used for checking the tension of the controls and should be applied to the cable inset in the runs in the hull roof just forward of the tail unit. The correct tension for these controls is 70 lb., and the tension-meter should be run backwards and forwards a few times along the cable before use to ensure a correct reading. When tensioning the controls they should be locked in the neutral position by the locking gear (Sect. 4, Chap. 2) and checks made to ensure that the control surface settings are not disturbed.

Tensioning rudder and elevator trimming tab controls

20. Turnbuckles are provided in each of the main runs and an adjuster is fitted in each of the closed circuits driving the elevator-tab actuating gearboxes. For the position of these adjusters, see illustration in Sect. 7, Chap. 4.

ENGINE INSTALLATION

Draining fuel tanks

21. The A.P.U. can be utilised to drain the tanks individually by connecting a hose from a stand pipe, placed in the tank filler, to the suction side of the A.P.U. fuel pump and connecting another hose from the hand-refuelling connection on the A.P.U. to a receptacle. Care should be taken to ensure that the refuelling valves are closed before operating the pump. If it is necessary to completely drain a tank, use can be made of the moisture drain cock (Sect. 4, Chap. 2) for fuel remaining in the sump.

Draining oil tanks

22. A hose connector is fitted to each sump and a hole is provided in the nacelle under-surface through which to pass a length of hose. Access to the tank sump can be obtained by removing the panel in the main-plane upper surface, just aft of the nacelle. The oil is released by slackening the nut of the hose connector.

Oil tank filter

23. After removing the screw cap from the circulating chamber, withdraw the dipstick. The filter, attached to a centre tube, can then be withdrawn through the top of the chamber.

Hand turning gear

24. An engine can be turned manually while servicing by a handle which can be fitted through the nacelle skin to engage with a stub shaft on the starter motor. This shaft is located on the upper starboard side of each nacelle and the handle (two of which are stowed on the radio bulkhead) has a loose bearing plate which attaches to the nacelle by two thumbscrews.

Fuel tanks No. 1, 2, 3, 4 and 5

25. Fig. 12 and 13 illustrate the dismantling of the vent valve for the replacement of damaged components, and fig. 15 illustrates and gives the necessary instructions for the removal of the sump for filter cleaning.

Fuel tanks No. 6, 7 and 8

26. When carrying out an inspection of the tanks they should be drained (*para. 21*) and the sump area inspected through the filler above. If water has polluted the fuel, a yellow sludge and also some free chromates will be found in the region of the sump. These need not be removed as their presence is beneficial rather than otherwise.

27. The areas round the sump fixing studs should be closely examined, and, if corrosion is found, the tank must be removed from the main plane, the inspection cover and contents gauge unit removed, and a detailed internal inspection carried out. Any corrosion found should be dealt with as described in Vol. II, Part 3, of this Publication. It is important that only zinc-coated iron wire be used for locking components, since the use of tin-coated copper wire induces corrosion.

28. The chromate cartridges in the tank sump should be examined, and where the bags have lost more than 50 per cent of their contents (this can be estimated visually) they must be replaced. To ensure that the cartridges are wetted by any moisture present in the fuel, they should be dipped in distilled water before fitting, surplus water being removed by shaking. A special spanner (*fig. 16*) is required for removing the inhibitor from tank No. 6. Fig. 14 illustrates the dismantling of the vent valve for replacement of damaged components.

Tensioning controls

29. Adjustment is provided in the throttle and propeller controls by the fork joints at the ends of each tie-rod. When tensioning control runs the throttle control levers should be in the E.C.B. position, and the propeller control levers in the DECREASE R.P.M. position. The positions of turnbuckles in the following control runs are given in the relevant illustrations of Sect. 8:—

- (i) Tank cock controls
- (ii) Carburettor cock controls
- (iii) Slow-running cut-out controls
- (iv) Oil cooler louvre controls

MISCELLANEOUS

Re-setting flap gear (after manual operation)

30. To re-engage the motor, the spring-loaded knurled barrel close to the gearbox should be operated as shown in fig. 17.

Lubrication

31. Lubrication points and the positions of all gearboxes are given in fig. 18 and 19. The following special points should be noted:—

- (i) All sprockets are fitted with sealed bearings packed with grease during assembly and do not require further lubrication

(ii) Control pulleys of the fabric-reinforced bakelite type and those of the Tufnol type do not need lubrication

(iii) For access to lubrication points in the main plane and tail unit, reference should be made to fig. 1 and 2

Checking oil level in gearboxes

32. The gearboxes for the flap motor and bomb hoisting winches are replenished by filling level with the filler plugs. The flap worm-drive gearboxes and the bomb-carriage traversing gearboxes are replenished by filling to the level plugs.

Bonding

33. For servicing notes on bonding, reference should be made to Sect. 6.

Re-setting bomb carriage traversing gear (after manual operation)

34. Re-engage the motor by setting the clutch lever on the gearbox to the ENGAGED position. Remove and stow the winding handle.

Beaching gear wheel changing

35. Fig. 20 illustrates and gives the necessary operating instructions for jacking the main struts and the tail trolley for the removal of the wheels.

Beaching gear removal

36. Fig. 21 illustrates and describes the method of jacking the aircraft for the removal of the main struts and the tail trolley.

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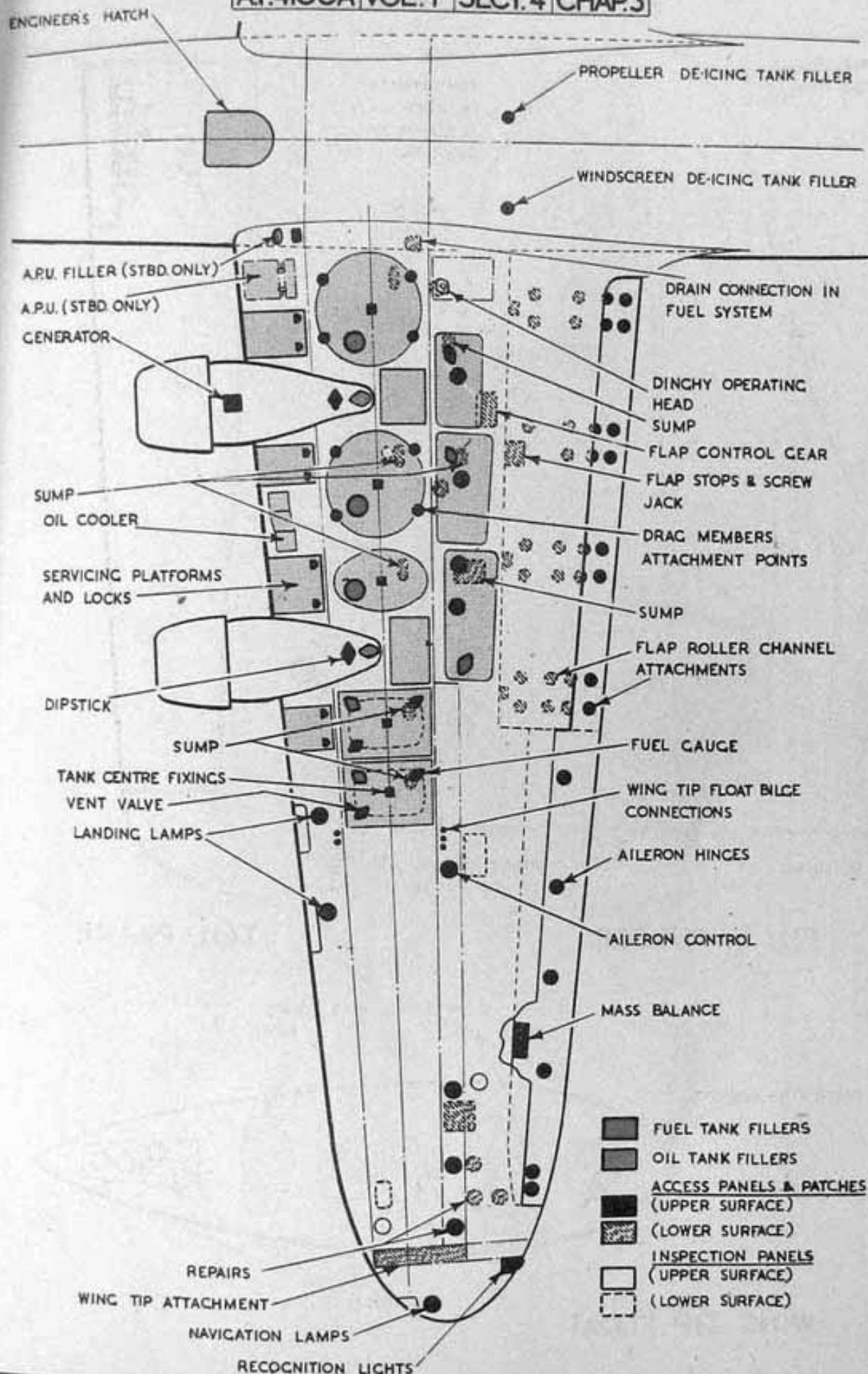
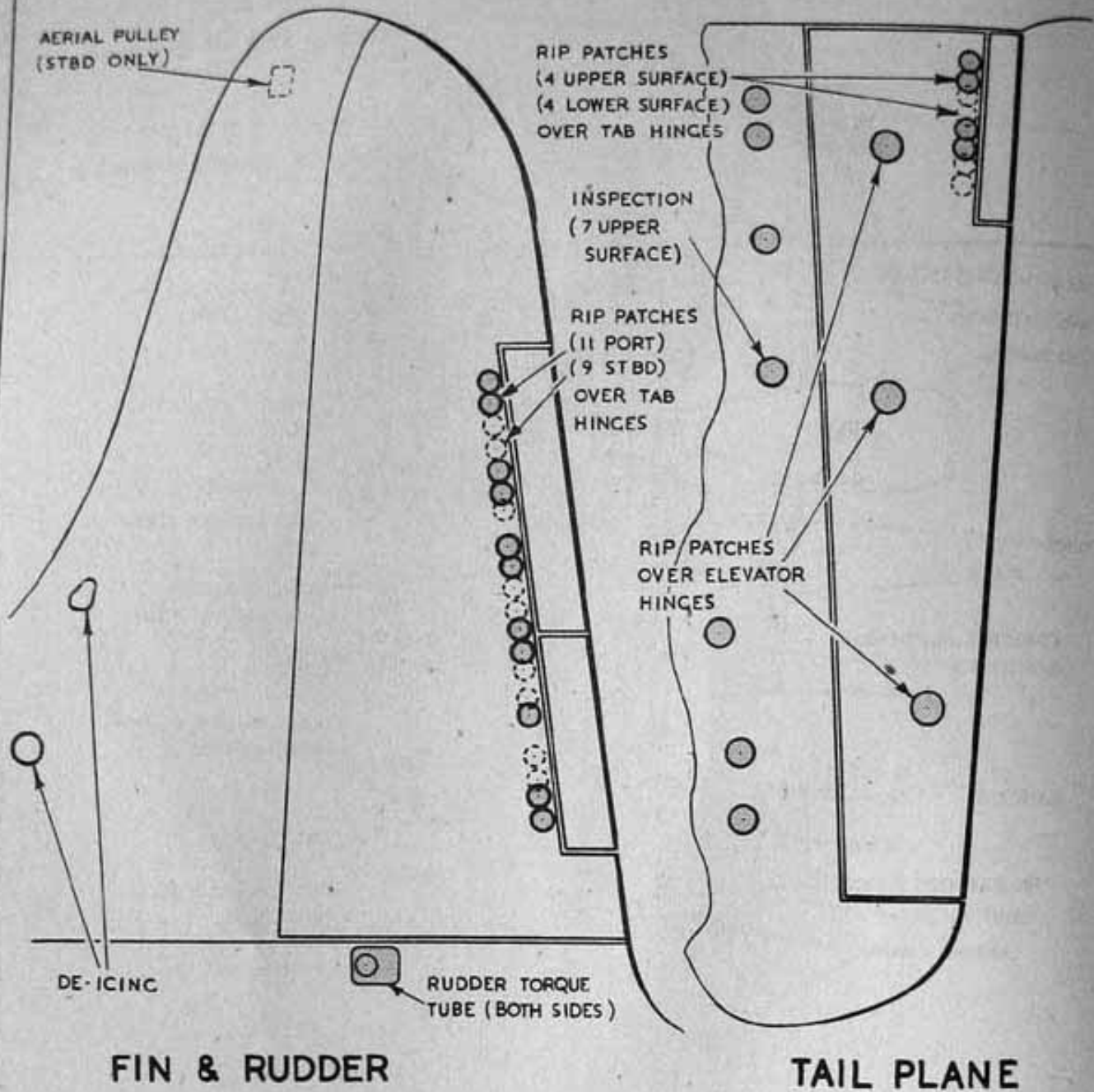


FIG. 1

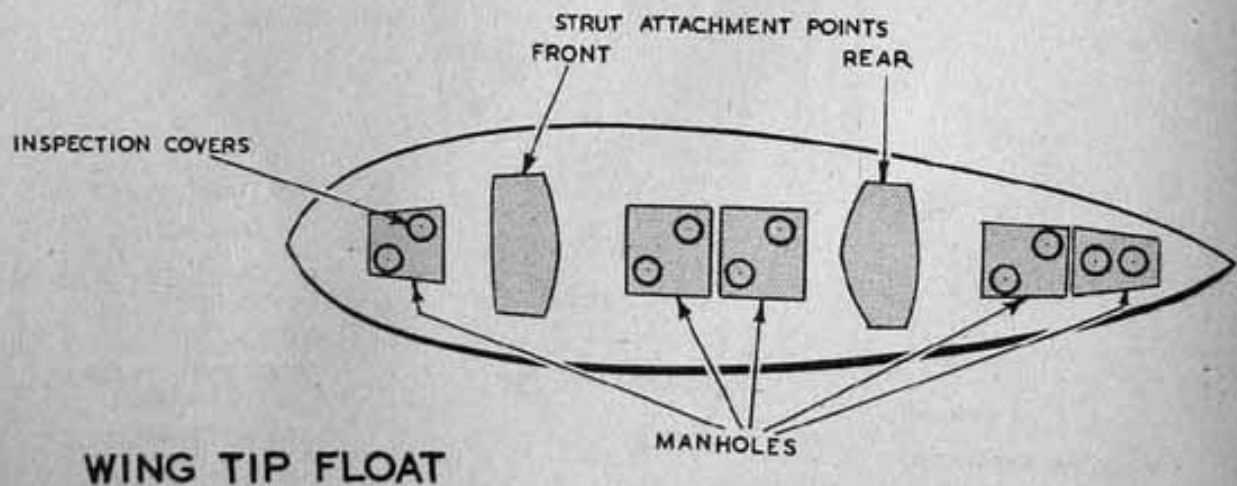
SERVICING PANELS (1)

FIG. 1



FIN & RUDDER

TAIL PLANE



WING TIP FLOAT

FIG 3

EXTENSION PLATFORMS & BRACING WIRES -
STORES REF 26AL/50862

ENGINE SLING -
STORES REF 26AL/50735

DERICK -
STORES REF 26AL/50734

MAINTENANCE LADDER -
STORES REF 26AL/6910

JACKING FOR RIGGING PURPOSES - SEE FIG. 7

BEACHING GEAR WHEEL CHANGING -
SEE FIG. 20.

