SECTION 4

INSTRUCTIONS FOR GROUND PERSONNEL

SECTION 4 — CHAPTER I

LOADING AND C.G. DATA

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Loading and C.G. Data is fully covered in A.A.P. No. 829.

SECTION 4 — CHAPTER 2

GROUND HANDLING AND PREPARATION FOR FLIGHT

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Ground Handling and Preparation for Flight

Introduction

60. Information on the general handling of the aircraft on the ground and on preparing it for flight is given in this chapter. Auxiliary equipment for handling and servicing is listed in Chapter 3 of this Section.

WARNING.

The position and attitude of the aircraft in relation to buildings and other aircraft is to be checked prior to running up the engine.

No person should approach closer than distance of four yards to the air intakes. The great quantity of air drawn in when the engine is running makes breathing difficult.

It is also important to see that the ground adjacent to the aircraft should be free from rags, paper, light pieces of wood, etc., while the engine is running, as they can easily be sucked in through the ducts. Care must be taken in positioning the aircraft so that the jet at the rear does not blow on any other aircraft or obstruction. This is necessary, not from a point of view of performance while the engine is running, but as a safeguard from the effect of hot gas and stones, etc., which may be blown up from the ground. It is most essential that the starter battery should be fully charged, as the amount of current consumed during starting operations is considerably in excess of the normal and a battery which is not fully charged will fail to give the necessary r.p.m. for starting the engine.

The blanking plates must be on the air intakes and tail whenever the engine is stationary. They should be replaced as soon as possible after any engine running, and only removed at the last minute before starting. The Part Nos. are as follows:—

Air Intake Blanking Plate: Part No. Y00516A (Ident No. A79/500002) & Y00517A (Ident No. A79/500003).

Tail Pipe Blanking Plate: Part No. Y00565 (Ident No. A79/500004).

GROUND HANDLING

Towing

61. (i) The aircraft may only be towed when the special towing equipment, Nose Steering Arms Part No. Y00304A, Ident No. W4G/25085 or Part No. 00Y127A, Ident No. A79/503485 are available. The towing arm is attached to the nose wheel spools and secured with two latches. The maximum permitted angle of the towing arm is 20° either side of the forward towing position.

(ii) A Special Towing Bridle, Part No. Y00413A, Ident No. W4G/25088 is available for conditions where the aerodrome surface is soft, or the aircraft bogged.

(iii) Operation of the aircraft's brakes facilitates its movement while under tow and it is therefore advisable to have a member of the ground crew in the cockpit while the aircraft is being moved.

Slinging

62. The slinging arrangement is illustrated in Fig. 13 and is self-explanatory.

Control Locking

63. The control locking gear (Fig. 10) is carried in the aircraft and is stowed in a small canvas bag attached to the forward face of bulkhead No. 2 just below the G3F compass amplifier.

Picketing

64. The aircraft must always be picketed head to wind. Eyes for the shackles are provided at the top of each main undercarriage leg. The shackles used on the towing bridle are not carried in the aircraft. The nose wheel should be picketed by a rope around the leg. Additional ropes should be passed over the booms forward of the fins.

Covers

65. (i) Ground covers are provided for the port and starboard air intakes, canopy, pitot head and tail-pipe. The pitot head cover only, is stowed in the aircraft.

(ii) Normally the air intake and jet openings are plugged when the aircraft is parked (see Warning para. 60). If the standard blanking plates are not available, substitutes should be improvised.

Jacking

66. (i) Place the adjustable jack, 5 ton (Ident No. W4G/10196) beneath the fuselage frame at rear of the nosewheel door with former W4G/25104 clear of the fuselage. Place the hydraulic jacks, 5 ton (Ident No. W4G/10015) with jacking pad (Part No. 00Y43) under the wing jacking points and raise the jacks to just take the weight.

(ii) With two men to steady the rear of the tail booms, raise the aircraft with the wing jacks until the booms can be raised by manhandling, high enough to place the tail trestles (Ident No. W4G/2554) with the boom formers (Part No. Y00258) in position, then raise the adjustable nose trestle to steady the forward end of the aircraft.

NOTE: When being raised on the wing jacks, the aircraft will be **tail** heavy with the engine installed, and **nose** heavy without the engine.

(iii) The aircraft may now be adjusted laterally and longitudinally for rigging operations. When levelling the aircraft fore and aft, care should be taken to lower one trestle when the opposite one is raised, e.g., if the nose is required to be raised, the tail trestle should be eased off first and vice-versa.

NOTE: When the aircraft is supported on jacks, wing trestles (Ident No. W4G/10812) must be in position when personnel are working on the wings or under the aircraft. See Fig. 9.

Undercarriage Locking

67. The gear for locking the undercarriage is carried in a stowage bag fitted to the right-hand gun bay door (see Fig. 104). The method of fixing is shown in Fig. 11.

Preventing Corrosion

68. The fuel float valve in the main fuselage tank is subject to corrosion if the tanks are left unfilled for any long period. To prevent this corrosion always keep the fuselage tank filled or the valve assembly liberally coated with oil (Ident No. K2/145), when the aircraft is grounded.

GENERAL PREPARATION FOR FLIGHT

WARNING: Attention is drawn to warning in para. 60.

Re-fuelling

69. (i) The fuel system is described and illustrated in Section 8. Before attempting to fill any tank make sure that the H.P. fuel cock in the cockpit is OFF. The tool, Part No. Y00162A (Ident No. A79/500016) is used for unscrewing the filler caps. When refuelling, always use the special filters and pay particular care to avoid spillage. Flaps should be down and an examination for fuel in the flap compartment should be made after each refuelling operation.

(ii) The filler cap for the fuselage tank is on the port side at the after end of the cockpit hood fairing. The filler caps for the wing tanks are in the top surface of the wing.

(iii) Fuel tanks should be filled in the order, fuselage tank, wing stub tanks, outer wing group tanks.

Draining

70. Draining of accumulated water from tanks is not necessary except in exceptional circumstances, as usual small quantities will not affect the engine. If draining is required it can be carried out as follows:—

(i) By means of a bowser, sucking the fuel from the tanks through the filler caps, or

(ii) By removing the drain plug under the collector box in the fuselage tank.

Drop tanks may be drained by removing the plugs provided for this purpose. (See Fig. 12.)

IMPORTANT: If draining fuselage tank. See para. 68.

Fitting Fuel Drop Tanks

71. Provision is made to carry the 100 gallon drop tanks suspended under each wing at rib 6. The fuel transfer and air pressure lines are of rubber hose, incorporating two glass tube connectors at the juncture of the tank to the wing (See Fig. 12), and these connections must be linked before the tank is offered up to the wing. The tank is suspended from the release gear by an eyebolt and located by fore and aft spigots.

