

Chapter 7 PNEUMATIC SYSTEMS

LIST OF CONTENTS

DESCRIPTION	Para.		Para.		Para.
<i>Introduction</i>	1	<i>Controls</i>	29	<i>Test points</i>	53
<i>Entrance door system</i>		<i>System components</i>	30	<i>Charging</i>	
<i>General</i>	3	<i>Ancillary systems</i>		<i>Entrance door system</i>	54
<i>Entrance door - emergency exit</i>		<i>General</i>	31	<i>H2S scanner system</i>	55
<i>Controls</i>	7	<i>Bomb bay door seals system</i>		<i>T4 bombsight</i>	56
<i>Operation - door opening</i>	11	<i>General</i>	33	<i>Leakage tests</i>	
<i>Operation - door closing</i>	14	<i>System installation</i>	35	<i>Entrance door system</i>	57
<i>Canopy jettison</i>		<i>Operation</i>	38	<i>H2S scanner system</i>	58
<i>Controls</i>	16	<i>Reservoir and power pack</i>		<i>T4 bombsight system</i>	59
<i>Operation</i>	17	<i>pressurisation</i>		<i>Ancillary systems</i>	60
<i>Pressure seals</i>		<i>General</i>	41	<i>Bomb door seal system</i>	61
<i>Operation</i>	19	<i>System installation</i>	42	<i>Complete system</i>	62
<i>De-icing system</i>		<i>System components</i>	45	<i>Entrance door</i>	
<i>General</i>	23	<i>T4 bombsight system</i>		<i>Restrictor adjustment</i>	66
<i>Ground isolation cock</i>	24	<i>General</i>	46	<i>T4 bombsight system</i>	67
<i>H2S scanner system</i>		<i>System components</i>	51		
<i>General</i>	25				

SERVICING

<i>Adjustment and testing</i>	52
--------------------------------------	----

REMOVAL AND ASSEMBLY

<i>Entrance door jacks</i>	69
-----------------------------------	----

LIST OF TABLES

<table border="0" style="width: 100%;"> <tr> <td style="text-align: right;"><i>Components in the pneumatic system</i></td> <td style="text-align: center;">Table</td> </tr> <tr> <td style="text-align: right;"><i>for entrance door</i></td> <td style="text-align: center;">1</td> </tr> <tr> <td style="text-align: right;"><i>Components in the H2S scanner system</i></td> <td style="text-align: center;">2</td> </tr> </table>	<i>Components in the pneumatic system</i>	Table	<i>for entrance door</i>	1	<i>Components in the H2S scanner system</i>	2	<table border="0" style="width: 100%;"> <tr> <td style="text-align: right;"><i>Components in the ancillary systems</i> ...</td> <td style="text-align: center;">Table</td> </tr> <tr> <td style="text-align: right;"><i>Components in the T4 bombsight system</i></td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: right;"><i>system</i></td> <td style="text-align: center;">4</td> </tr> </table>	<i>Components in the ancillary systems</i> ...	Table	<i>Components in the T4 bombsight system</i>	3	<i>system</i>	4
<i>Components in the pneumatic system</i>	Table												
<i>for entrance door</i>	1												
<i>Components in the H2S scanner system</i>	2												
<i>Components in the ancillary systems</i> ...	Table												
<i>Components in the T4 bombsight system</i>	3												
<i>system</i>	4												