PLATFORM JIB -
STORES REF 26AL/51203

CARGO PLANK -
STORES REF 26AL/6917
EXTENSION CRADLES -
STORES REF 26AL/14362

JACKING TRETTLES
STORES REF 26AL/14517

MAINTENANCE CRADLES

4 - STORES REF 26AL/50858

3 - STORES REF 26AL/50859

2 - STORES REF 26AL/50861

1 - STORES REF 26AL/50860

BEACHING GEAR MAIN STRUT (STRD)
STORES REF 26AL/50002

BEACHING GEAR TAIL TROLLEY
STORES REF 26AL/50003

BEACHING GEAR MAIN STRUT (PORT)
STORES REF 26AL/50001

FIG 3

SERVICING EQUIPMENT

4
FIG.

THIS LINK USED ON
OUTER ENGINES

THIS LINK USED ON
INNER ENGINES

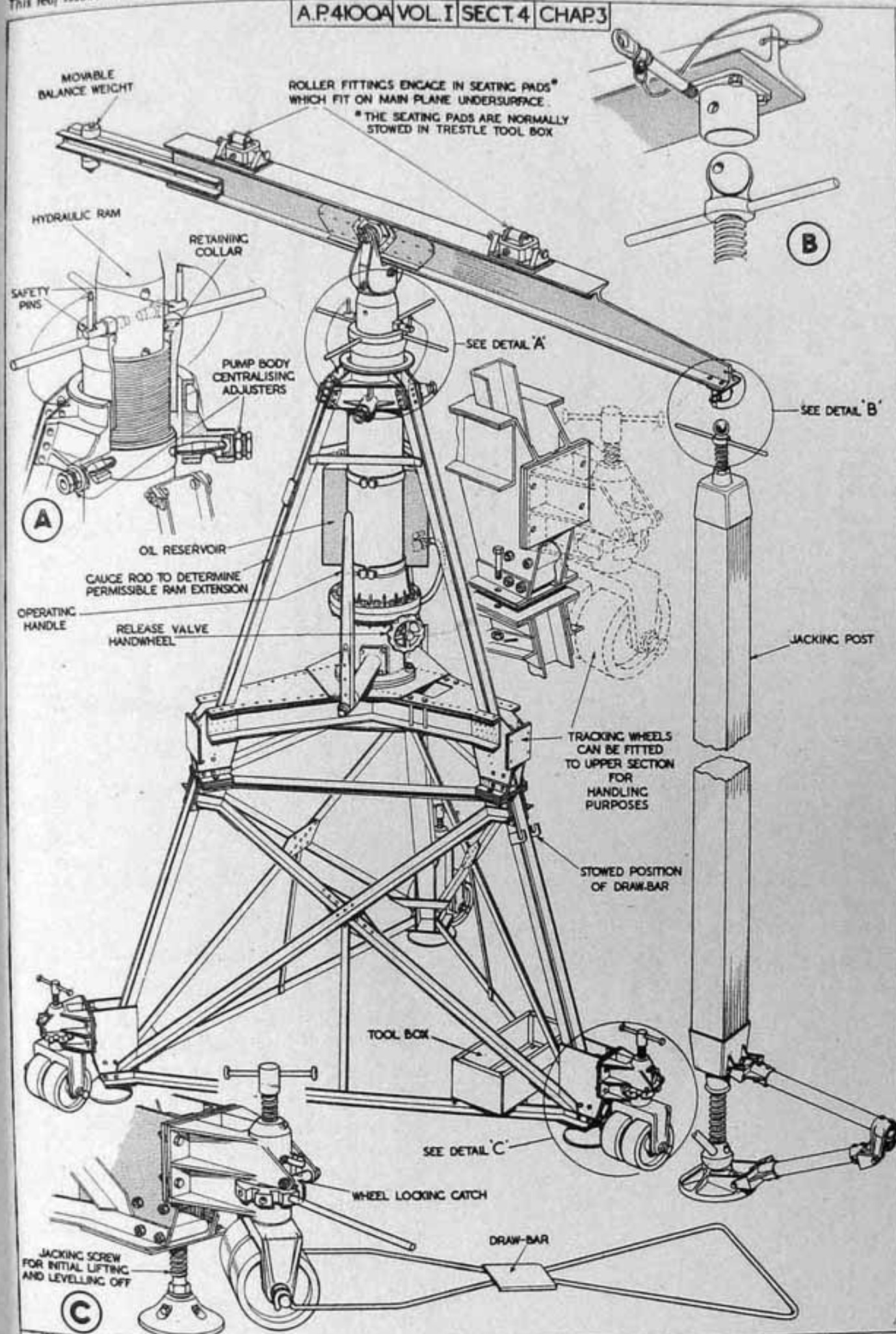
PLATFORM JIB

EYEBOLTS FOR
SAFETY BELT

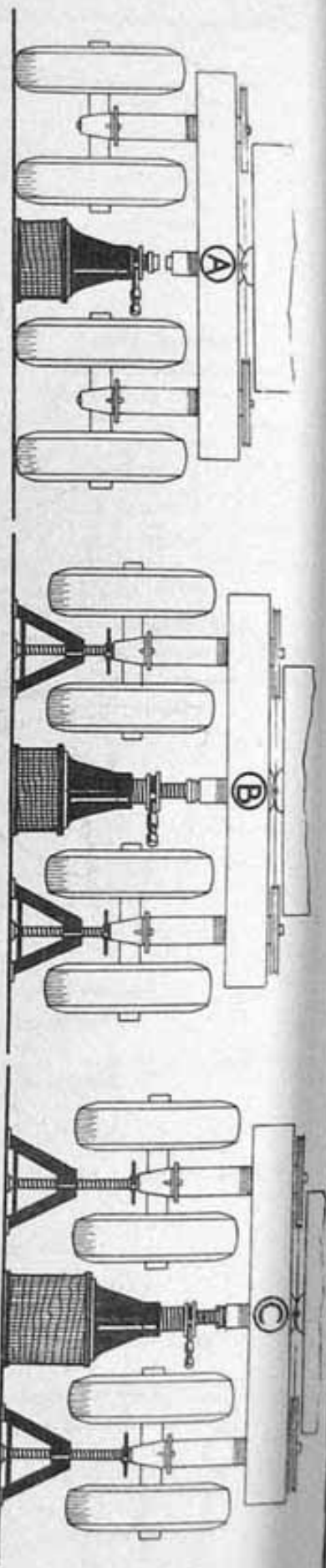
REAR ANCHORAGE FITTING -
PART OF DERRICK ASSEMBLY
(SECT. 5)

MAINTENANCE CRADLES

4
FIG.
THIS LINK USED WITH DERRICK
(SECT. 5)

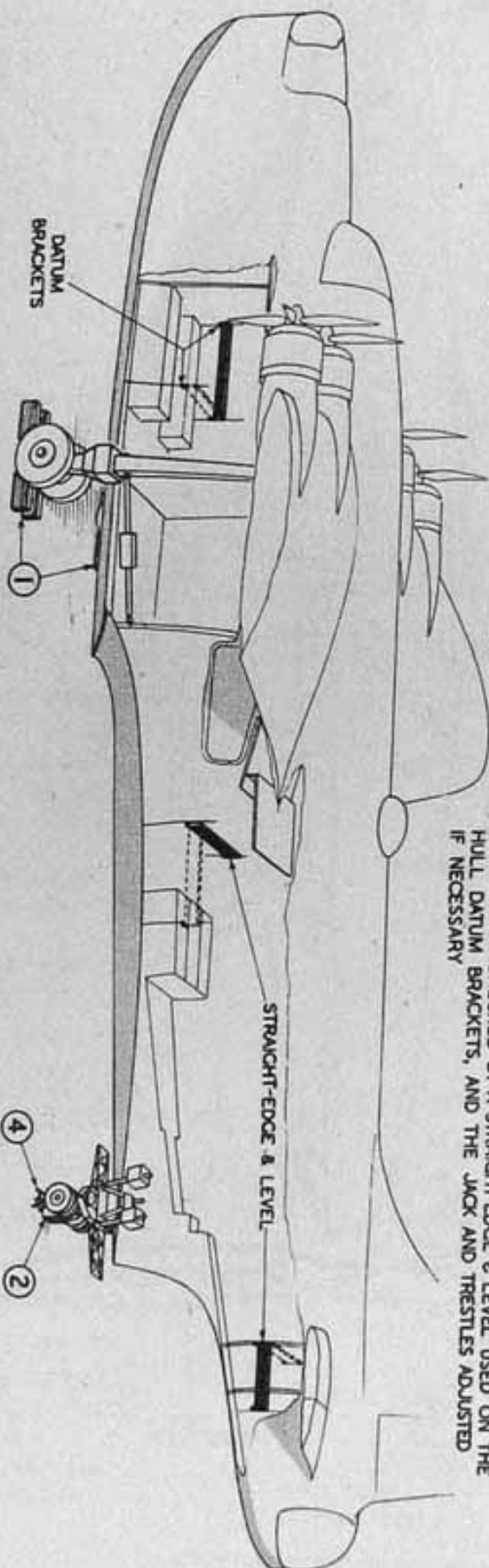


JACKING TRESTLE



- ①—PLACE CHOCKS FORE & AFT OF MAIN STRUT WHEELS
- ②—POSITION 8-TON JACK ON 8 IN. JACKING BLOCK (STORES REF 26AL/50568) UNDER CENTRAL JACKING POST OF TAIL TROLLEY (SEE DETAIL A)
- 3—OPERATE JACK TO RAISE TROLLEY 6 3/4 IN.
- ④—POSITION TRETTLES (STORES REF 26AL/50736) UNDER SPHERICAL PROJECTIONS AT BASE OF STRUTS (SEE DETAIL B) AND EXTEND TRETTLES TO TAKE LOAD

- 5—SCREW DOWN JACK AND REPLACE 8 IN. BLOCK BY 15 IN. BLOCK (STORES REF 26AL/50301)
 - 6—OPERATE JACK TO RAISE TROLLEY A FURTHER 6 3/4 IN. AND EXTEND TRETTLES TO TAKE LOAD (SEE DETAIL C)
- THE AIRCRAFT SHOULD THEN BE IN THE CORRECT RIGGING POSITION. THIS CAN BE CHECKED BY A STRAIGHT-EDGE & LEVEL USED ON THE HULL DATUM BRACKETS, AND THE JACK AND TRETTLES ADJUSTED IF NECESSARY



RIGGING POSITION

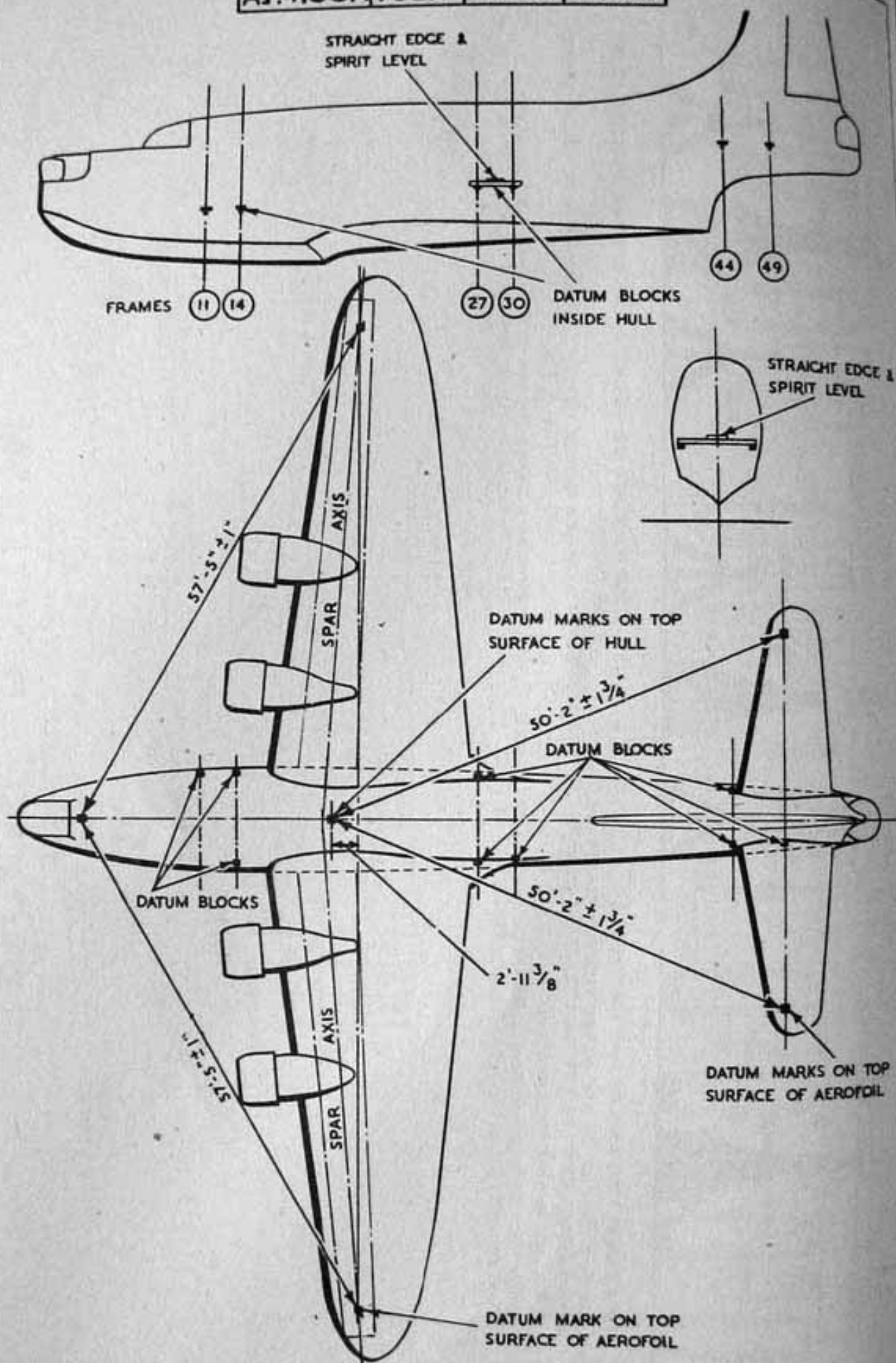
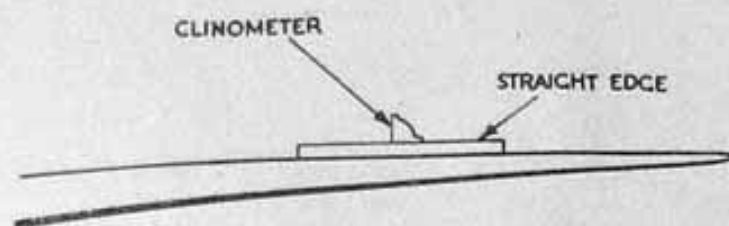