The procedure for fitting a new or replacement tank is as follows (see Fig. 12):—

(i) Check the functioning of the release gear by attaching suitable weights to the slips and by slowly moving the cockpit handle. The slow movement enables an accurate check to be made as to where the actual release point occurs in relation to the end of travel. If the weights are not released simultaneously, the cables require adjustment; proceed as follows:—

(ii) With the jettison handle in the cockpit in the fully stowed position, and with the bomb slip in the leading edge cocked (this is most important), the cable is to be rigged with as much slack as possible (approximately 3/16" min.) consistent with being able to release when the handle is approximately 1½" at knob end from the end of its travel.

Alternative Method:

Place the cockpit handle approximately 1½" from the end of its travel and lock so that it cannot move. Then with control cable slacked right off and slip unit fully cocked, carefully tension the cable until slips release, taking care not to obtain a false reading by moving cable up and down during adjustment.

This will give the maximum possible slack and still ensure release of both slips.

(iii) Grease the bearing surface of the release hook and press the tank suspension bolt up into the release unit. This will lock the unit and secure the bolt. Ensure that the hard rubber packing is in position around the locating spigot on the front support casting. Align the tanks on the ground with the wing attachment points, connect the rubber hoses to the tank tubes and tighten the pipe clips. Offer the tank up to the wing, guiding the suspension bolt into its tube and engage the front and rear spigots with their holes in the wing skin, fit washer and stiffnut on suspension bolt, tighten nut to a torque-loading of 400-500 lbs./inch, ensuring tank is secure to the wing.

NOTE: It should now be possible for an average size man to exert his weight on the tail of the tank without movement of the latter.

(iv) Check that the tank is bearing over the whole of the front support casting and on the bearing surface of the rear spigot.

(v) Check the clearance between the tank fairing and the wing. This should be kept as small as possible with a minimum of 0.03" and a maximum of 0.30". The correct clearance can be obtained by releasing the tank from the wing and adjusting the rear spigot as illustrated in Fig. 12.

Replenishing Engine Oil Sump

72. There is no oil tank, but the engine sump has a capacity of 10 pints. The filler cap may be reached by removing the access door on the power unit cowling at the lower port side of the fuselage. Fill the sump to within half an inch of the filler orifice with oil to Spec. D.T.D.44D (Ident No. K2/116). After the initial ground run, approximately two pints of oil may be necessary to bring the oil to the correct level. When the sump has been properly replenished, put back the filler cap, slip the crossbar into its bayonet catch and lock it by screwing down the finger wheel. The sump should NOT be filled while the engine is running, and care should be taken to ensure that the cap is always fitted correctly and tightened before running the engine.

Draining

73. To drain the oil sump remove the plug on the starboard side of the sump. When refitting the plug use a new washer.

Replenishing Engine Accessories Oil Sump

74. The combined gearbox and mounting for the engine accessories, and auxiliary

drive, has a separate oil sump incorporated. This is topped up by means of a filler cap accessible from above the engine through a hand access hole provided in the top engine cowling.

A dip stick, the top of which is painted red, is provided adjacent to the filler cap. Replenish with oil O.E.P.71 to Spec. D.E.D.2479/1 (Ident No. K2/214) to the full mark on the dip stick immediately after installation and before running engine.

Draining

75. To drain the engine accessories oil sump remove the drain plug found vertically below the dip stick, and wirelock after refitting.

Hydraulic Reservoir

76. The hydraulic reservoir is located on the fuselage deck, between No. 2 and 3 bulkheads. The reservoir is filled through the filler cap which is accessible when the canopy is pushed back past the first stop. It is important that the hydraulic accumulator pressure is released before filling, to the level indicated on the reservoir window. A release valve, situated below the cockpit floor (accessible through the gun bay doors) on the left-hand side, is provided for this purpose. When removing the filler cap use tool Part No. Y00162A (Ident No. A79/500016). The fluid capacity is one gallon and only fluid to Spec. D.T.D. 585 (Ident No. K2/138) is to be used.

Hydraulic Accumulator

77. The air pressure in the accumulator should read 1,250 lb./sq. in. The accumulator may be filled from an outside supply through the inflation valve, mounted on the right-hand side aft face of bulkhead No. 2. The pressure gauge should be mounted on the outside supply charging pipe or cylinder.

Pneumatic System

78. The air bottle may be filled from an outside supply through the inflation valve on the pneumatic panel, mounted on the aft face of bulkhead No. 2 (Fig. 35). The maximum pressure is 450 lb./sq. in. The pressure gauge mounted on the right-hand instrument panel has a pipe line direct to the air bottle, which records the bottle's existing pressure. The oil and water trap should be frequently drained.

Dry-Air Sandwich Windscreen and Hood

79. (i) The silica-gel container is positioned just forward of the instrument panel on the right-hand side.

(ii) When the crystals show a pink colour through the inspection window (Fig. 44), they should be replaced with "Tell-Tale" silica-gel to Spec. D.T.D.471 (Ident No. K4/10592).

(iii) It is particularly important to check that there is a free passage of air to the dry sandwich areas. During pressurisation of the cockpit, any blockage in the dry-air system will effect the cabin differential pressure and possibly cause the hood to fracture.

Windscreen De-Icing

80. The glycol tank is positioned on the right-hand stay tube of the nose wheel top structure (Fig. 100). The tank capacity is approximately three pints and glycol fluid to specification K.22 is used (Ident No. K4/10332).

SECTION 4 — CHAPTER 3
GENERAL SERVICING

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General Servicing

Introduction

81. This chapter describes servicing operations and serves to implement A.A.P. 721:79/30, Vol. 4—"Aircraft Planned Servicing Schedule."

For information and servicing notes on items of equipment not dealt with in this Chapter, reference should be made to the relevant Air Publications and Australian Air Publications listed at the beginning of this book.

The location of the servicing inspection panels is given in Fig. 14, and the lists given in this Chapter include all the items of Ground Equipment necessary for servicing the aircraft.

Design characteristics connected with high speed - high altitude must be kept in mind when servicing aircraft of this type. The exterior paint finish, for instance, presents a highly efficient aerofoil surface in addition to the normal function of protection. Be careful to avoid damage to the finish, and if repairs are carried out, fill and rub down the surface to achieve a polished finish blending with that on adjacent surfaces.

For procedures and further information, see A.P. 2656A, Section 9, Chapter 2.

The efficiency of cabin sealing depends to a large extent on the manner in which each bolt or fitting which passes through into the sealed area is bonded to the cabin surround with sealing compound. Therefore, when removing these fittings during servicing, care must also be exercised to remove the old compound with approved solvent, clean thoroughly the bolts, washers, sealing plates, etc., with cleaner such as trichlorethyline. During reassembly, reprime and reseal with Bostik 1751 and 1790 in the approved manner. For tests connected with pressurised cabin, see index to this chapter.