LIST OF ILLUSTRATIONS

<table border="0" style="width: 100%;"> <tr> <td style="text-align: right;"><i>Pneumatic system diagram - entrance door</i></td> <td style="text-align: center;">Fig.</td> </tr> <tr> <td style="text-align: right;"><i>Pneumatic system - entrance door</i></td> <td style="text-align: center;">2</td> </tr> </table>	<i>Pneumatic system diagram - entrance door</i>	Fig.	<i>Pneumatic system - entrance door</i>	2	<table border="0" style="width: 100%;"> <tr> <td style="text-align: right;"><i>Door operating mechanism</i></td> <td style="text-align: center;">Fig.</td> </tr> <tr> <td style="text-align: right;"><i>Pneumatic system - H2S scanner</i></td> <td style="text-align: center;">3</td> </tr> <tr> <td style="text-align: right;"><i>Pneumatic system diagram - ancillary supplies</i></td> <td style="text-align: center;">4</td> </tr> <tr> <td style="text-align: right;"><i>ancillary supplies</i></td> <td style="text-align: center;">5</td> </tr> </table>	<i>Door operating mechanism</i>	Fig.	<i>Pneumatic system - H2S scanner</i>	3	<i>Pneumatic system diagram - ancillary supplies</i>	4	<i>ancillary supplies</i>	5	<table border="0" style="width: 100%;"> <tr> <td style="text-align: right;"><i>Pneumatic system installation - ancillary supplies</i></td> <td style="text-align: center;">Fig.</td> </tr> <tr> <td style="text-align: right;"><i>Pneumatic system - T4 bombsight</i></td> <td style="text-align: center;">6</td> </tr> <tr> <td style="text-align: right;"><i>system</i></td> <td style="text-align: center;">7</td> </tr> </table>	<i>Pneumatic system installation - ancillary supplies</i>	Fig.	<i>Pneumatic system - T4 bombsight</i>	6	<i>system</i>	7
<i>Pneumatic system diagram - entrance door</i>	Fig.																			
<i>Pneumatic system - entrance door</i>	2																			
<i>Door operating mechanism</i>	Fig.																			
<i>Pneumatic system - H2S scanner</i>	3																			
<i>Pneumatic system diagram - ancillary supplies</i>	4																			
<i>ancillary supplies</i>	5																			
<i>Pneumatic system installation - ancillary supplies</i>	Fig.																			
<i>Pneumatic system - T4 bombsight</i>	6																			
<i>system</i>	7																			

DESCRIPTION

Introduction

1. This chapter contains a description of the pneumatic systems, gives details of servicing operations and recommends the method of removal and assembly of certain components. Reference must be made to Sect.3, Chap.11 of this Book for infor-

mation on the door and canopy mechanisms.

2. Four separate air systems are provided in the aircraft. One, a storage system, supplies air to operate the main entrance door and pressurise the seals surrounding the door and canopy apertures.

The second, also a storage system, supplies air to the H2S scanner system. The third system utilizes air from the engines to pressurise the bomb bay door seals, the hydraulic system reservoir and the oil cylinder of the hydraulic system power pack unit (Sect.3, Chap.6). The