FIG. 8

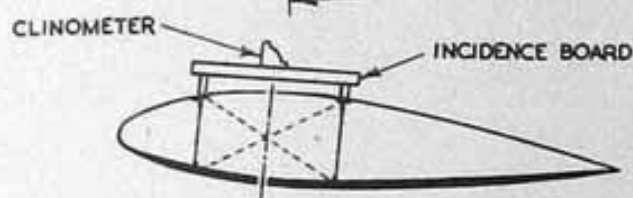
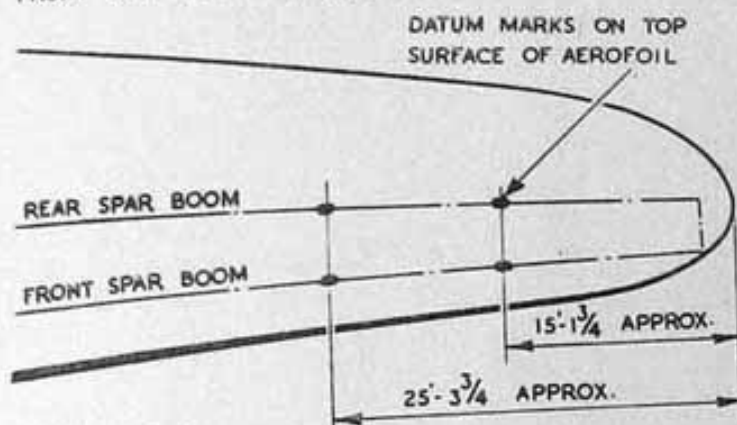
CHECKING SYMMETRY

FIG. 8

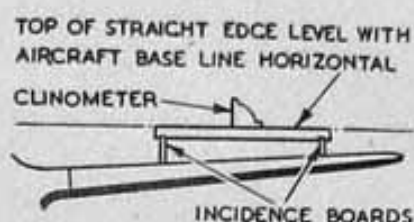
A.P.4100A VOL. I SECT.4 CHAP.3



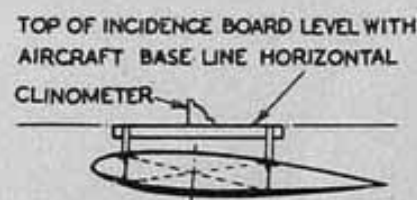
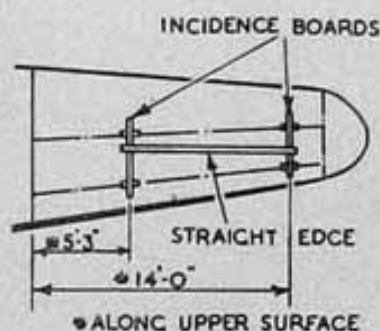
DIHEDRAL $0^{\circ}-50' \pm 30'$ MEASURED ALONG TOP FRONT SPAR BOOM (15% ORD.)



MAIN PLANE SETTING $5^{\circ} \pm 15'$

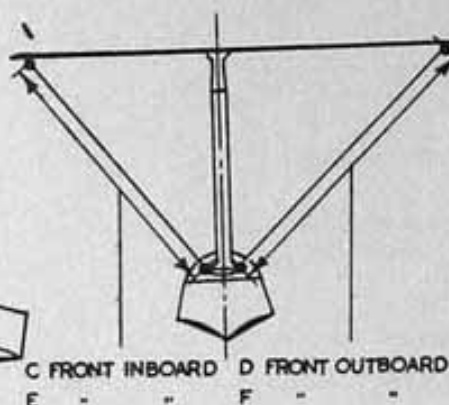
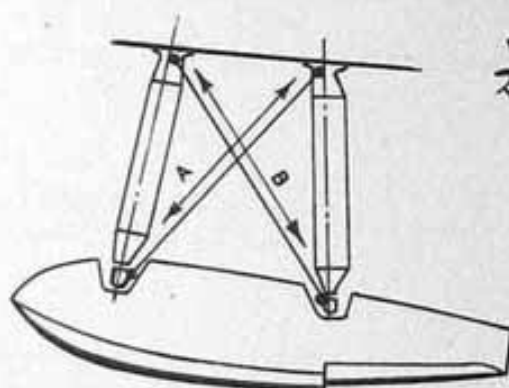


DIHEDRAL $4^{\circ}15'$ MEASURED ALONG FRONT SPAR BOOM



TAIL PLANE INCIDENCE $4^{\circ} \pm 15'$

INCIDENCE BOARDS		MAIN PLANE		TAIL PLANE	
		PART NO	STORES REF.	PART NO	STORES REF.
PORT	INBOARD	S25 A 29102	26 AL / 14534	S45 B 23302	26AL / 50737
	OUTBOARD	- - 29100	- / 14533	- - 23304	- / 50739
STBD.	INBOARD	- - 29103	- / 14535	- - 23303	- / 50738
	OUTBOARD	- - 29101	- / 14532	- - 23305	- / 50740



WIRE	PIN CENTRES
A	7' - 6 ⁹ / ₃₂ "
B	7' - 11 ¹ / ₈ "
C	8' - 1 ³ / ₃₂ "
D	8' - 11 ¹⁹ / ₃₂ "
E	8' - 6 ¹⁵ / ₁₆ "
F	9' - 5 ¹ / ₁₆ "

FIG. 9

CHECKING AEROFOILS

FIG. 9

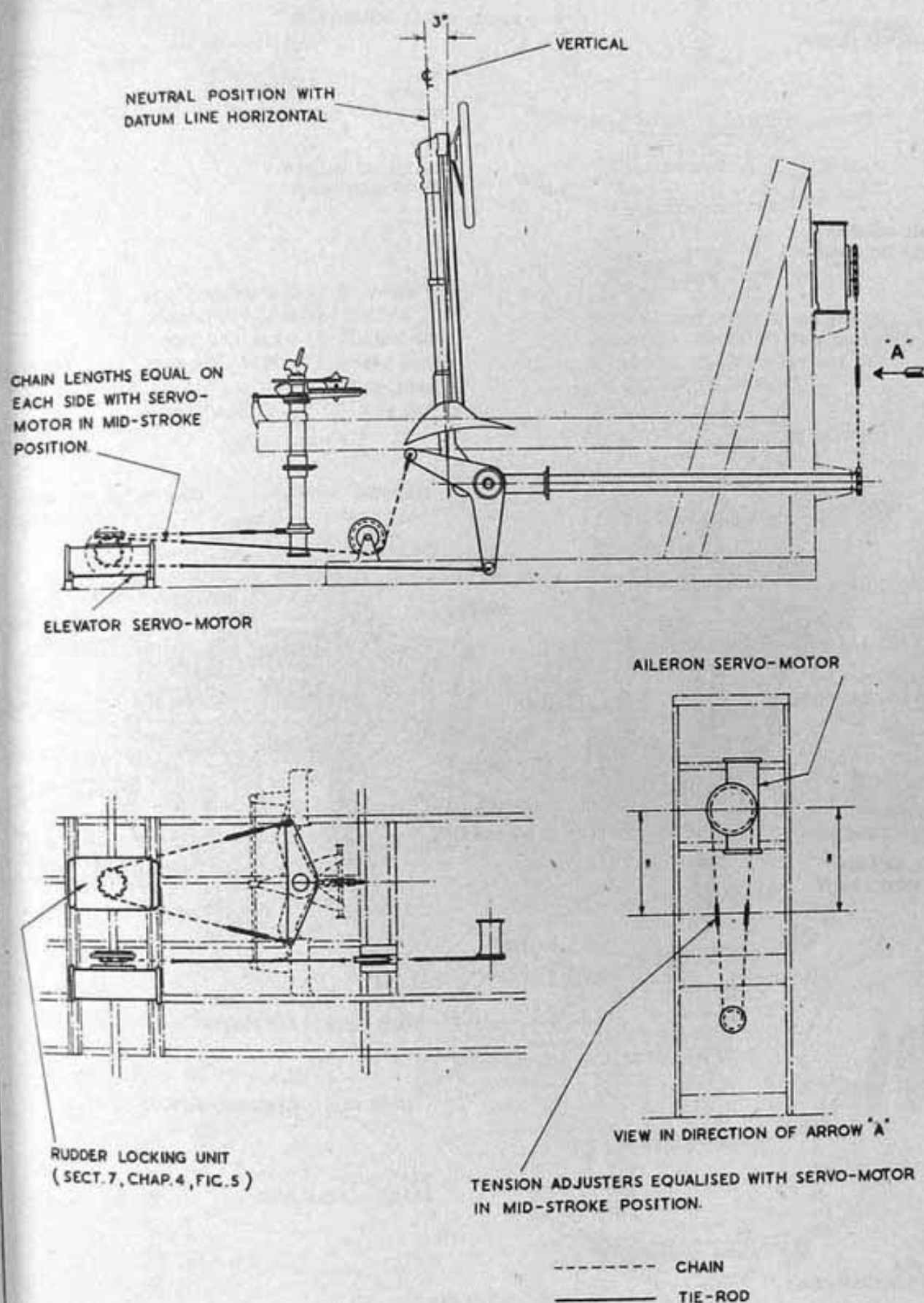
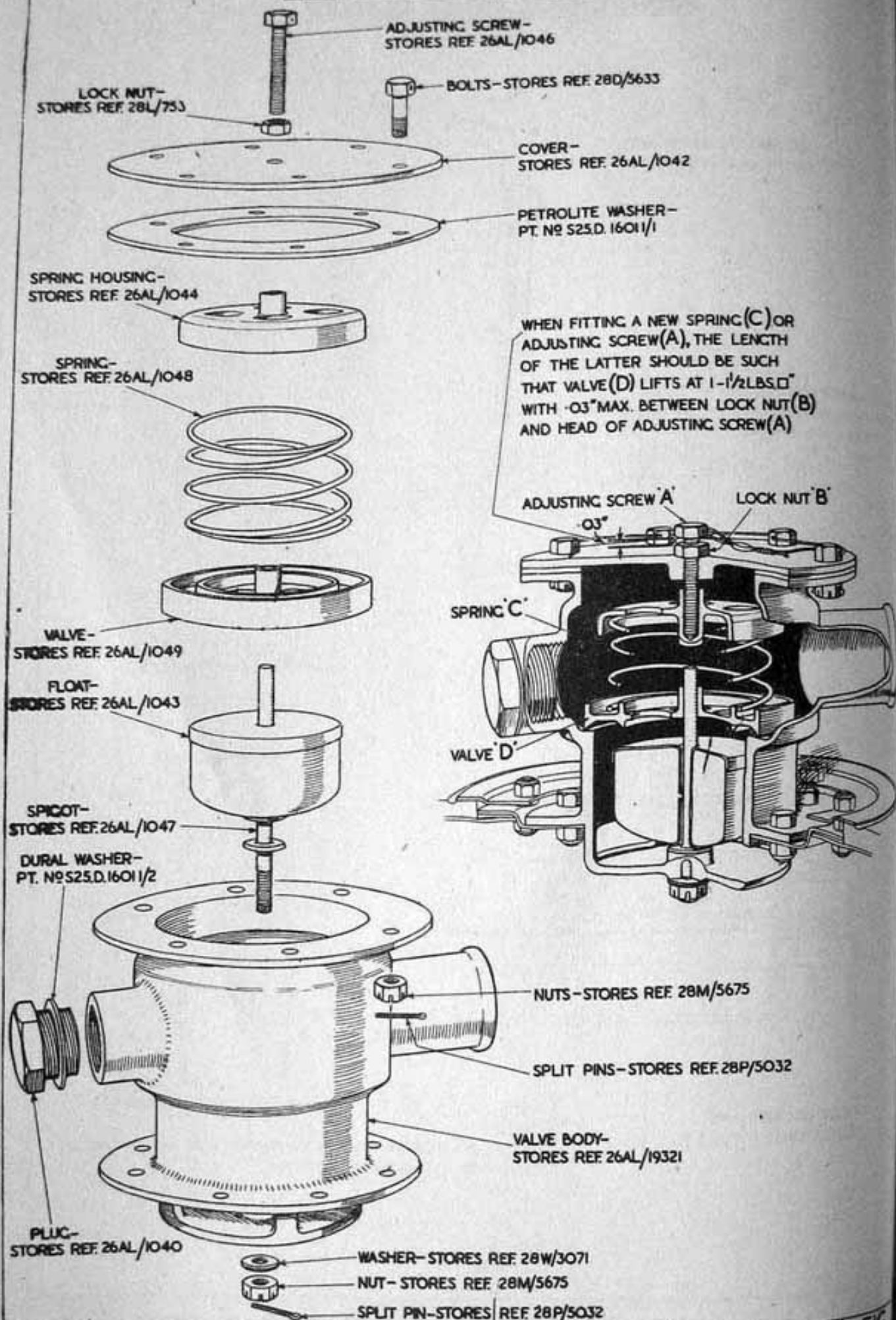
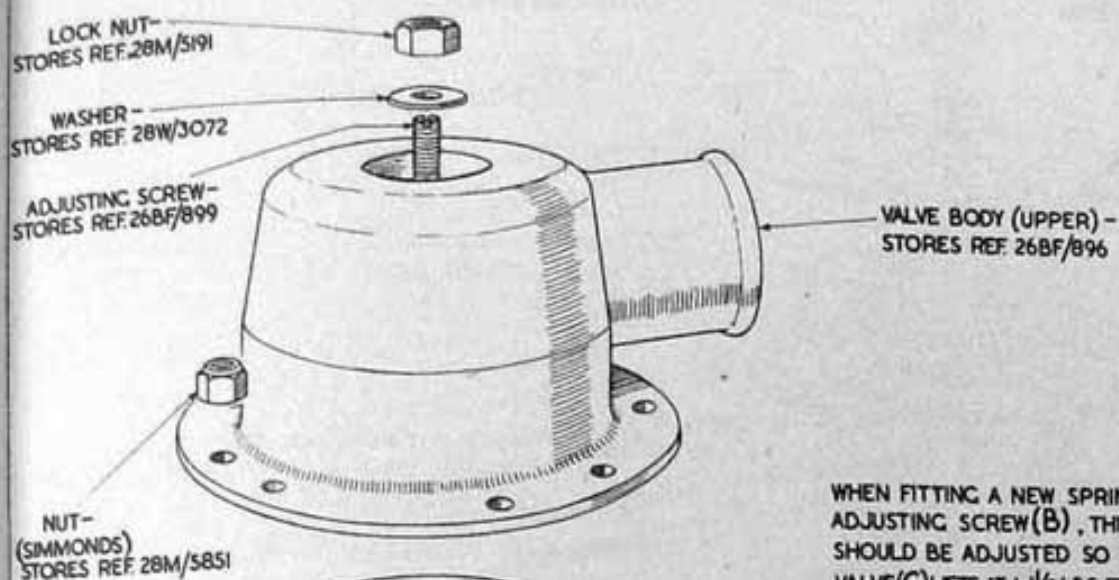