NOTE: For further information, see A.P.1464B, Vol. 1, Part 2, Section 2.

GROUND EQUIPMENT AND TOOLS

82. TABLE 1.—SPECIAL GROUND EQUIPMENT AND TOOLS.

R.A.A.F. Ident No.	*Part No.*	*Description.*	*Application.*
		TOWING AND STEERING	
W4G/25085	Y00304A	Arm, nose steering.	
W4G/25088	Y00413A	Bridle, Towing.	
A79/503485	00Y127A	Arm, Towing Assy.	Vampire Trainer Equipment, but used as alternative to above.
		JACKING	
W4G/25138	00Y43	Pads, mainplane jacking.	
W4G/25104	00Y191A	Nose Wheel Changing Trestle (hinged legs).	Use with pillar jack W4G/10196.
		TRESTLING	
W4G/25105	Y00157A	Former for use with U.J.T. No. 3 Port.	Mainplane steadying at Rib 10.
W4G/25083	Y00158A	Former for use with U.J.T. No. 3 Starboard.	Mainplane steadying at Rib 10.
W4G/25103	Y00118A	Trestles, Tripod fuselage.	Supporting fuselage when mainplanes are removed.
W4G/25084	Y00258A	Former for Boom Trestle (W4G/2554).	Supporting mainplane at stub and rear of boom.
W4G/25100	00Y189A	Trestle, for fuselage nose.	
W4G/25086	00Y53A	Trestle, rear fuselage (at engine mountings).	Assembling mainplane to fuselage.
		SLINGING	
W4G/25091	Y00546A	Sling, complete A/c.	
W4G/25087	Y00323A	Sling, mainplane.	
		RIGGING	
W4G/25095	Y0094A	Board, incidence, mainplane.	Port and Starb'd for Ribs 3 & 10.
W4G/25094	Y0090A	Board, dihedral, mainplane.	Also used for boom levelling.
W4G/25096	Y00500A	Board, incidence, low tailplane.	Also tailplane levelling.
W4G/25092	Y0075A	Board, lateral levelling.	Fuselage.
W4G/25093	Y0076A	Board, longitudinal levelling.	Fuselage.

R.A.A.F. Ident No.	*Part No.*	*Description.*	*Application.*
W4G/25098	Y0011A	Locking Pin, elevators and rudders.	Control circuit.
W4G/25099	Y00403A	Locking Plate, aileron.	Control circuit.
W4G/24097	Y00600	Quadrant Setting Plate, elevator.	Control circuit.
		MISCELLANEOUS	
A79/500015	Y00390	Box Spanner, joint.	Main wing joints.
A79/500009	Y00181	Adaptor to Box Spanner.	Main wing joints.
A79/500012	Y00406A	Box Spanner, wheel.	Removing wheels.
A79/500013	Y00185A	Box Spanner, Port.	U/c and boom joint.
A79/500014	Y00186A	Box Spanner, Starboard.	U/c and boom joint.
A79/500002	Y00516A	Board, blanking Port.	On air intake when picketed.
A79/500003	Y00517A	Board, blanking Starboard.	On air intake when picketed.
A79/500004	Y00565A	Board, blanking tailpipe.	On when picketed.
A79/500011	Y0093	Acorn, bolt removing.	Front wing joint.
A79/500010	Y00175A	Extractor, joint bolt.	Main wing joint.
A79/500062	AH8404	Extractor, main wheel.	

83. TABLE 2.—STANDARD GROUND EQUIPMENT.

R.A.A.F. Ident No.	*Part No.*	*Description.*	*Application.*
		JACKING	
W4G/10015	—	Jack, 5 ton Hydraulic.	Mainplane jacking.
W4G/10196	—	Jack, 5 ton Pillar Hydraulic.	Nose jacking.
		TRESTLING	
W4G/2554	—	Trestle, tail type "D." Min. height, 3 ft. 11½ in. Max. height, 7 ft. 2¼ in.	Tail boom trestling.
W4G/500028	—	Trestle, tail. Min. height, 2 ft. 3 in. Max. height, 3 ft. 3 in.	Tail boom trestling.
W4G/10812	—	Trestle U.J.T. No. 3.	Wing trestling.
		MISCELLANEOUS	
W4G/25101	CAC.TH75	Sling, engine, Nene. Stand, engine, Nene.	
W4G/1358	—	Syringes, oil.	Charging Oleo legs.
W4G/1966	—	Mats, mainplane, Type B.	
W4C/257	—	Pump, Oleo Type A.	
W4C/20905	—	Adaptor Plug.	Oleo leg charging.
W4C/20971	—	Gauge Mk. 2 (0-1,500 lb./sq. in.).	
W4C/20960	—	Gauge Mk. 1 (0-600 lb./sq. in.).	
W4G/4090	—	Trolley, oxygen cylinder.	Recharging.
W4G/25109	—	Trolley, pressure cabin testing.	
—	—	Streamline Filter Trolley, Type P.M.55A.	
—	—	Air Pressure Cylinder.	Testing Canopy Seal.

Jacking and Trestling

84. Particulars of the jacking operations are given in Section 4, Chapter 2, para. 66.

Former Stations and Inspection Panels

85. The locations of the fuselage formers and of inspection panels and doors are shown in Fig. 14.

Lubrication

86. The lubrication details are shown in Figs. 15, 16 and 17.

All cable control pulleys and flying control levers in the tail unit are fitted with sealed ball races packed with anti-freezing grease (Ident No. K2 210) before assembly, and no attention is necessary.

RIGGING

87. As the wings, fin, tail plane and tail booms are fixed cantilever structures, no adjustment to them is provided. The only rigging operations, therefore, are those concerned with checking the diagonal measurements, the incidence and dihedral of the wings, and the control surface settings and ranges of movement. Rigging data is shown in Fig. 18, and all rigging dimensions and angles with tolerances are given in Leading Particulars.

NOTE: Cable turnbuckles are locked with 20 S.W.G. copper locking wire, except the rudder cable turnbuckles on Rib No. 1, Port Wing; these are locked with 20 S.W.G. soft iron locking wire.

Rigging Sequence

88. The sequence of operations is as follows:—

(i) Trestle the aircraft at the points marked JACK at the forward end of the stub boom attachment of the wing, i.e., the main spar; and then trestle the tail booms as shown in Fig. 9.

(ii) Place the levelling boards, Part No. Y0075 (Ident No. W4G/25092) and Y0076 (Ident No. W4G/25093) on the datum blocks in the fuselage, as shown in Fig. 18. Adjust trestles until the level of the levelling board is zero. Use the datum blocks for longitudinal level, and in a similar manner adjust the tail trestle until the level on the levelling board reads zero.

(iii) Check the incidence angle of the wings, ribs No. 3 and 10, using incidence board, Part No. Y0094A (Ident No. W4G/25095) in the position indicated in Fig. 18. Check the dihedral by means of a levelling board Part No. Y0090A (Ident No. W4G/25094) and clinometer on the top of the front spar, as shown in diagram.