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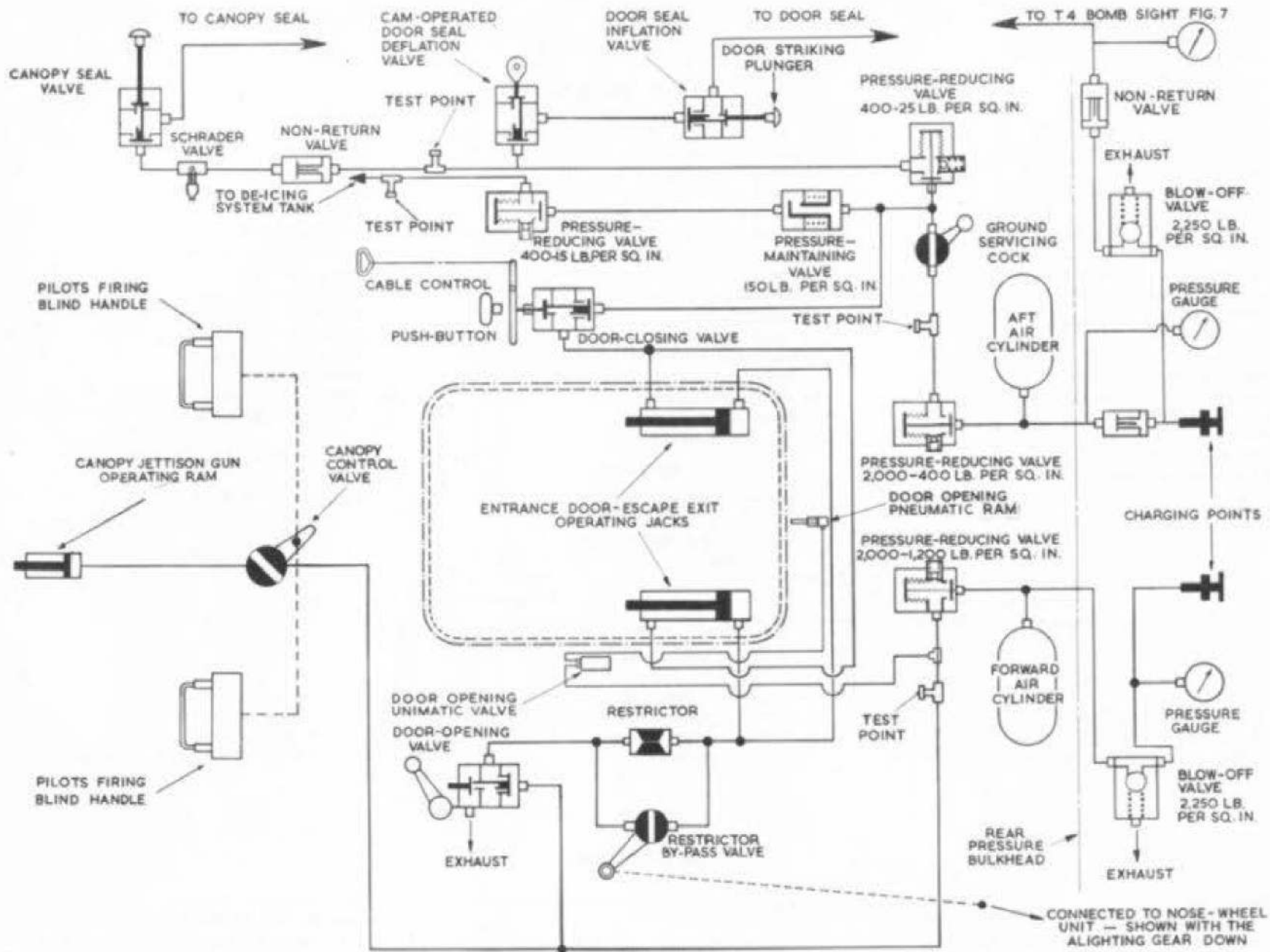


Fig. 1. Pneumatic system diagram - entrance door

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fourth system, which is a storage system, supplies air to the T4 bombsight computer.

ENTRANCE DOOR SYSTEM

General

3. The pneumatic system supplies compressed air to operate the main entrance door, used in flight as an emergency exit, jettison the canopy, pressurise the seals of the canopy and entrance door apertures and pressurise the windscreen de-icing system tank. A list of the main components used in the system is given in Table 1.

4. Two storage cylinders, each of

374 cu. in. capacity, mounted below the crew's floor on the port side, are charged from an external supply to 2,000 p.s.i. Each cylinder supplies a separate system; one, the emergency system to open the door and jettison the canopy, the other to close the door, pressurise the seals and operate the de-icing system.

5. Charging valves, A58 Mk.2 (or DC22), and a pressure gauge to each cylinder are mounted on the rear pressure bulkhead in the nose-wheel bay. Blow-off valves, set at 2,250 p.s.i. are incorporated in each line between the charging valve and the cylinder.