FIG. 11

AUTO-CONTROL COUPLINGS

FIG. 11





WHEN FITTING A NEW SPRING (A) OR ADJUSTING SCREW (B), THE LATTER SHOULD BE ADJUSTED SO THAT THE VALVE (C) LIFTS AT 1-1/2 LBS. D"

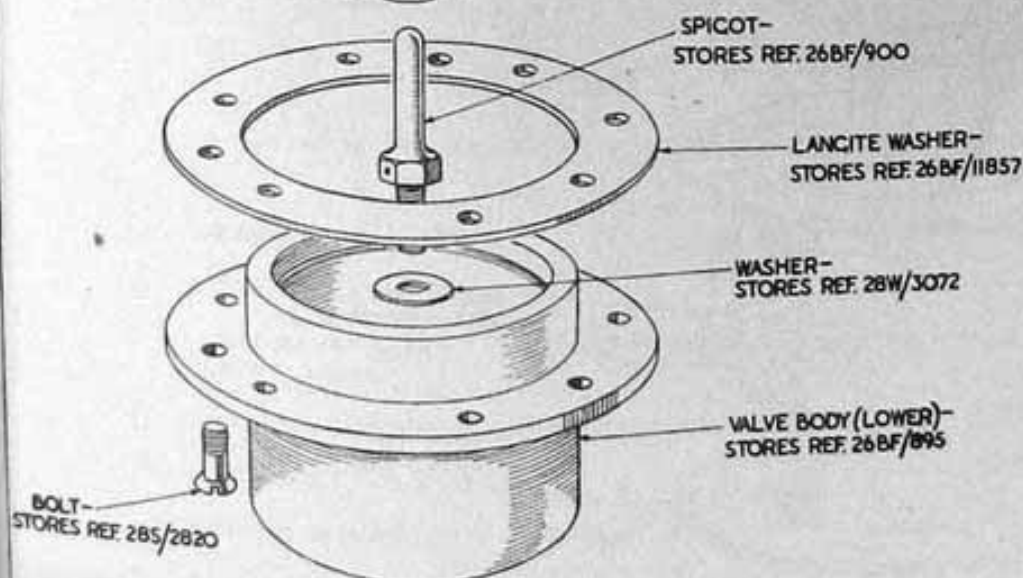
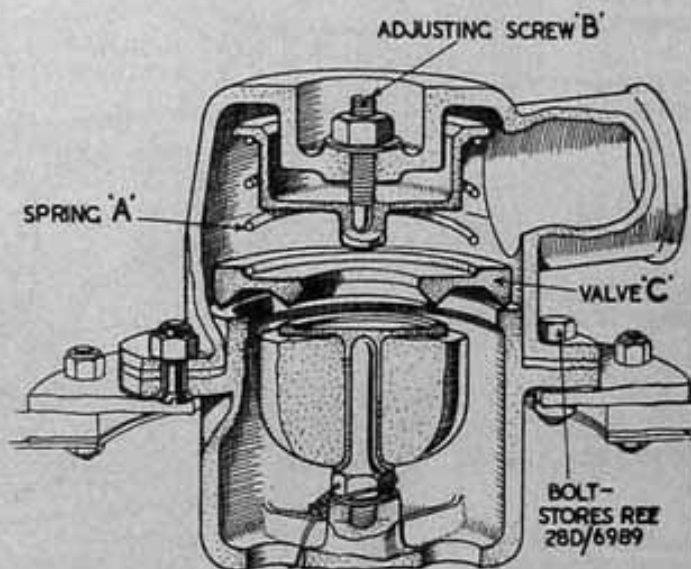
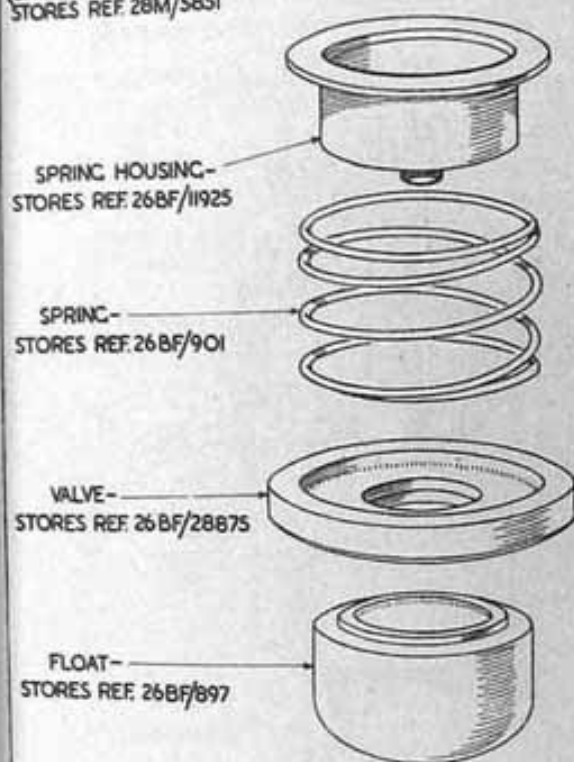


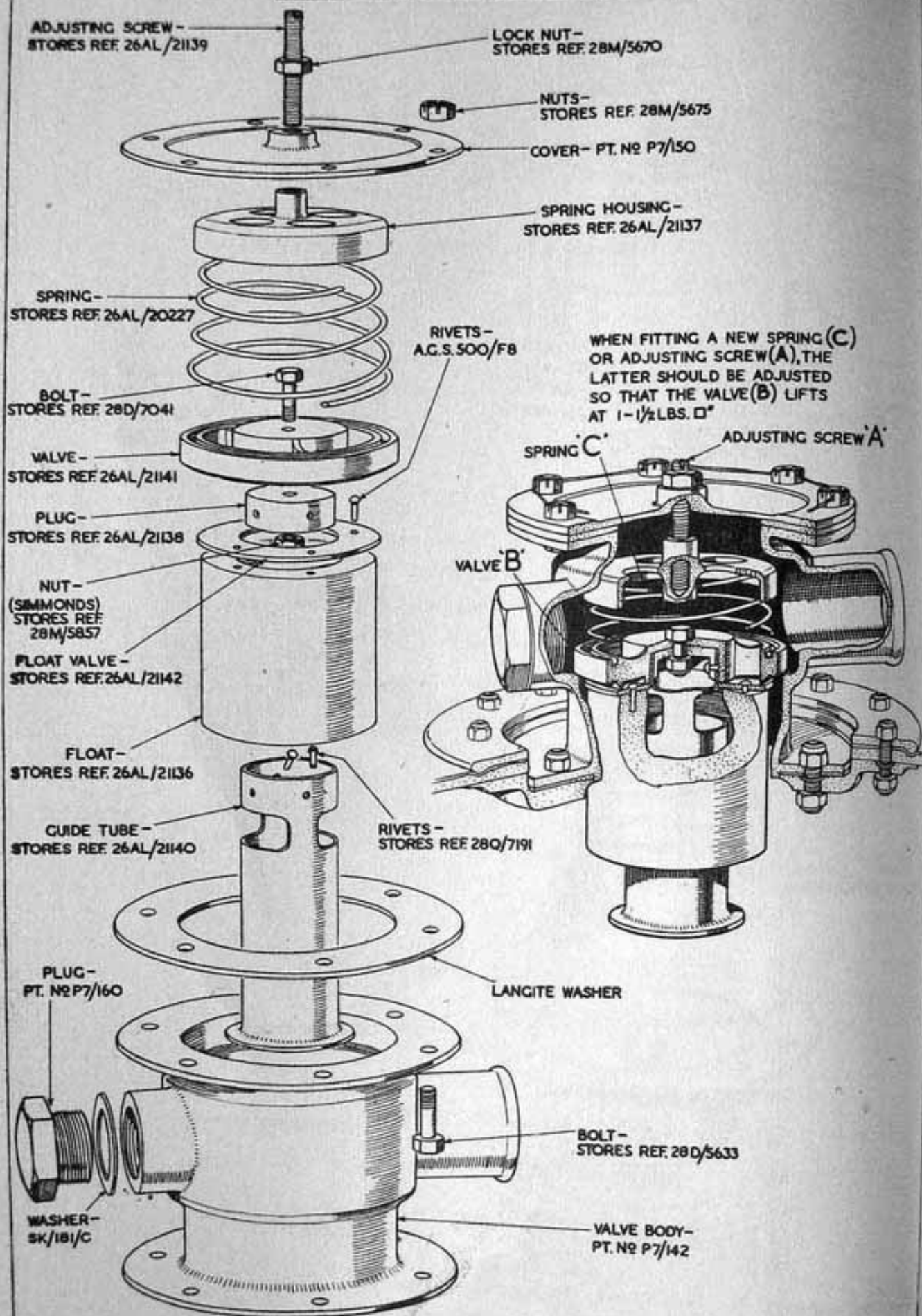
FIG.

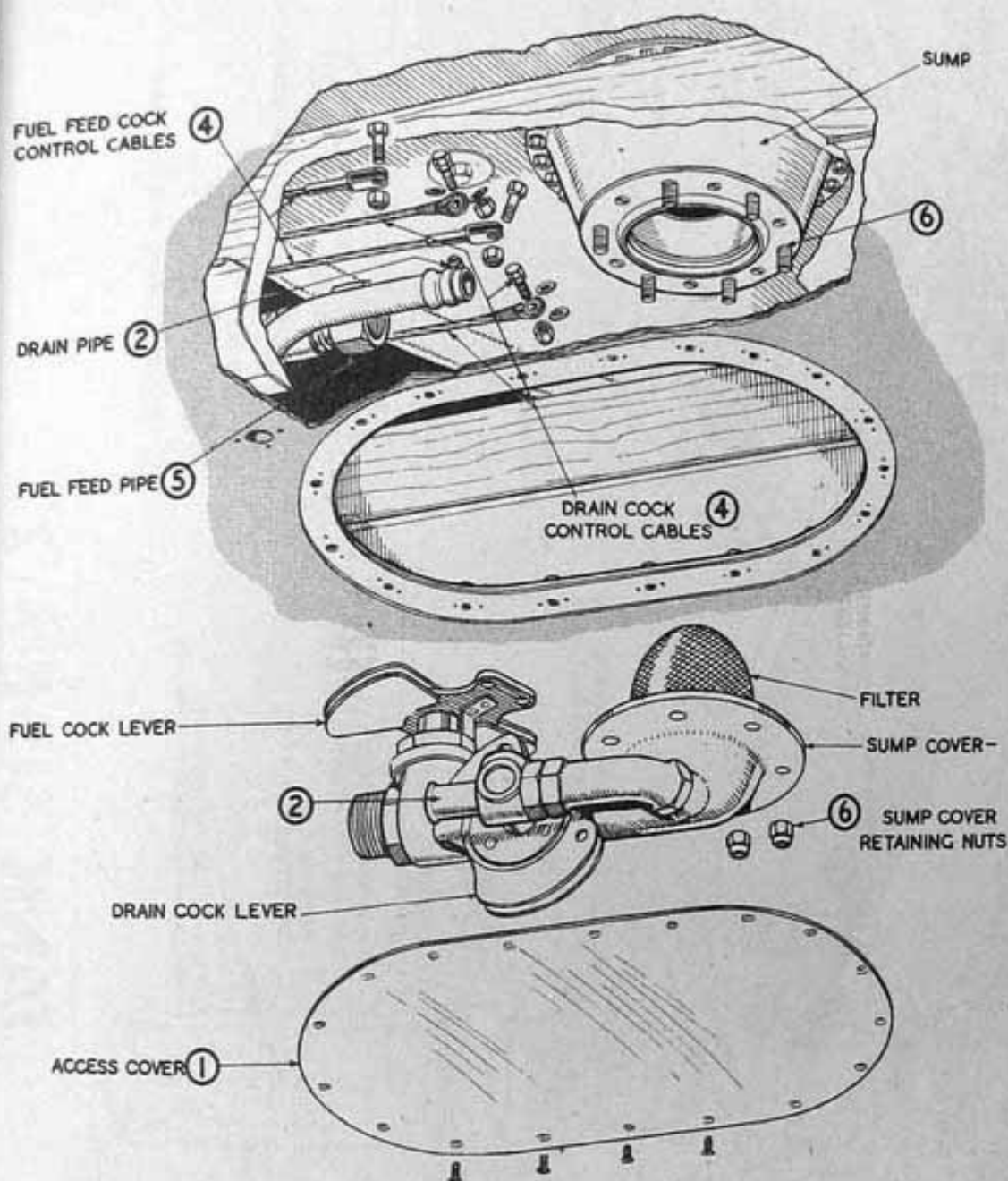
13

VENT VALVE (TANKS N° 4 & 5)

FIG.