(iv) Check the angle of the tail booms by placing levelling board Part No. Y0090A (Ident No. W4G/25094) along the top and using the clinometer.

(v) Check the incidence of the tail plane by using incidence board, Part No. Y00500A (Ident No. W4G/25096), at position shown in Fig. 18. Also check that the transverse level is horizontal and that the fins are vertical in relation to the tail booms.

(vi) Check for symmetry between the wings and tail booms, wings and nose of fuselage, and opposite fins by taking diagonal measurements as shown in Fig. 18.

NOTE: The tail plane angle of incidence is set by the manufacturer and is not adjustable.

CONTROL SETTINGS

Ailerons

89. Lock the control column with locking gear, Part No. 00Y213A (Ident No. A79/503856), and proceed as follows:—

(i) Remove the nut, washer, distance piece and bolt located above the cable pulley at bottom of control column, and attach aileron locking plate, Part No. Y00403A (Ident No. W4G/25099), to lock the pulley sprockets in the NEUTRAL position.

(ii) Adjust tie-rods to give the equal tension on the chain at the top of the control column.

(iii) Set aileron differential pulley at aileron, NEUTRAL, with a 2 BA bolt (see Fig. 20).

(iv) Couple up cables. The cable run and adjusting points are shown in Fig. 90.

(v) Remove locking bolts on aileron differential pulleys, the locking plate at the base of the control column and the control locking gear. Replace all items removed under sub-para. (i).

(vi) Move the control column over with full range of travel and check that the tension of the chain and cable is satisfactory at NEUTRAL and full travel.

NOTE: Using the Mk. 4 tensionmeter, check that the cable tension is 70 lb. ± 20 lb. up to first minor inspection or 70 lb. ± 10 lb. after first minor inspection; at the same time ensure that the cable tensioners are in safety.

(vii) Check for full and free movement of aileron, 15 deg. 36 min. up, to 10 deg. 31 min. down, ± 1 deg. 18 mins.

NOTE: The gap between the aileron leading edge and the aileron shroud varies, being 0.05" at outer hinge, 0.080" at centre hinge, and 0.10" at inboard hinge, with overall tolerance 0.02". Adjustment may be effected by the addition of laminum shims on the bracket fixing bolt.

Aileron Trim Tabs

90. Servo trim tabs are fitted to each aileron, and may only be adjusted on the ground to suit the flying characteristics of the aircraft. The servo gear normal position is shown in Fig. 20, and this gives tab movements measured between the outward end of the tab and the aileron trailing edge of .85" up and 1.2" down.

Elevator

91. To rig the elevator proceed as follows:—

(i) Lock the elevator quadrant pulley on the right and left-hand sides of the cockpit, in the NEUTRAL position with locking jig, Part No. Y00600 (Ident No. W4G/25097).

NOTE: Position jig plates between the fuselage and quadrant pulley, pick up tapped hole in plate with longer bolt in lieu existing bolt which passes through pulley bracket and cable guide block. Adjust position of pulley so that castle nuts on cable cleat bolts engage in 17/32" holes in jig plate.

(ii) If necessary, adjust the connecting rods from the quadrant pulleys to the levers on the control column torque tube, so that the position of the control column is nominally 8½ deg. forward of the vertical. The position of the control column may be adjusted to suit particular requirements, but the over-riding factor is that it must have unobstructed travel over the full range of movement allowed by the quadrant pulley stops.

(iii) Lock the elliptical pulley, at the forward end of the tail booms, in the NEUTRAL position with a ¼ in. dia. pin. Couple up the cables from the quadrant pulley to the elliptical pulley, and tighten to the correct tension.

(iv) Lock the elevator control levers at the boom rear end with the pin, Part No. Y0011 (Ident No. W4G/25098). Check, with torch and mirror, that the pin is actually in the NEUTRAL hole. Couple up the cables from the elliptical pulley to the links on the control levers.

NOTE: It is important that both sets of cables should be tightened up at the same rate and that the tension, using a Mk. V tensionmeter, is 80 lb. ± 20 lb. on the 25 cwt. scale up to the first minor inspection, and 80 lb. ± 10 lb. after the first minor inspection.

(v) Couple up the elevator operating rod to the elevator lever and adjust so that the elevator trailing edge is in line with the tail plane. Ensure that the lock nut at the lower end of this combined operating rod and mass balance is secure to avoid any chance of fouling the rudder links.

(vi) Check that the elevator has the full and free movement indicated in the Leading Particulars. It is important that the locking pins in the pulley may be freely withdrawn after the cables have been tensioned.

(vii) Push the control column fully forward and adjust the stop pins on the boom rear diaphragms so that they just contact the elevator control levers, then unscrew half a turn and lock. Repeat this operation with the control column fully back.

NOTE: Bolts in elevator control lever at rear of booms must point outwards from the centre of each boom.

Elevator Trim Tab

92. The trim tab cables run from the left-hand side of the cockpit down through the left-hand boom to the elevator. The first part of the cable from the cockpit is a Teleflex control and extends to half-way down the engine rib. It is important to see that there is an equal extension from the end of the Teleflex tube for both cables before coupling up the cables to the elevator.

To rig, proceed as follows:—

(i) Set the elevator tab control wheel in the cockpit so that the tab indicator reads NEUTRAL.

(ii) Set the elevator tab jack on the tailplane rear spar at NEUTRAL.

(iii) Assemble chain to sprocket with an equal number of links either side of the sprocket, and couple up the cables to the Teleflex controls.

(iv) Set the elevator to NEUTRAL and adjust the tab connecting rod until the tab has a ⅜" droop from the neutral position; i.e., until the tab trailing edge is three-eighths in. below the trailing edge of the elevator.

(v) Operate the handwheel in the cockpit and check for full measurement (Pre Mod. V.90) 6° (0.34") UP and 18° (1.0") DOWN and (Post Mod. V.90) 8° (0.5") UP and 22° (1.25") DOWN from the neutral position. The elevator tab should move upwards when the cockpit control is turned clockwise.

NOTE: It may be necessary to rig the tab slightly, either more or less than the ⅜ in. dimension to the

elevator, so that the aircraft cruises with the indicator in the cockpit at ZERO. To do this, adjustment should be made on the tab connecting rod only, with the indicator in the cockpit at ZERO.

Rudder

93. To rig the rudder, proceed as follows:—

(i) Using control locking gear Part No. 00Y213A (Ident No. A79/503856) set rudder pedals in NEUTRAL position and lock. Refer to Fig. 10.

(ii) Set rudder levers at tail plane NEUTRAL by putting a $\frac{3}{8}$" diameter pin, Y0011A (Ident No. W4G/25098), through the levers (see Fig. 21).