TABLE 1
Components in the pneumatic system for entrance door

Component	Part No.	Ref.No.	Associated Publication Reference			
			A.P.	Sect.	Chop.	Appendix
Cylinder Mk.5F	-	6D/9429887	4303Z	-	-	-
Gauge Mk. 14KK, 0-3,000 p.s.i.	-	6A/2691	1275A	-	--	-
Jack - canopy	ACM13324	27VA/5308	4303B	7	32	-
Jack - door, starboard	AC11116	27VA/4496	4303B	7	28	-
Jack - door, port	AC11118	27VA/4495	4303B	7	28	-
Valve, charging A58, Mk.2 (or DC.22)	-	-	4303Z	-	-	-
Valve, sequence	ACO1297	27VA/3392	4303B	6	11	-
Valve, sequence	ACO3297	27VA/4824	4303B	6	11	1
Valve, sequence	ACO4578	27VA/4493	4303B	6	11	3
Valve, control, canopy	AC10638	27VA/2894	4303B	6	12	-
Valve, pressure reducing 2,000/1,200 p.s.i.	ACM17432	27VA/4817	4303B	4	20	2
Valve, pressure reducing 2,000/400 p.s.i.	ACM16390	27VA/4816	4303B	4	20	3
Valve, pressure reducing 400/25 p.s.i.	ACM17452	27VA/4818	4303B	4	7	12
Valve, pressure reducing 400/15 p.s.i.	ACM20218	27VA/6184	4303B	4	7	16
Valve, by-pass	AC62794		4303B			
Univalve, shut-off	AC1071	27VA/4505	4303B	6	4	-
Valve, pressure-maintaining 150 p.s.i.	ACO1564	27VA/2949	4303B	4	2	1
Valve, blow-off 2,250 p.s.i.	ACO16886	27VA/4491	4303B	4	3	1
Restrictor	ACO1223	27VA/2876	4303B	4	12	-

6. A schematic diagram of the system is given in fig.1. Part numbers of components are Dunlop if not otherwise stated.

ENTRANCE DOOR - EMERGENCY EXIT

Controls

7. The system is used to open the main entrance door when it is being used, in flight, as an emergency exit and also to close the door when the aircraft is on the ground.

8. A lever in a gated quadrant mounted at the forward end of the door port frame member is provided to open the door manually. For emergency operation a unimatic valve, operated by a switch marked EMERGENCY DOOR OPEN situated on the centre navigator's panel, provides a supply of air to the torque shaft operating pneumatic jack.

9. Two controls are available to close the door. One, consisting of a handle and cable attachment, normally covered by a hinged access panel in the crew's floor immediately below the centre seat, is provided for use by the personnel inside the aircraft and is pulled to operate. The other control, a press-button adjacent to the external door handle, is usable by personnel outside the aircraft.

10. Warning indicators on the rear of the operating-lever quadrant housing consist of a red lamp marked DOOR NOT SAFE and a green lamp marked DOOR SAFE; a warning electro-magnetic indicator, energised white when the door is not fully closed, is also provided on the pilots' panel.