13





PORT TANK NO 3 SUMP SHOWN — OPERATIONS TYPICAL FOR TANKS NO 1-5

- ① — REMOVE ACCESS COVER
- ② — DISCONNECT DRAIN PIPE
- ③ — SLACKEN OFF NEAREST TURNBUCKLE IN DRAIN COCK AND FUEL FEED COCK CONTROL RUNS
- ④ — DISCONNECT CABLES FROM OPERATING LEVERS
- ⑤ — DISCONNECT FUEL FEED PIPE
- ⑥ — REMOVE RETAINING NUTS FROM SUMP

16
FIG

NUT -
(SIMMONDS)
STORES REF. 28W/5650
BOLT -
STORES REF. 28D/7001

FUEL FEED PIPE ④

FUEL FEED COCK CABLES ③

ASBESTOS WASHER
STORES REF. 26AL/21157

SUMP RETAINING NUTS - (SIMMONDS)
STORES REF. 28W/6152

⑥

FILTER

DRAIN PIPE ⑤

FUEL COCK LEVER

SUMP
STORES (26AL/21145) (PORT)
REF. (26AL/21146) (STBD)

CARTRIDGE CONTAINERS
STORES REF. 26AL/21179

ASBESTOS WASHERS
PT. NO SK/383/B

TANKS NO 7 & 8

SUMP
STORES (26AL/21180) (PORT)
REF. (26AL/21185) (STBD)

SIMMONDS NUT
STORES REF. 28W/6152

ASBESTOS WASHER
STORES REF. 26AL/21157

ACCESS COVER ①

TANK NO 6

BOX
SPANNER (TUBE - PT. NO SK/492
SPANNER (TOMMY BAR - PT. NO SK/495)

ASBESTOS WASHER
STORES REF. 26AL/21156
CARTRIDGE CONTAINER
STORES REF. 26AL/21148
CHROMATE CARTRIDGE
STORES REF. 26AL/21144
INHIBITOR CAP
STORES REF. 26AL/21147

- ① - REMOVE ACCESS COVER
- 2 - SLACKEN OFF FUEL COCK
CONTROL RUNS
- ③ - DISCONNECT CABLES FROM OPERATING LEVERS
- ④ - DISCONNECT FUEL FEED PIPE
- ⑤ - DISCONNECT DRAIN PIPE
- ⑥ - REMOVE RETAINING NUTS FROM SUMP

16
FIG

TANK SUMPS (2)

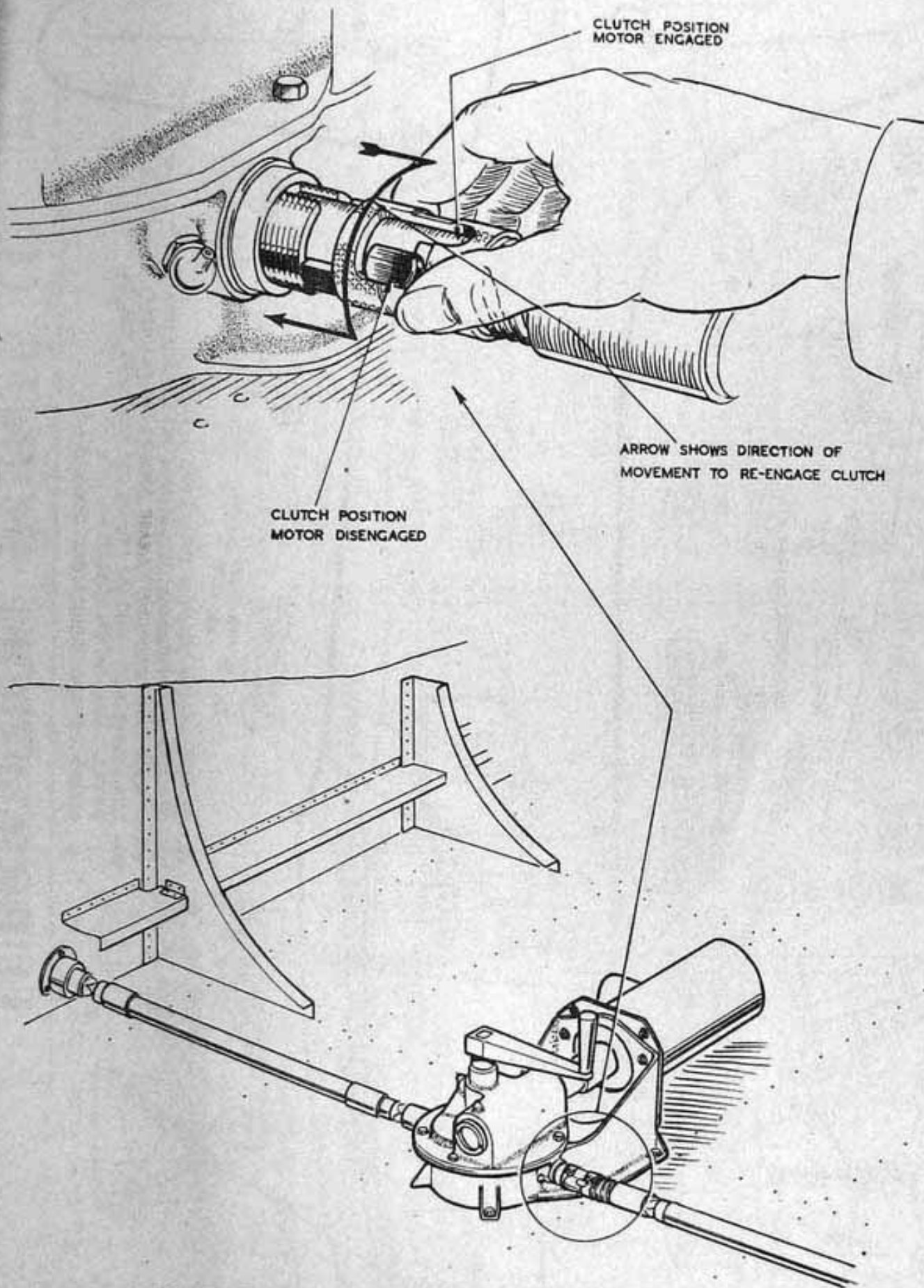
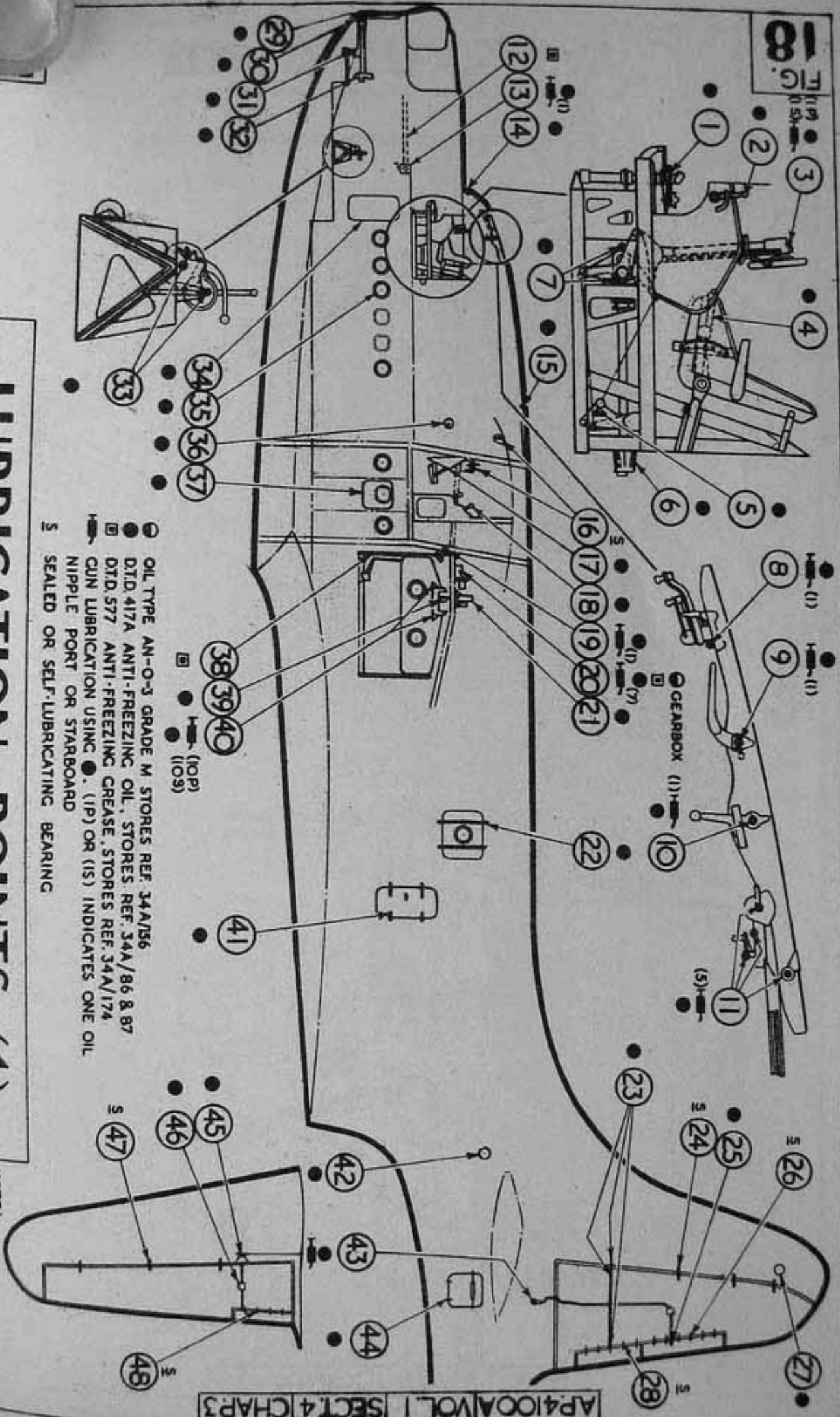


FIG.
17

RESETTING FLAP GEAR

FIG.
17



LUBRICATION POINTS (1)

- | | | | |
|----|---|----|--|
| 1 | Rudder bars | 25 | Rudder trimming tab operating lever bearings |
| 2 | Landing lamp dipping lever | 26 | Rudder trimming tab hinge bearings |
| 3 | Control handwheel bearing | 27 | Aerial tensioning-wire pulley |
| 4 | Seat-operating gear | 28 | Rudder balance tab hinge bearings |
| 5 | Elevator intermediate levers | 29 | Mooring gear |
| 6 | Aileron torque-tube | 30 | Bomb sight door hinges |
| 7 | Base of control columns | 31 | Reversible platform pivots |
| 8 | Fuel jettison controls | 32 | Mooring bollard |
| 9 | Slow-running cut-out control | 33 | Anchor winch |
| 10 | Carburettor cock levers | 34 | Entrance door hinges and catches |
| 11 | Trimming tab control box and control pulleys | 35 | Porthole hinges and fasteners |
| 12 | Guides for front turret retraction | 36 | Aerial winch |
| 13 | Turret retracting gear | 37 | Drogue door hinges and catches |
| 14 | Windscreen wipers | 38 | Bomb door guides |
| 15 | Engineer's hatch hinges and catches | 39 | Bomb hoist winch and gearbox |
| 16 | Control pulleys | 40 | Bomb carriage rollers |
| 17 | Adjustable seat | 41 | Rear entrance door hinges and catches |
| 18 | Controls at engineer's station | 42 | Aerial tensioning winch |
| 19 | Aileron right-angle drive | 43 | Rudder trimming tab gearbox |
| 20 | Flap motor gearbox, torque-shaft and indicator gear | 44 | Tail escape door hinges and catches |
| 21 | Bomb carriage traversing gearbox | 45 | Elevator trimming tab driving sprockets |
| 22 | Beam gun door hinges and catches | 46 | Elevator trimming tab gearbox |
| 23 | Rudder hinge and tab-operating lever bearings | 47 | Elevator hinge bearings |
| 24 | Rudder hinge bearings | 48 | Elevator trimming tab bearings |

KEY TO FIG.18

19
FIG.

AILERON CONTROL CHAINS □
ACCESS THROUGH LOWER SURFACE

FLAP ROLLERS & GUIDES □

WING-TIP FLOAT STRUT & INCIDENCE BRACING WIRE
ATTACHMENTS (LOWER SURFACE) ● — (4P) & (4S)

AILERON HINGES □

AILERON CONTROL CHAINS □
ACCESS THROUGH UPPER SURFACE

LANDING LAMP PIVOTS ●

ALL MAINTENANCE PLATFORM PIVOTS ● — (8P) & (8S)

ANCHORAGE EYE-
BOLT (UNDER HEAD) ●

FLAP OPERATING SCREW ATTACHMENTS ● — (2P) & (2S)

GEARBOX & JACK SCREW
● — (2P) & (2S)

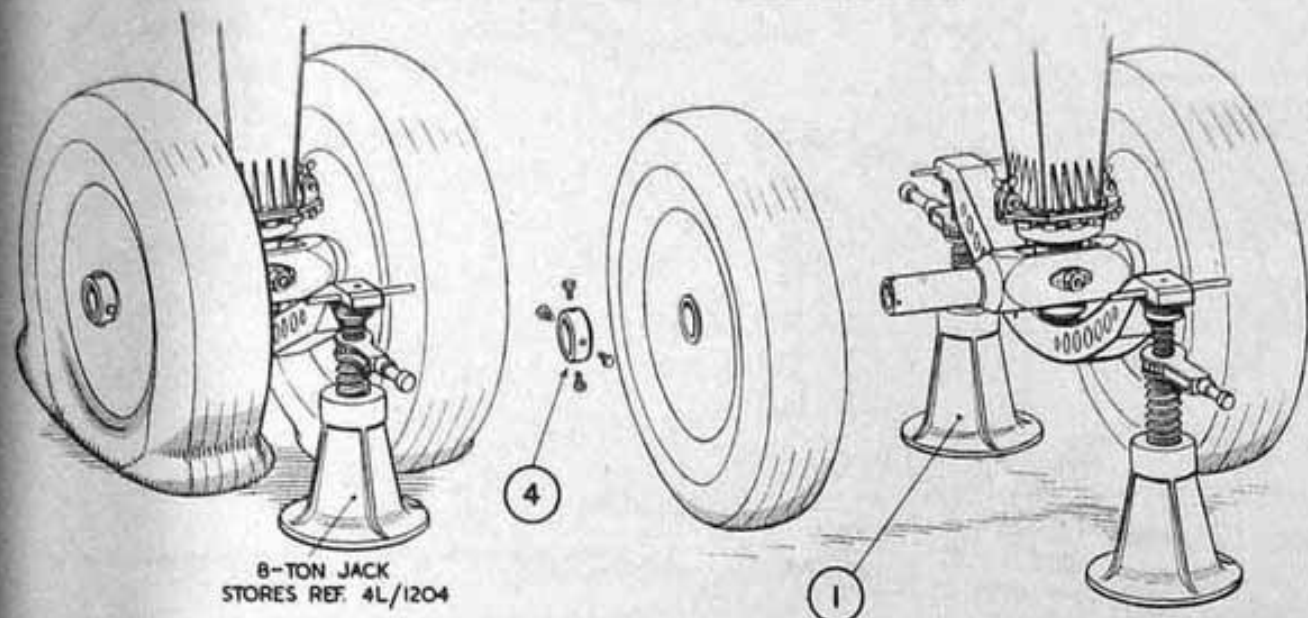
FLAP CONTROLS ● — (1P) & (1S)

A.P.U. ACCESS DOOR (STBD.
ONLY) HINGES ●

19
FIG.

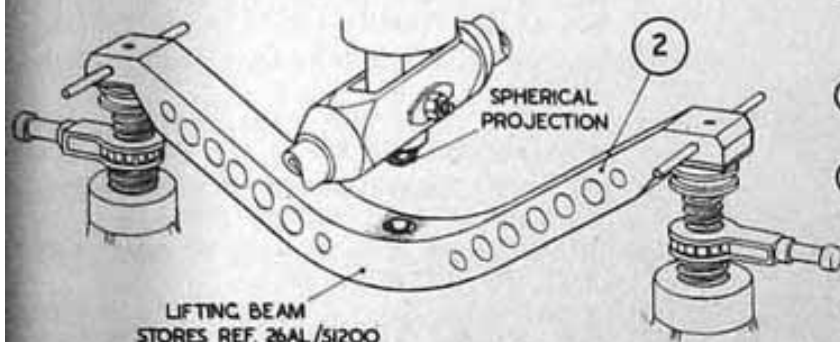
FOR KEY TO SYMBOLS SEE FIG. 18

LUBRICATION POINTS (2)