(iii) Insert a $\frac{1}{4}$" diameter pin to lock the elliptical pulleys at the forward end of the tail booms and couple up cables from the cockpit to the forward end of the tail booms.

(iv) Use a Mk. 5 tensionmeter and tension up cables so that the indicator shows 80 lb. ± 20 lb. on the 25 cwt. scale.

NOTE: After first minor inspection a tolerance of ± 10 lb. is allowed.

(v) With the locking pins in the elliptical pulleys, connect the cables from the forward end of the tail boom to the rudder lever links. (See Fig. 22.)

(vi) Tension up as in sub-para. (iv).

(vii) Couple up connecting rod to rudder control lever. (See Fig. 21.)

(viii) Remove all locking devices and check for full travel of rudder, 24 deg. 36 min. either side of neutral. There are no rudder trim tab controls, but a small tab is fitted to each rudder which can only be adjusted as required on the ground by slackening the bolt which is located at the base of the rudder.

(ix) It is important that the locking pins should be free to be removed after the cables have been tensioned.

(x) With full right rudder, adjust the stop pins on the boom rear diaphragms so that they just contact the rudder control levers, then unscrew half a turn and lock.

NOTE: Bolts in rudder control lever at rear of boom must point outwards from the centre of each boom.

Repeat this operation with full left rudder.

MASS BALANCING

General

94. The movable control surfaces are mass-balanced to prevent flutter or vibration. Accuracy of balance is vital to the safety of the aircraft, and should be checked as described below if it is suspected that it may have been affected by repairs or other causes.

(a) Ailerons.

Each aileron, complete with servo tab, but without connecting rod, should be balanced separately in position on the wing, and each should be nose heavy.

With the aileron approximately horizontal, suspend a check weight on the trailing edge 10.13 in. aft of the centre hinge pin. With the aileron free to float, it should then balance within ± 2 deg. of horizontal with a weight of from 19.5 to 25.5 ozs.

If adjustment is required, remove the plug from the outboard balance tube and adjust lead as required. Re-assemble, re-install and re-check. For further details, see Repair Manual, Part 3, Chapter 6.

(b) Elevator.

The elevator, complete with tab but less tab connecting rod, and supported at the torque tube ends, should balance with chord line horizontal within an angular tolerance of ± 2 deg. by a downward load of between 4 lbs. 5 ozs. and 4 lbs. 17 ozs. suspended from (elevator) centre line on the trailing edge.

(c) Rudder.

The rudder, complete with fittings, but not attached to aircraft, is to be supported at top hinge and end of torque tube.

In this horizontal position and free to pivot, balance must be obtained within an angular

tolerance of ± 2 deg. by applying an upward load (spring balance) of between 22 ozs. to 30 ozs. at the trailing edge rivet nearest to the tab.

LANDING GEAR

General

95. All moving parts of the undercarriage and nose wheel units should be kept clean, and properly lubricated. Before any test can be made on the landing gear, the aircraft will have to be jacked off the ground at the main wheels and the nose wheel (see Fig. 9). For removal and assembly of wheel units reference should be made to Section 5.

Retracting Mechanism

96. The length of the hydraulic jacks is important and requires careful adjustment. They should be checked after any servicing on the undercarriage or retracting jack if it has affected the initial settings.

NOTE: To centre the bottom end eye of radius rod in fork end on the compression leg, it may be necessary to assemble shims between the hinge pick-up J and the end fitting L. It is important that shims MUST be fitted under one fitting only as required. (See Fig. 23.)

Installing a New Jack

97. To install a new jack, screw the top end of the jack to the top lug (P in Fig. 28) with the appropriate bolt, and connect up the flexible hydraulic pipes. Operate the hand pump to retract the jack as far as possible and release the pressure in the system by operating the pressure release valve under the cockpit floor. (See note on the port side of fuselage.) Assemble the fork end of the jack piston to the lug attached to the top end of the compression leg with the appropriate bolt.

Adjustment of Jack

98. It is most important that the jack be adjusted when the main undercarriage is in the UP position; i.e., with the jack extended, so that the roller Q is 1/16th inch to 3/32nd inch from the end of the slot. (See Fig. 28.)

NOTE: The nose wheel jack is adjusted in the DOWN position.

Adjustment of Stop Bolt

99. The stop bolt between the upper and lower links of the radius rod should be adjusted with the lock plate in the locked position (undercarriage down).

Adjust the stop bolt until the lock plate roller moves freely within the slot, and ensure that the stop faces are in contact. (See Fig. 28.) The points X, Y and Z should now be in a straight line.

Adjustment of Eye Bolt

100. The adjustment to the length of the radii rod by screwing out the eye bolt (see Fig. 23) must be made to suit the UP position of the main and nose undercarriages. The main wheel and wheel retaining nut should be just clear of the skin and stringers at the top of the wheel-well (1/16" to 0.1" is ample). This is most readily checked with the wheel removed.

UNDERCARRIAGE SHOCK-ABSORBER STRUT

WARNING: No screws, nuts, etc., are to be removed from an inflated strut; high pressures are involved and negligence can result in serious accident.

Dismantling should only be necessary after lengthy service or accidental damage. Release air pressure through the inflation valve (see Item 37, Fig. 26) at base of strut.

NOTE: For detail regarding removal of U/C leg from airframe, see Section 5, para. 171.

101 to 104. For detailed description of the main undercarriage strut including the instructions for dismantling, servicing and testing, reference is directed to A.P.1803C, Vol. 1, Sect. 2, Chap. 10, Appendix 1.

NOTE: The struts fitted to the aircraft are exact in every detail to those described in the A.P. except for the sealing rings which are made of synthetic rubber to enable mineral oil to be used in the strut. The hydraulic fluid to be used is OIL OM-15 (D.T.D.585) and *not* Oil OF-4 (Lockheed 22) as mentioned in the A.P.

Inflation (of Main Stock-Absorber Strut)

105. Diagram showing the undercarriage inflation curve is given in Fig. 27.

Leakage—Main Shock-Absorber Strut

106. The possible causes of air and fluid leakage from the strut are given in A.P.1803 C, Vol. 1, Sect. 2, Chap. 10, Appendix 1, with the exception of the following:—

(i) It is possible for the gland or sealing rings to become set and/or grow on the plunger tube after periods of storage or non-use, often resulting in an oil leak when the strut is first compressed. To rectify this, the following procedure is to be carried out if the oleos have not functioned for three (3) months:—

(a) Inflate the undercarriage struts to 30 to 150 lb./sq. in.;

(b) Reciprocate the undercarriage struts 5 to 10 times;

(c) Wipe the plunger tube, removing all oil. (There should be no further leakage);

(d) Inflate struts to normal working pressure.

Reciprocation of the undercarriage struts on aircraft may be achieved by rocking the aircraft from the wingtip. This need not be a vigorous operation, as just enough movement is necessary to cause the plunger tube to travel 1 to 2 inches.

Nose Wheel Shock-Absorber Strut

107 to 110. For a detailed description of the nose wheel shock absorber strut including the instructions for the dismantling, servicing and testing,reference is directed to A.P.1803C, Vol. 1, Sect. 6, Chap. 1.

Leakage. Nose Wheel Shock-Absorber Strut

111. The possible causes of air and fluid leakage from the strut are given in A.P.1803C, Vol. 1, Sect. 6, Chap. 1, with one addition which is covered in para. 106 (i).

Inflation. Nose Wheel Shock-Absorber Strut

112. A diagram showing the nose wheel inflation curve is given in Fig. 33.

Nose Wheel Self-Centring Unit

113. For dismantling the self-centring unit, reference should be made to Fig. 34.

HYDRAULIC SYSTEM

General

114. (i) The hydraulic system is described in Sect. 9 and illustrated in Figs. 36-41.

(ii) Scrupulous cleanliness is essential in all servicing operations on the system, as a small piece of swarf or other foreign matter might render the system inoperative.

(iii) Clean fluid only to Specification DTD. 585 (Ident No. K2/138) should be used for filling or topping up, and the filter in the reservoir should always be in position during the operation.

(iv) Fluid containers must be perfectly clean and should be swilled out with a small quantity of clean fluid before being used for filling the reservoir or for collecting fluid when draining the system.

(v) All air should be vented from the system and the reservoir should be kept topped up to ensure efficient running; when making reconnections, pipe connections must be wire locked with 20 g. gal. iron wire.

Components

115. Lockheed components are used in this aircraft, the part numbers and details for dismantling and servicing will be found in the Air Publication as follows:—

A.P.1803B, Vol. 1.	
Accumulator Pressure Release Valve	AIR.40018
Cut-out Valve	AIR.40020
Dive Brake Jack	AIR.40022
Dive Brake Selector, Flap Selector, Undercarriage Selector	AIR.40272
Flap Jack	AIR.40008
Hydraulic Accumulator	AIR.40016
Non-Return Valve for Ground Operation of Dive Brakes	AIR.40504
Nosewheel Jack	AIR.40542
Non-Return Valve between Valve and Undercarriage Selectors	AIR.34126
Pump, Hydraulic, Mk. 6 —N37J/263	AIR.8000
Undercarriage Jack,	AIR.41192
A.P.1803P, Vol. 1.	
Hand Pump	UMC.501
Non-Return Valve	UMC.703
Non-Return Valve at Dive Brakes Selector	UMC.706

TESTS

WARNING: Before disconnecting the

pipes or removing any units, it is important that the pressure in the system should be released by operating the release valve situated underneath the cockpit floor. (See Fig. 37.)

Pressure

120. The following pressures are correct and should be aimed at when testing:—

	lb./sq. in.
Hydraulic Accumulator Air Pressure	1,250
Accumulator Oil Pressure....	2,500-2,600
Thermal Relief Valve Pressure	3,000

121. Before proceeding with operational tests, the following procedure should be adopted:—

(i) Jack up the aircraft (see Fig. 9).

(ii) Inflate the hydraulic accumulator to 1,250 lb./sq. in. air pressure, and inspect for leaks.

(iii) Fill the hydraulic reservoir until fluid runs through the vent pipe.

(iv) Set control levers in cockpit as follows:—
Undercarriage and flaps .... UP
Dive brakes .... OFF

(v) Work hand pump until all jacks are fully operated.

(vi) Set control levers in cockpit as follows:—
Undercarriage and flaps .... DOWN
Dive brakes .... ON

(vii) Work hand pump until all jacks are fully operated.

NOTE: During operation of dive brakes, the non-return valve in the hand pump pressure line must be held open.

(viii) Top up hydraulic reservoir to the level indicated on window.

Functioning Tests

122. After carrying out the preparations described in para. 121, proceed with the main test, as follows:—

(i) Connect test rig pump to ground test coupling points on the left-hand side of the engine bulkhead (see Sect. 5), and run the pump for 2 minutes, holding the accumulator release valve open.

(ii) With pressure gauge in position on hydraulic accumulator, run pump to check and, if necessary, adjust cut-out valve to operate at 2,500 lb./sq. ins. + 100 — 000 lbs./sq. ins.

(iii) Wire-lock the adjuster bolt after setting the cut-out valve. The valve should not cut in for at least one minute after cutting out.

(iv) Using test rig running at between 1,400 and 1,500 R.P.M., operate the flaps 3 times, checking the indicator in the cockpit. The operational times for flaps are: DOWN, 15-20 seconds; UP, 20-23 seconds.

(v) Select flaps DOWN and move lever to NEUTRAL when indicator records 30 deg. movement.

(vi) Leave pump running for 3 minutes, during which time the flaps should not move.

(vii) With test rig running, operate the dive brakes 3 times, checking operational times. The times for ON and OFF should be 0.5 to 1 second.

(viii) With the test rig running, operate the undercarriage 5 times, checking indicator lights in cockpit and operational times. The times should be UP OR DOWN, 2 to 3 seconds.

(ix) With undercarriage and flaps UP and dive brakes OFF, stop engine pump and release accumulator pressure.

(x) Disconnect pump pressure line at the test coupling on the fireproof bulkhead and restart pump, collecting oil flowing from pump in a clean container for re-use. When flow ceases, stop pump and reconnect pressure line.

(xi) Select undercarriage and flaps DOWN and, using hand pump until pump handle is immovable, set dive brakes lever ON and maintain pressure on hand pump for 2 minutes, during which time dive brakes should not move.

(xii) Refill hydraulic reservoir and run engine pump for 2 minutes on test rig, holding accumulator release valve open.

(xiii) With the accumulator pressure released, stop engine pump, and finally top up reservoir to level line shown on window.

(xiv) Run engine pump and operate undercarriage and flaps 5 times.

ENGINE CONTROLS

General

123. There are two main engine controls: the throttle which varies the fuel flow to the burners (and consequently the engine R.P.M.), and the high pressure shut-off cock for stopping the engine. A low pressure shut-off cock is also fitted to isolate the fuel tank during servicing. (See Figs. 94 and 95.)

A micro switch, mounted on starboard rear face of engine bulkhead, is functioned by an adjustable cam lever on the throttle cross tube and ensures that the engine cannot be started unless the throttle is fully closed. The throttle linkage actuates one other micro switch, mounted on the lower rear face of the bulkhead, which is an integral part of the undercarriage circuit. (For adjustment, see para. 125.)

Control Linkage

124. Teleflex controls are used from the control box mounted on the port cockpit wall to the engine bulkhead, and from there to the engine and fuel cock by an assembly of cross tubes and push rods mounted on the rear face of the bulkhead.