MAIN STRUT

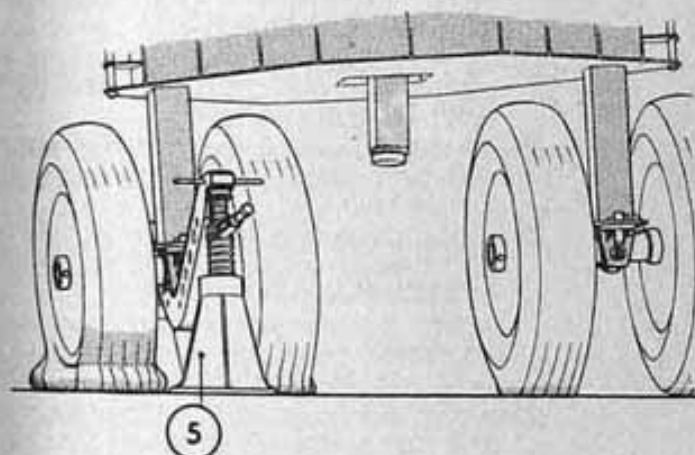
- ① POSITION JACKS, ONE ON EACH SIDE OF THE AXLE
- ② PLACE THE LIFTING BEAM ON JACKS AND POSITION SO THAT SEATING ON BEAM IS DIRECTLY UNDER SPHERICAL PROJECTION ON STRUT
- ③ OPERATE JACKS TO RAISE STRUT TO REQUIRED HEIGHT
- ④ REMOVE BOLTS AND WHEEL RETAINING COLLAR



TAIL TROLLEY

(a) WITH ONE TYRE FLAT

- ⑤ PLACE JACKS AND LIFTING BEAM UNDER TROLLEY STRUT, AND POSITION AS FOR THE MAIN STRUT (SEE ② ABOVE)
- ⑥ OPERATE JACKS TO REQUIRED HEIGHT AND REMOVE BOLTS AND WHEEL RETAINING COLLAR



(b) WITH TWO TYRES FLAT ON SAME AXLE

- 7- PLACE A JACK UNDER THE CENTRAL JACKING POST AND RAISE TROLLEY ABOUT 2 INCHES
- 8- PLACE JACKS AND LIFTING BEAM IN POSITION (SEE ②) AND PROCEED AS ABOVE

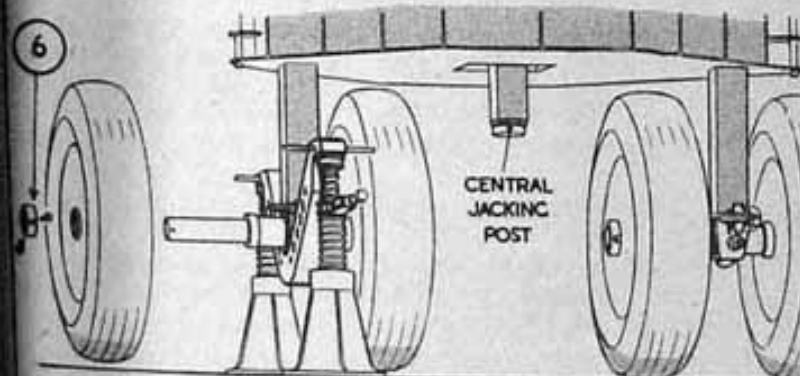
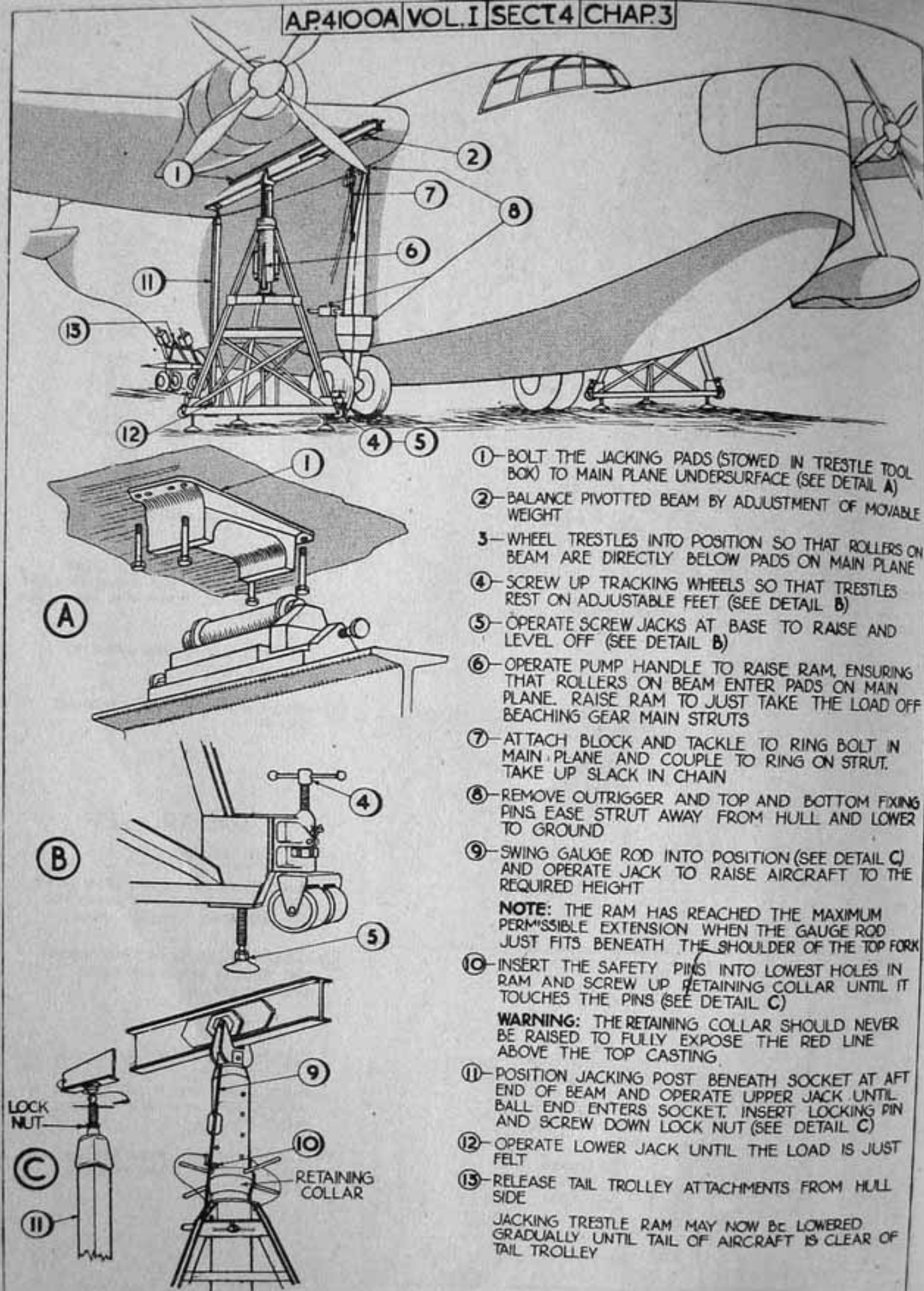


FIG.

FIG.



- ① BOLT THE JACKING PADS (STOWED IN TRESTLE TOOL BOX) TO MAIN PLANE UNDERSURFACE (SEE DETAIL A)
- ② BALANCE PIVOTTED BEAM BY ADJUSTMENT OF MOVABLE WEIGHT
- ③ WHEEL TRESTLES INTO POSITION SO THAT ROLLERS ON BEAM ARE DIRECTLY BELOW PADS ON MAIN PLANE
- ④ SCREW UP TRACKING WHEELS SO THAT TRESTLES REST ON ADJUSTABLE FEET (SEE DETAIL B)
- ⑤ OPERATE SCREW JACKS AT BASE TO RAISE AND LEVEL OFF (SEE DETAIL B)
- ⑥ OPERATE PUMP HANDLE TO RAISE RAM, ENSURING THAT ROLLERS ON BEAM ENTER PADS ON MAIN PLANE. RAISE RAM TO JUST TAKE THE LOAD OFF BEACHING GEAR MAIN STRUTS
- ⑦ ATTACH BLOCK AND TACKLE TO RING BOLT IN MAIN PLANE AND COUPLE TO RING ON STRUT. TAKE UP SLACK IN CHAIN
- ⑧ REMOVE OUTRIGGER AND TOP AND BOTTOM FIXING PINS. EASE STRUT AWAY FROM HULL AND LOWER TO GROUND
- ⑨ SWING GAUGE ROD INTO POSITION (SEE DETAIL C) AND OPERATE JACK TO RAISE AIRCRAFT TO THE REQUIRED HEIGHT
- ⑩ INSERT THE SAFETY PINS INTO LOWEST HOLES IN RAM AND SCREW UP RETAINING COLLAR UNTIL IT TOUCHES THE PINS (SEE DETAIL C)
- ⑪ POSITION JACKING POST BENEATH SOCKET AT AFT END OF BEAM AND OPERATE UPPER JACK UNTIL BALL END ENTERS SOCKET. INSERT LOCKING PIN AND SCREW DOWN LOCK NUT (SEE DETAIL C)
- ⑫ OPERATE LOWER JACK UNTIL THE LOAD IS JUST FELT
- ⑬ RELEASE TAIL TROLLEY ATTACHMENTS FROM HULL SIDE

NOTE: THE RAM HAS REACHED THE MAXIMUM PERMISSIBLE EXTENSION WHEN THE GAUGE ROD JUST FITS BENEATH THE SHOULDER OF THE TOP FORK

WARNING: THE RETAINING COLLAR SHOULD NEVER BE RAISED TO FULLY EXPOSE THE RED LINE ABOVE THE TOP CASTING

JACKING TRESTLE RAM MAY NOW BE LOWERED GRADUALLY UNTIL TAIL OF AIRCRAFT IS CLEAR OF TAIL TROLLEY

SECTION I

PILOTS' CONTROLS AND EQUIPMENT

LIST OF CONTENTS

	PARA.
Entry to cockpit	3
Coupé	4
Pilots' seats	5
Accommodation	6
Flight engineer's controls, etc. ...	7

LIST OF ILLUSTRATIONS

	FIG.
Aircraft controls and instruments	1
Equipment	2
Pilot's electrical panel	3

1. This Section is a general guide to the location of all controls, equipment and instruments in the cockpit. The method of operating controls is described where this is not obvious. The main systems are fully covered in other Sections.

2. To assist identification, the items on the key pages of the illustrations are grouped under various headings. The groups are arranged in alphabetical order.

Entry to cockpit

3. This is by the front entrance door and the stairway in the bow compartment.

Coupé

4. A sliding window is provided on each side of the coupé and adjustable wind deflectors are fitted.

Pilots' seats

5. Both seats can be adjusted vertically by a lever on the outboard side of the seat, the locking catch is released by pressing the plunger in the end of the lever. Safety belts are fitted to the seats. Armour plate shields are fitted on the back of the 1st pilot's seat and at the top of the seat support structure, in addition armour plate shields are fitted just forward of the instrument panel.

Accommodation

6. Bunks are provided, one on each side of the wardroom, and a removable table with folding leaves is fitted in the centre of the compartment.

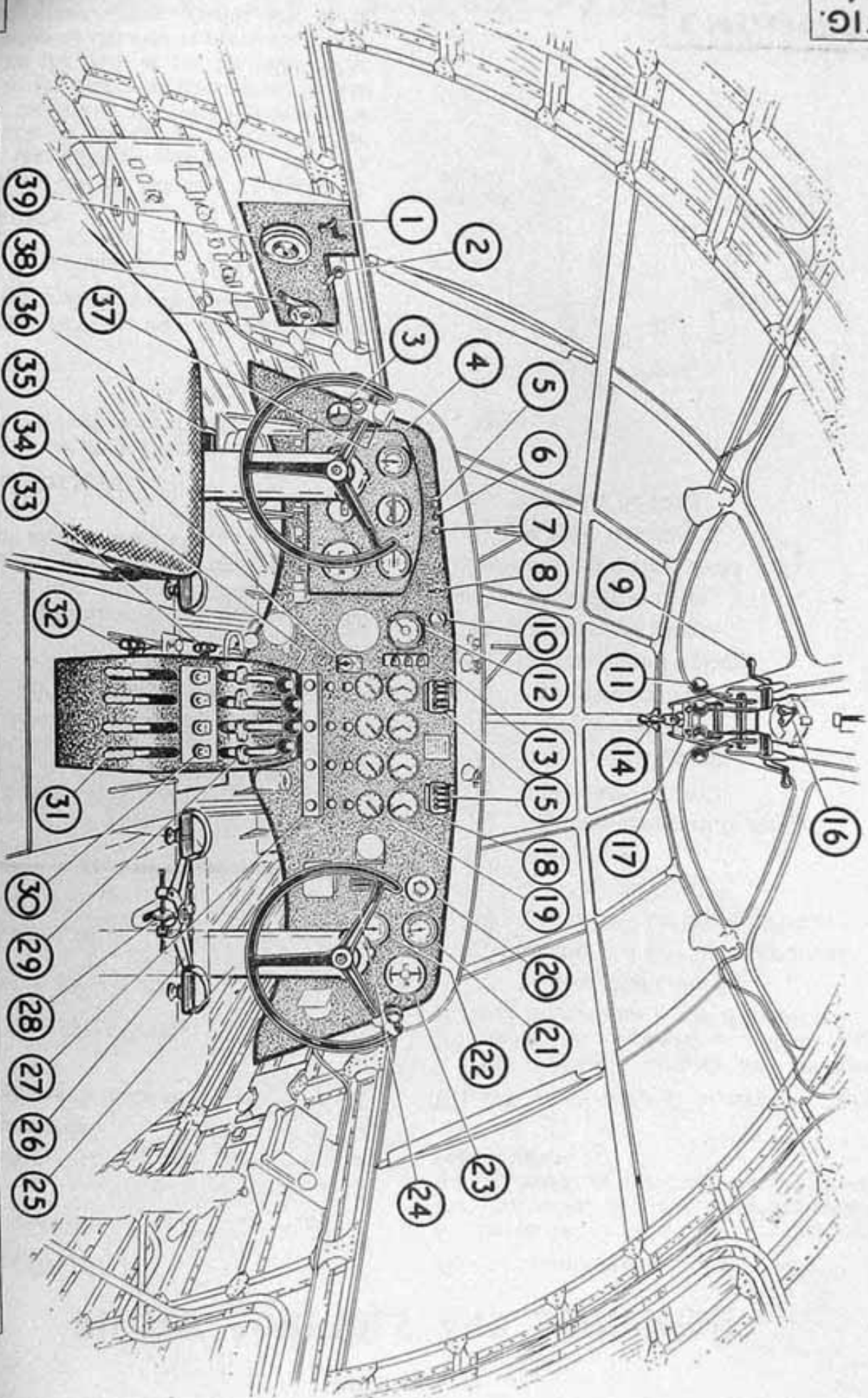
Flight engineer's controls, etc.

7. The following controls and instruments are under the supervision of the engineer and full information is given in Sect. 3:—

- (i) Ground/flight switch
- (ii) Engine and fuel system priming
- (iii) Carburettor air intake shutters
- (iv) Cowling gills
- (v) Booster coils
- (vi) Cylinder temperature gauges
- (vii) Tank cocks
- (viii) Fuel contents gauges
- (ix) Fuel flowmeters
- (x) Fuel pressure warning lamps
- (xi) Oil temperature gauges
- (xii) Oil pressure gauges
- (xiii) Oil cooler shutters
- (xiv) Vacuum system cocks
- (xv) Aerofoil de-icing
- (xvi) Propeller de-icing

ENGINEER

FIG. 1



AP4100A VOL. I SECT. I

FIG. 1

AIRCRAFT CONTROLS AND INSTRUMENTS

KEY TO FIG. 1

AUTOMATIC CONTROLS Mk. VIII

1. Rudder lock control
2. Clutch lever
3. Combined pressure gauge
35. Switch—"Compass control—Jink turn"
36. Gyro unit
37. Suction gauge
38. Control cock
39. Pitch control

ENGINE CONTROLS

11. Carburettor cock levers
15. Ignition switches—Bridge plates enable switches to be used together if necessary
17. Slow-running cut-out control levers
27. Propeller feathering buttons—Hold the appropriate button in only long enough to ensure that it stays in by itself, then immediately close throttle
29. Throttle levers
31. Propeller speed control levers
32. Friction type damper handwheel—Propeller speed control levers
33. Friction type damper handwheel—Throttle levers
34. Starter push-buttons—Under spring-loaded cover

ENGINE INSTRUMENTS

18. R.P.M. indicators
19. Boost gauges
30. Mixture indicator lamps—Light up when mixture is unsuitable for continuous running

EMERGENCY CONTROLS

14. Fuel jettison control levers—Spring-loaded guard fitted. Telescopic outlet pipes in the planing bottom must be lowered first

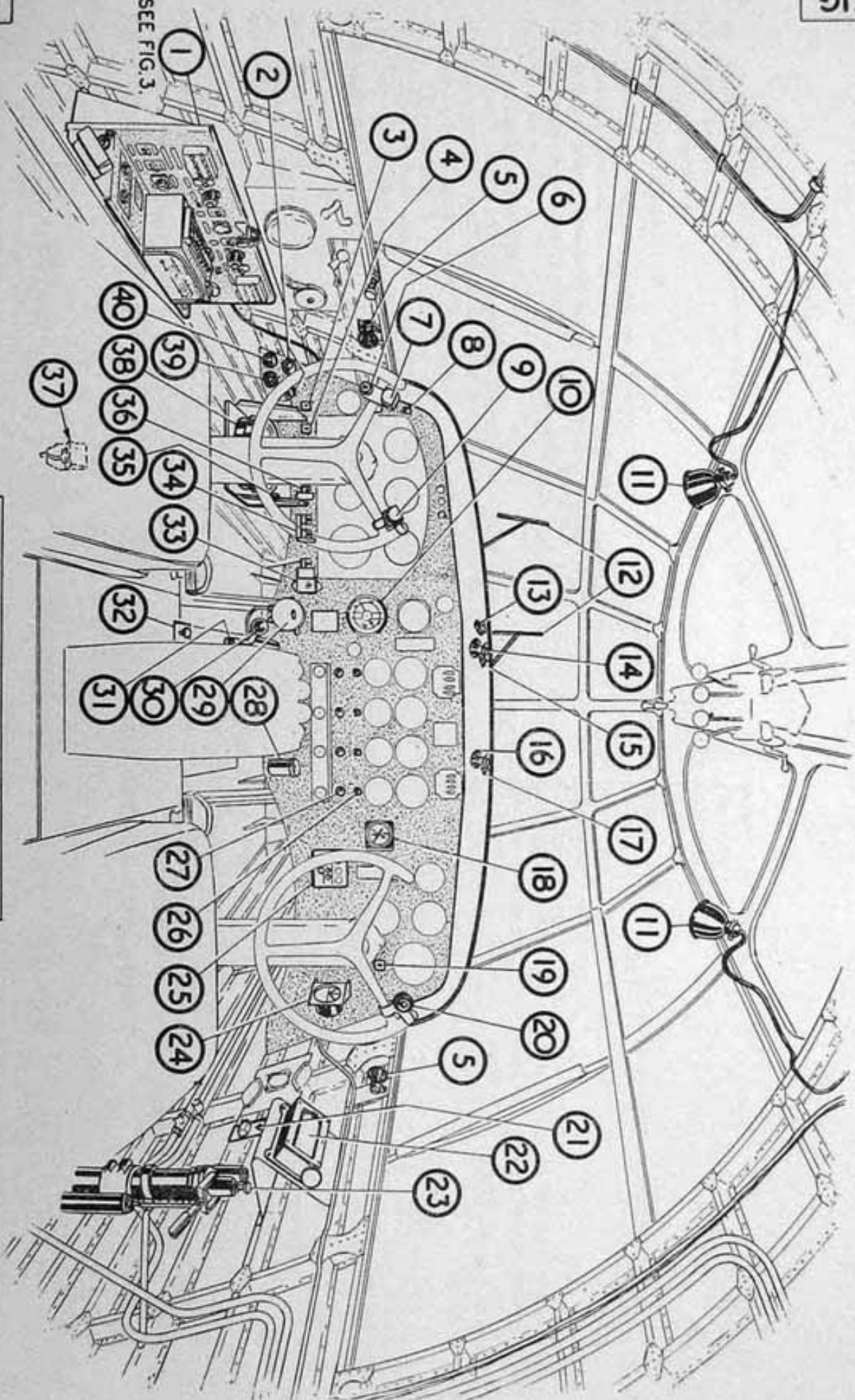
FLYING CONTROLS

8. Flap control switch
9. Elevator trimming tab controls—Operate in natural sense
16. Rudder trimming tab controls—Operate in natural sense
25. Control column
26. Rudder control—Bar type
28. Rudder bar adjusting wheel—Backward movement of top of wheel increases leg reach

FLYING INSTRUMENTS

4. Standard instrument flying panel
5. Flap $\frac{1}{2}$ out indicator lamp—Remains on as long as flaps are more than $\frac{1}{2}$ out
6. Flap indicator switch—Switch on to obtain reading on indicator (10)
7. Flap position indicator lamp—Lights up when position indicator is in circuit
10. Flap position indicator
12. Radio altimeter
13. Limit indicator lamps }—Radio altimeter installation
20. Limit switch }
21. Airspeed indicator
22. Altimeter
23. Turn indicator
24. Fore-and-aft level

FIG. 2



AP4100A VOL. I SECT. I

FIG. 2

EQUIPMENT

KEY TO FIG. 2

ARMAMENT

4. Bow guns master switch
7. Bomb release push-button, 1st pilot
9. Bow guns firing switch
20. Bomb release push-button, 2nd pilot
22. Low level bomb-sight computer

CAMERA

8. Camera indicator lamp

EMERGENCY

27. Fire extinguisher push-buttons

LAMPS

2. Dimmer switches—Ultra-violet lamps
3. Emergency panel lamp switch
5. } Ultra-violet lamps
14. }
16. }
11. Floodlights
13. Emergency panel lamp
15. } Cockpit lamps—Red
17. }
19. Bomb sight computer lamp switch
26. Fire warning lamps
29. Signalling switchbox

30. Landing lamps dipping lever
31. Landing lamps selector switch
33. Recognition lamps master and selector switches
34. Navigation and head or steaming lamp switches
35. P.10 compass lamp—Red
36. Downward identification lamp switches
39. P.10 compass lamp dimmer switch
40. Cockpit lamps dimmer switch

NAVIGATIONAL

10. Pilot's type repeater—D.R. Compass installation
38. Compass, type P.10

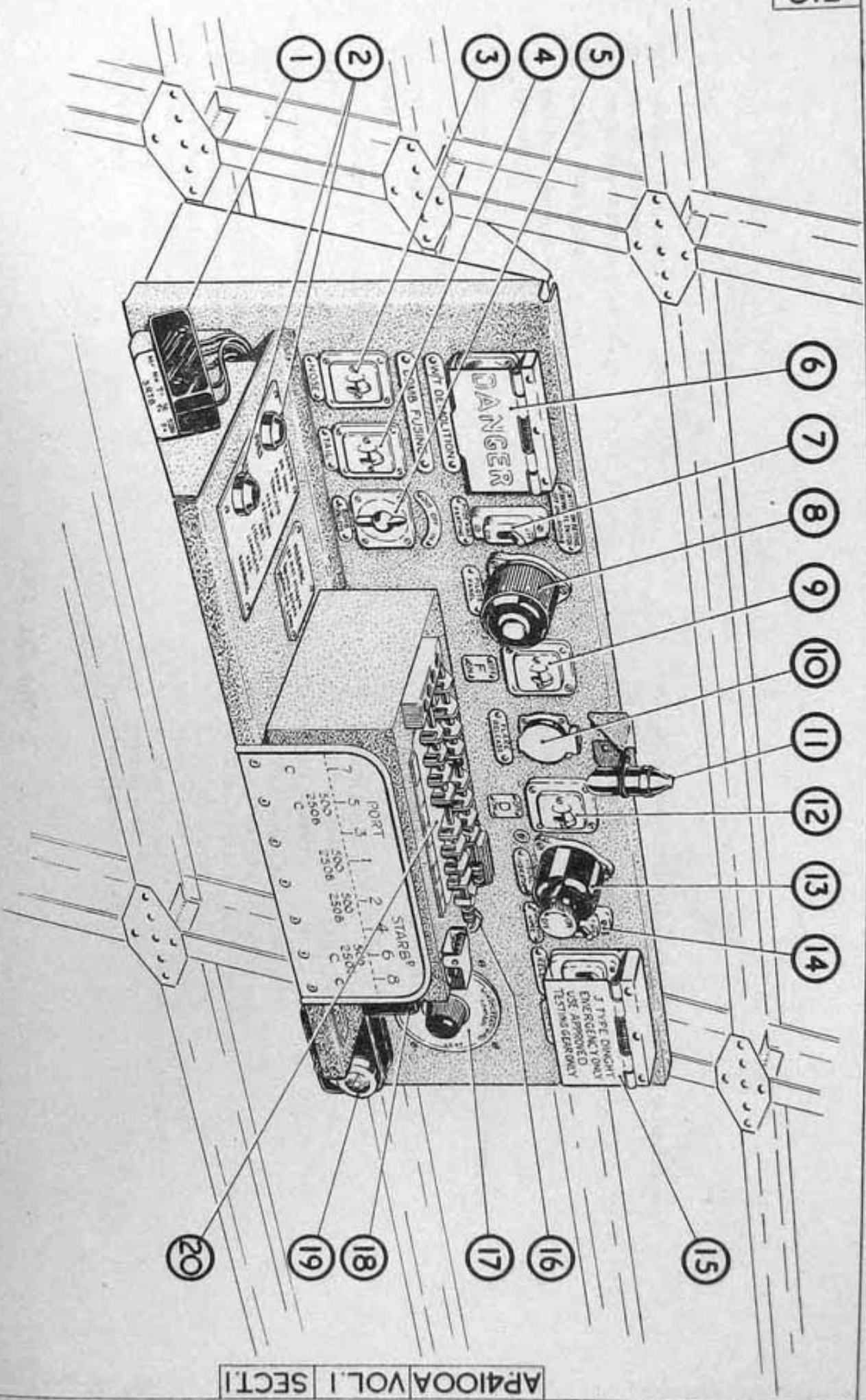
RADIO

6. Press to transmit switch T.R.1196 (1st pilot)
21. Press to transmit switch T.R.1196 (2nd pilot)
24. Visual indicator R.1155/L or N.D.F.
37. Intercommunication socket—(Under 1st pilot's seat)

MISCELLANEOUS

12. Windscreen wipers
18. Clock
23. Recuperator—nose turret system
25. Droque signal switchbox
28. Ash tray
32. Hand pump and metering cock—(Window de-icing system)

FIG. 3



AP4100A VOL. I SECT. I

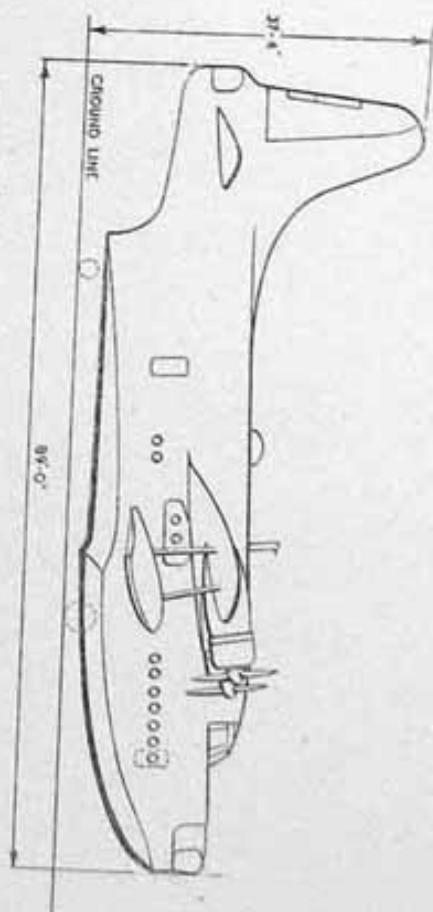
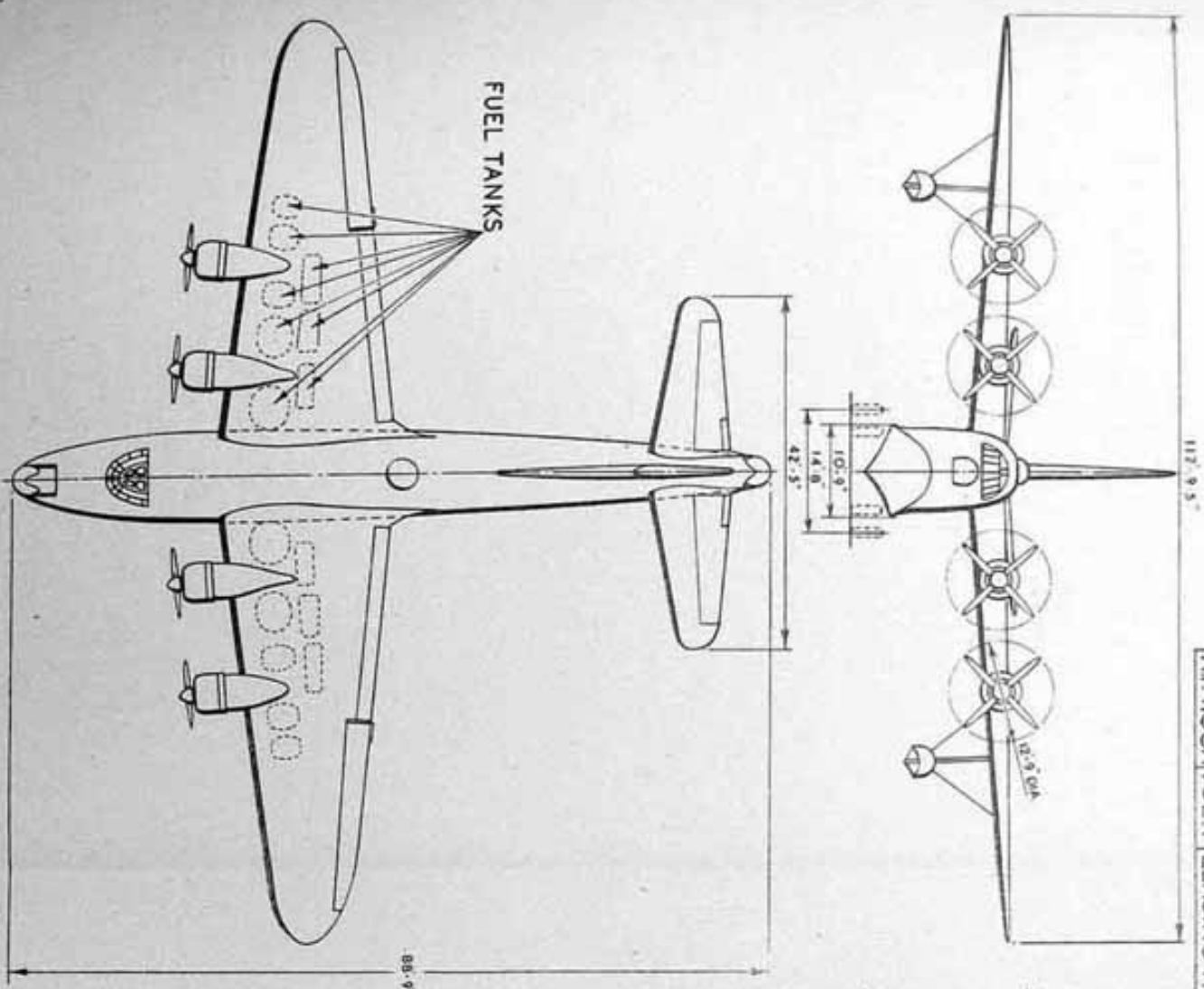
FIG. 3