Servicing instructions for Teleflex controls are given in A.P.1464 D., Vol. I, Part 2, Section 2, Chapter 3. For servicing controls on engine, see the Nene Handbook.

Control Rigging

125. (a) The throttle needle valve on the engine is adjusted as detailed in the Nene Handbook, and must be fully closed when the throttle control lever in the cockpit is $\frac{1}{8}$" from its closed position. The cam lever actuating the starter circuit micro switch is adjusted to close this switch when the throttle lever is closed, and the U/c warning switch is adjusted to close when the throttle is quarter-closed. Micro switch adjustment is achieved by loosening off the 2 B.A. bolts which clamp the cam arms to the cross tubes.

(b) The high pressure fuel cock control setting is shown on Fig. 95.

(c) When adjusting the control settings, check for freedom of movement and excessive backlash.

Fuel Booster Pump and Neg. "G" Valve

126. The two components are integral with the fuel collector box in the base of the main fuel tank. The box serves as the negative "G" reservoir containing fuel for approx. 5 seconds (max.) inverted flight. For detailed description and instructions, for maintenance and testing refer to A.P.4343D, Vol. 1, Sect. 7, Chap. 16.

Attachment of B.P. and Valve

127. Viewed from underneath, the outer (oval) ring of aerotight nuts retains the reservoir complete with pump and valve, which may be removed as a whole.

A drain bolt and plug are fitted in this ring of nuts to facilitate fuel drainage.

The next circle (of 2 B.A. bolts) retains the pump, type B.P.3 Mk. 3, complete with Neg. "G" valve B.P.23 Mk. 1. The pump only may be removed by undoing the next inner circle (of 12 studs), and this also gives access to the gauze filter screen. Two extraction holes, drilled and tapped $\frac{1}{4}$ B.S.F., are provided to assist in breaking the joint between the pump and the mounting ring.

NOTE: Before removing tank components ensure that tank is empty, disconnect pump motor electrical supply leads by unscrewing breeze type socket.

Upon reassembly, use approved jointing compound on joint washers and relock all pipe connections. Use the jointing compound sparingly as any excess squeezed out around the edge of the joint may cause the inverted flight valves to stick open.

Valves

128. (a) Neg. "G" Valve.
Is fully automatic in action, the seven clack valves fitted around the pump ensure an uninterrupted supply of fuel to the engine under all conditions of flight, including violent negative "G" effects and short periods of inverted flight.

(b) Non-Return Valve in Pump.
In the lower pump body casting, and situated on top of the fuel delivery outlet, is a non-return valve which closes when the pump is functioning, and forms part of the delivery line. When the pump is stationary, the valve drops open, allowing a free flow of fuel from the tank into the delivery line.

A.S.I. SYSTEM

General

129. The pressure and static pipes leaving the pitot head (see Fig. 54) in the port fin are clipped in the fin shroud, and continue through the boom to two drain traps forward of the wing to boom joint. Clamps located on No. 2 wing rib and main spar carry the pipes to drain traps which protrude through the cockpit floor below the pilot's seat. The drain trap comprises a vertical tube containing a screwed plug in its lower end which may be removed for drainage purposes. Access to the drain traps is obtained by removing the hand hole cover adjacent to the wing to boom joint, and through the holes in the bottom of No. 2 bulkhead; in the latter case, the drain plugs will be found above the air reservoir.

NOTE: (a) On early aircraft static pressure pipe lines are identified at each joint with letter "S" stamped on union nuts and ¼" yellow band each end of pipes. Pitot pressure lines are plain. On later aircraft the static pipes are identified by two narrow yellow bands and the pitot pressure pipes by one narrow and one broad yellow band. In future any pipes fitted or replaced in aircraft must be identified by the later markings.

(b) For testing after installation, see Para. 138.

Removal of Pitot Head

130. Remove pitot head bracket by disconnecting the clamp bolt, and removing the six attaching screws to the fin. Disconnect electrical lead at the terminal block attached to the access door in the top fin rib. Then disconnect the outer sleeves from the static and pressure pipes.

CABIN PRESSURISING

Canopy Seal

131. The cabin seal is maintained by pressure taken from the impeller casing of the engine. A pipe is led from the impeller casing through a pressure reducing valve and a non-return valve to a Vickers three-way cock, located on the right-hand side of the cockpit below the canopy jettison lever. The pressure is reduced to 5 lbs./sq. in. The cabin seal is inflated by turning the cock to ON, which permits air to flow to the seal. The seal is deflated by turning the cock to OFF, which opens the circuit to atmosphere.

Pressure Cabin

132. Pressure is supplied from the engine impeller casing and is passed to a non-return valve which is located on the rear of No. 2 bulkhead. The air is then passed to a cabin blower air control valve marked OFF - HOT - COLD, which is attached to the air cooler on the right-hand side of the cockpit. The degree of heat may be regulated by moving the control lever to intermediate positions provided by slots in the control.

Vacuum System

133. This system is no longer applicable to Mk. 30 and 31 aircraft (Post Vampire Mod. No. 175).

Pressure Cabin Control

134. The pressure in the cabin is automatically regulated by a Mk. 11 Pressure Cabin control valve, fitted on the forward face of bulkhead No. 1. The valve operates so that the variation between internal and external pressure is not appreciable until the pressurising height is attained. At this predetermined height, the valve progressively regulates the cabin pressure up to a maximum of 3 lb./sq. in. Incorporated in the valve is a switch which operates a warning lamp should the cabin pressure fall ½ lb. below the normal for any altitude.

Two further valves are incorporated in the unit: an outward relief valve set to relieve at 3.1 lb./sq. in. if the main regulating valve fails, and an inward relief valve which operates when the external pressure exceeds the internal pressure, as would occur in a power dive.

For further details, see A.P.1275A, Vol. I, Section 10.

GROUND TESTING OF PRESSURE CABIN

The pressures in the following tests are given for the Mk. 11 Cabin Pressure Control Valve only.

Requirements

135. (1) Cabin to be pressurised to 3.00 lb./sq. in.

(2) Cabin to maintain a pressure of 3.00 lb./sq. in.

(3) Check that "NOMALAIR" valve cracks at 3.10 to 3.20 lb./sq. in.

(4) Check time for pressure to drop from 3.00 to 1.50 lb./sq. in. Time should not be less than 20 seconds.

Equipment Required

136. The following test equipment is required:—

Petrol motor rig complete with airflow measuring device or electric motor rig.

Air pressure bottle with attachments to pressurise canopy seal. Pressure supply to be regulated to between 45 and 10 lb./sq. in.

Pressurising and Testing Cabin (without Engine Running)

137. To pressurise the cabin, proceed as follows:—

(i) Shut and lock the sliding canopy.

(ii) Remove the detachable nose panel and connect the test rig air supply line to the charging point on the door of the armour bulkhead.