PILOT'S ELECTRICAL PANEL

KEY TO FIG. 3

1. Terminal block
2. Bomb trolley position lamps
3. Bomb fusing switch—nose
4. Bomb fusing switch—tail
5. Bomb trolley control switch
6. W/T demolition switches
7. Pitot head heating switch
8. Panel lamp dimmer switch
9. On-off switch "F" (A.R.I.5025A)
10. Flare release push-button
11. Panel lamp
12. On-off switch "D" (A.R.I.5025A)
13. Visual indicator dimmer switch
14. Windscreen wiper control switch
15. "J" type dinghy release switch and test socket
16. I/C switch
17. Windscreen wiper control rheostat
18. Jettison switch
19. Call light receiver unit
20. Bomb selector switchbox, type H

AP4100A VOL. I LEADING PARTICULARS



MAIN PLANE

AEROFOIL SECTION COTTINCEN 436 MODIFIED
 INCIDENCE: AERODYNAMIC CHORD TO HULL DATUM 5° 9'
 DIHEDRAL: TOP FRONT SPAN BOOM 0° 30'

MAIN PLANES TOTAL INCLUDING ALERONS AND FLAPS 1487.60 SQ. FT.
 ALERONS TOTAL 134.40 SQ. FT.
 FLAPS TOTAL 288.24 SQ. FT.

TAIL PLANE

AEROFOIL SECTION R.A.F. 30 MODIFIED
 INCIDENCE: AERODYNAMIC CHORD TO HULL DATUM 4° 0'
 DIHEDRAL: TOP FRONT SPAN BOOM 4° 15'

TAIL PLANE TOTAL INCLUDING ELEVATORS 265.00 SQ. FT.
 ELEVATORS TOTAL INCLUDING TRIMMING TABS 101.50 SQ. FT.
 ELEVATOR TRIMMING TABS 3.75 SQ. FT.

FIN AND RUDDER

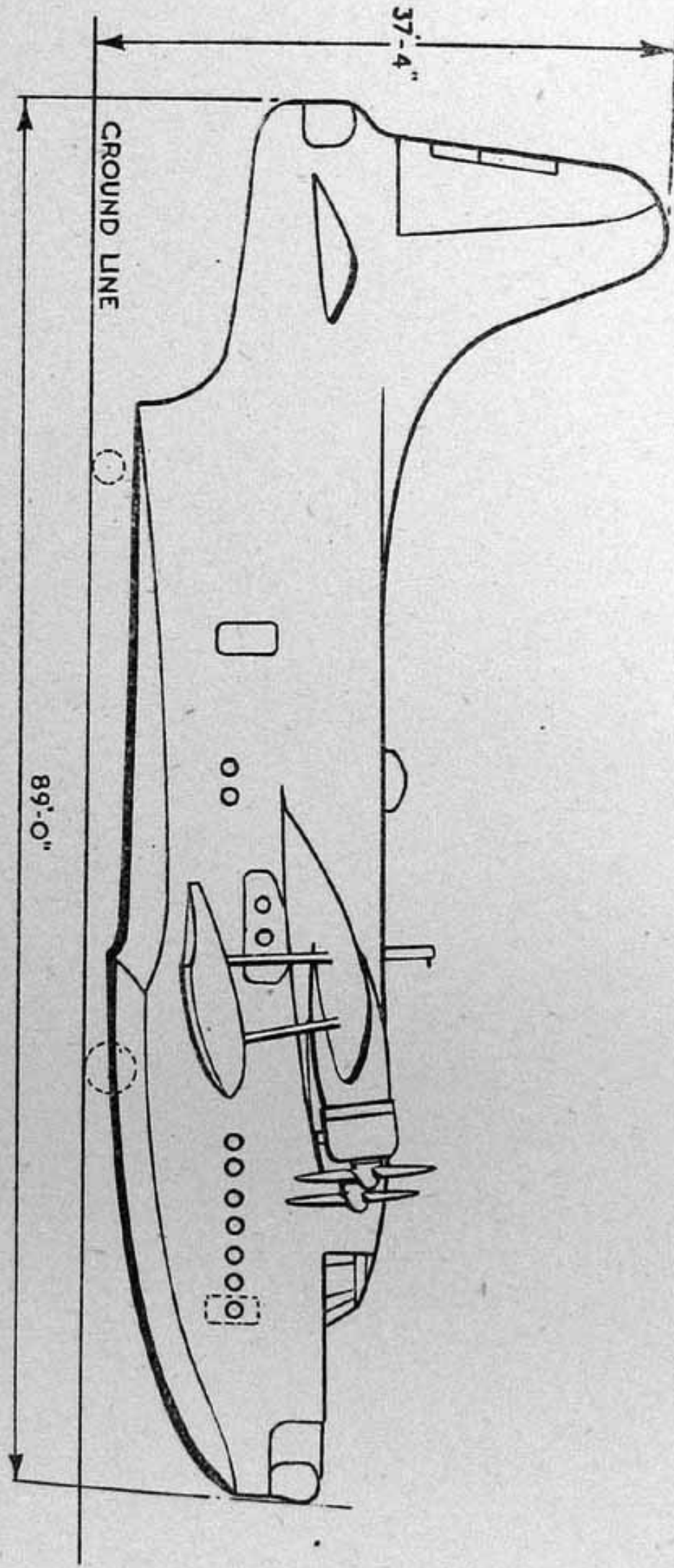
AEROFOIL SECTION R.A.F. 30 MODIFIED
 AREAS

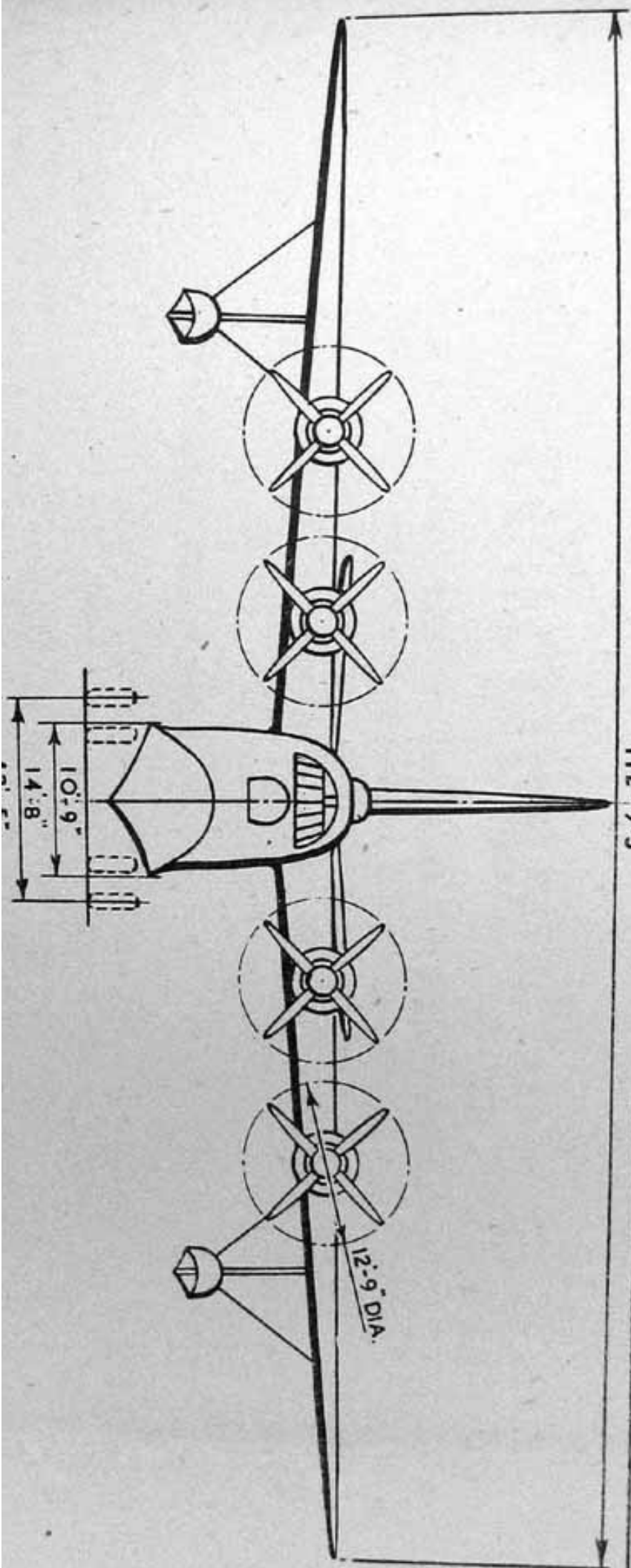
FIN INCLUDING DORSAL FIN AND RUDDER 189.00 SQ. FT.
 RUDDER INCLUDING TRIMMING AND BALANCE TABS 92.18 SQ. FT.
 RUDDER TRIMMING TAB 4.55 SQ. FT.
 RUDDER BALANCE TAB 3.40 SQ. FT.

CONTROL SURFACE MOVEMENTS

ALERON 18° 30' EACH WAY
 ELEVATOR 18° 30' EACH WAY
 RUDDER 18° 00' EACH WAY
 ELEVATOR TRIMMING TAB 14° 00' EACH WAY
 RUDDER TRIMMING TAB 8° 00' EACH WAY
 FLAP 25° 00' DOWN

GENERAL ARRANGEMENT





112'-9.5"

A.P.4100A VOL. I LEADING F

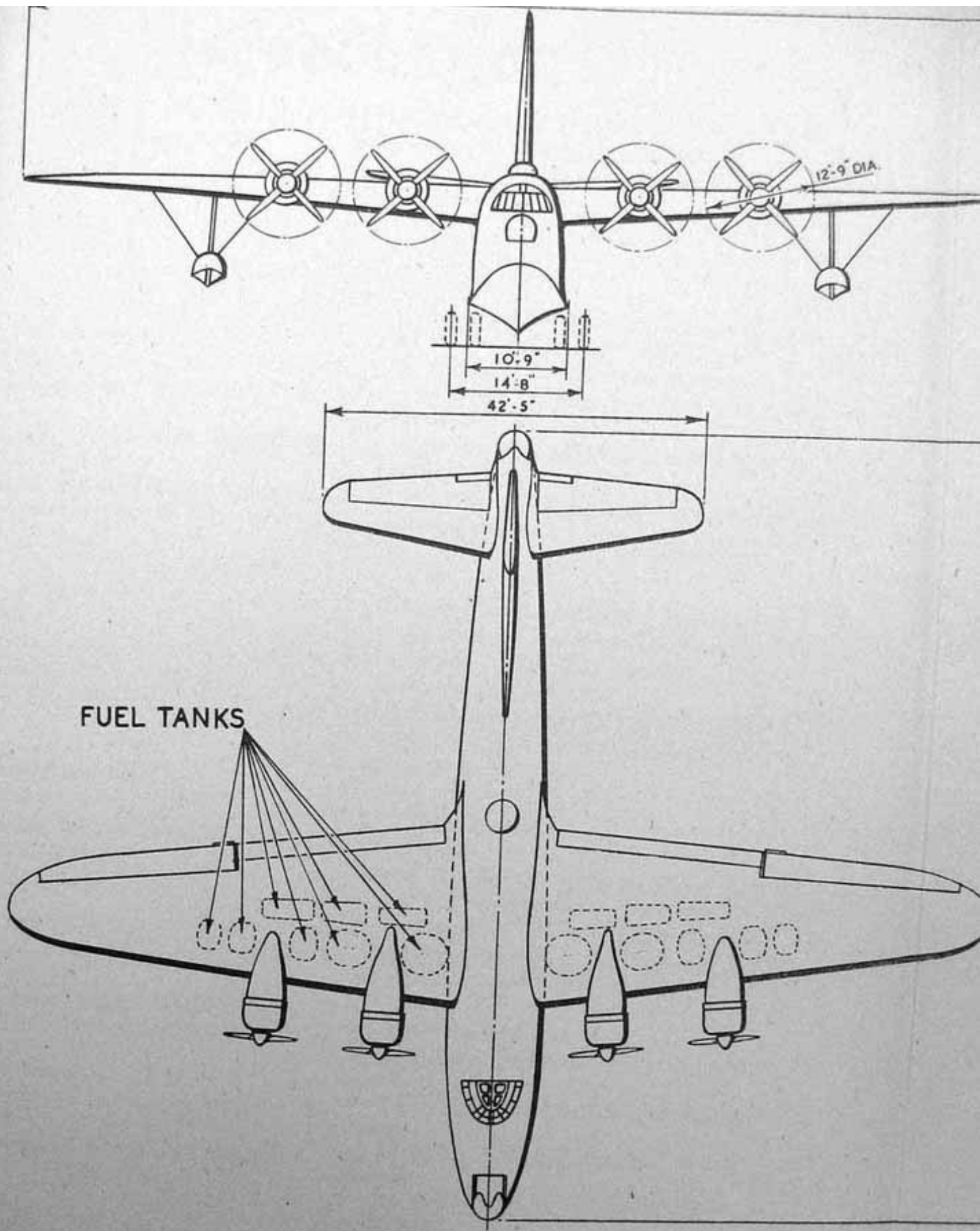


FIG.
1

GENERAL ARRANGEMENT