(iii) Connect the mercury "U" tube flexible pipe to the connection adjacent to the canopy seal vent on the armour bulkhead. Connect the pressure bottle to the inlet side of the pressure reducing valve in the canopy seal line. To accomplish this, disconnect the canopy seal line from the branch pipe off the cabin pressure pipe and connect the air pressure line. Blank off the branch pipe.

(iv) Blank off the atmospheric vent on the "NORMALAIR" Cabin Pressure Control valve and turn the canopy seal three-way cock to the "ON" position.

(v) Commence to pressurise cabin to satisfy requirement No. 1.

(vi) Maintain the required pressure of 3 lb./sq. in. with an airflow into the cabin of not more than 14 cu. ft./min. to satisfy requirement No. 2. Check "NORMALAIR" valve for leaks. Detect leaks by placing hands over the two gauze covered exists and check that the cabin pressure gauge corresponds with the Mercury "U" tube on the test rig.

(vii) Raise the cabin pressure to 3.10 to 3.20 lb./sq. in. and check that "NORMALAIR" valve cracks at this pressure.

(viii) Drop the cabin pressure to 3 lb./sq. in. and when this pressure is steady, check the time it takes to drop to 1.5 lb./sq. in. The minimum time should be 20 seconds.

(ix) At completion of test, turn the canopy seal cock "OFF," disconnect the test rigs from the aircraft and remove the blank from the "NORMALAIR" valve atmospheric vent. Reconnect canopy seal line to the branch pipe on the cabin pressure pipe.

Test A.S.I. System

138. The usual checks of the A.S.I. lines and instruments should be made with the cabin pressurised and unpressurised (refer to Instrument Instruction No. 1.21/1).

Warning Light

139. At the completion of the pressure cabin ground tests, remove the tube from the cabin control valve, and test that the pressure warning light electrical circuit operates by removing the terminal cover on the control valve and bridging the terminals; the warning light should glow. In flight the warning light will glow when the cabin pressure drops ½ lb./sq. in. below the normal pressure for any altitude.

Pressurising and Testing Cabin (with Engine Running)

140. (i) First Test.

With engine turning over at 6,000-6,500 R.P.M. and the cockpit control "ON" it should be possible to pressurise the cabin from ZERO to 3.0 lb./sq. in., with a tolerance of $+\frac{1}{2}$ and $-\frac{1}{4}$ lb./sq. in., in a maximum time of 3 minutes, and to maintain this pressure indefinitely.

Procedure:—

(1) Blank off "NORMALAIR" valve vent pipe.

(2) Close and secure canopy.

(3) Turn canopy seal cock "ON."

(4) Position cockpit control at "OFF."

(5) Start engine and as soon as R.P.M. is steady at 6,000-6,500 R.P.M., place cockpit control at "ON" and check time to build up to 3.00 lb./sq. in.

(6) Check that pressure is maintained equally with the cockpit control in the "HOT" or "COLD" position.

(7) Turn control lever to "OFF" and allow cabin pressure to leak away, taking the time for the pressure to drop to 1.5 lb./sq. in. This time should exceed a minimum of 20 seconds.

(ii) Second Test.

With engine at full r.p.m. (12,300) pressure in cabin must not exceed 1.0 lb./sq. in. Proceed as follows:—

(1) Control valve NOT blanked off.

(2) Close and secure canopy.

(3) Put canopy seal cock ON.

(4) Position cockpit control at OFF.

(5) Start engine, and as soon as r.p.m. is steady at (approx.) 3,500 r.p.m. place blower control lever at COLD and then raise speed to maximum of 12,300 r.p.m., when pressure should not rise above 1.0 lb./sq. in.

(6) To release pressure, put cockpit control OFF and allow cabin pressure to leak away.

Pressurising and Testing Cabin on Repaired Aircraft (without Engine running)

141. The test described in para. 137 is only applicable to aircraft receiving a periodical inspection, but if the non-return valve (Fig. 42) has been replaced or structural repairs of the cabin have been effected, then the following tests should be carried out:—

(1) Close and secure the canopy.

(2) Connect the test rig air supply line to the cabin pressure line at a convenient point between the non-return valve and the engine impeller casing, such a point being obtained by removing the cabin air pressure pipe from the impeller casing and attaching it to the test rig air supply.

(3) Connect the mercury "U" tube and air pressure line to their respective points. (See para. 137 (iii).)

(4) Remove the existing "NORMALAIR" pressure control valve and instal a special proof test safety valve set at 4 lb./sq. in. in its place.

(5) Maintain a pressure of 5 lb./sq. in. in the canopy seal.

(6) Inflate the cabin to a pressure of 4 lb./sq. in. and maintain for 1 minute.

(7) Shut off the air supply, and take the time for the cabin differential pressure to fall from 3.0 to 1.5 lb./sq. in. If this time is less than 20 seconds inflate the fuselage to approx. 2 lb./sq. in. and examine all possible sources of leaks. Minor leaks should be stopped as detailed in A.P.1464B, Vol. 1, Part 2, Sect. 4, Chap. 6.

(8) After completion of test, turn the canopy seal cock "OFF," remove test rigs from the aircraft and replace the special proof tested "NORMALAIR" valve with the standard type. Reconnect the canopy and cabin pressure lines to their respective positions.

Testing the Drier Tube

142. To test the drier tube it is required to have means to supply air pressure at 2.75 lb./sq. in. and suction at 0.5 lb./sq. in. at the top of the drier tube and a 12 in. mercury tube (see Figs. 44, 45), then proceed as follows:—

(i) Remove the blanking cap from the stowage beside the drier tube.

(ii) Remove the hose from the connection "A" and screw it on the blanking cap stowage.

iii) With the blanking cap, seal the drier tube and remove it from the aircraft.

(iv) Connect up air pressure pipe to drier tube at connection A with the mercury U tube interposed, blank off the open end of the drier tube by

fixing a rubber tube and plug as shown, and apply pressure at 2.75 lb./sq. in. The complete assembly must be air-tight.

(v) Remove rubber tube and plug from lower end of drier tube and check that the outlet valve C opens at 0.6 lb./sq. in. pressure, but is airtight below 0.3 lb./sq. in. pressure.

(vi) Connect up vacuum pipe in place of pressure pipe at connection A with mercury U tube interposed, and test that inlet valve B opens at 0.6 lb./sq. in. suction, and is airtight below 0.3 lb./sq. in.

(vii) Disconnect vacuum pipe and mercury U tube and re-instal drier tube in aircraft.

(viii) Pinch the hose connection to the windows, remove plug, and keeping the hose pinched, reconnect the drier tube at point A.

NOTE: If indicator has turned pink, the tube should be refilled before testing, with activated "Tell-Tale" silica gel R.A.A.F. (Ident No. K4/10590 or K4/10592).