Operation - door opening

11. When the gated lever is selected, the following sequence of operations occurs:-

(1) The first 25 deg. of lever movement

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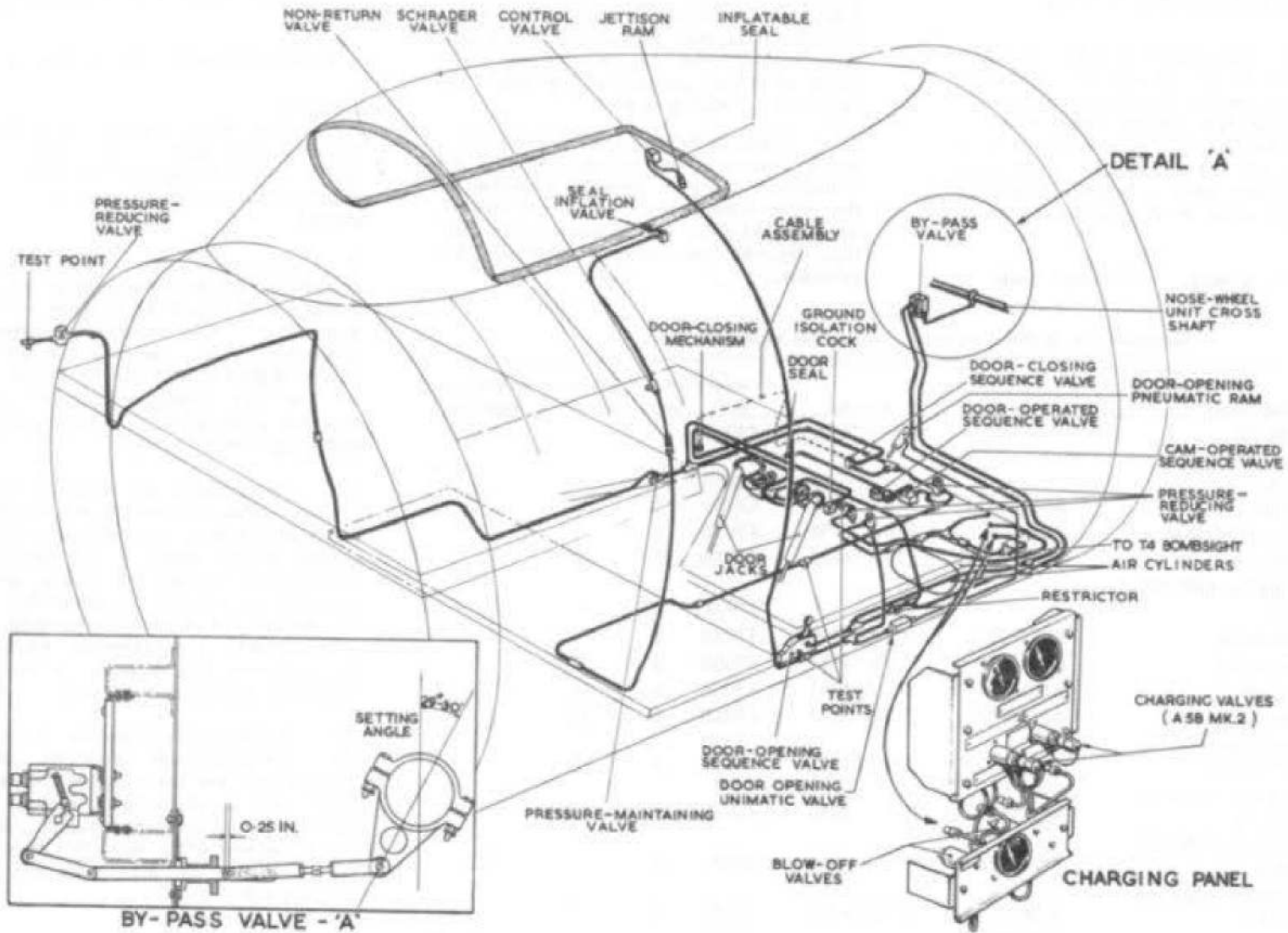


Fig.2. Pneumatic system-entrance door
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moves a cam on the door operating layshaft away from the plunger on a sequence valve and the door seal exhausts to atmosphere.

- (2) The next $42\frac{1}{2}$ deg. of movement withdraws the door pins and the door opens under gravity, when the aircraft is on the ground.
- (3) In flight, the final $27\frac{1}{2}$ deg. movement of the lever, to the EMERGENCY position, depresses the plunger of the door-opening sequence valve and admits air from the forward storage cylinder through a pressure reducing valve set to 1,200 p.s.i. and through a by-pass valve or a restrictor to the down side of the jacks. Air from the upside of the jacks is exhausted through a sequence valve to atmosphere. The route of the pneumatic pressure is determined by the position of the nose-wheel unit.
- (4) Details of door opening utilising the electrically energised unimatic valve are given in Sect.3, Chap.11.

12. In flight, sufficient pressure is required to open the door against the force of the airstream acting upon it. The by-pass valve is coupled mechanically to the nose-wheel strut, the linkage being so arranged that when the strut is retracted, the valve is open, the restrictor is by-passed and the full operating pressure is applied to the jacks.

13. With the aircraft on the ground and the nose-wheel unit lowered, the by-pass valve is closed by the linkage and air passes through the restrictor. This considerably reduces the speed of the door opening and in so doing prevents the door assembly and hinges from being damaged.

Operation - door closing

14. When the door-closing handle, inside the aircraft, is pulled, a lever operates the door-closing sequence valve plunger and air passes from the rear storage cylinder through a pressure-reducing valve set at

400 p.s.i. and a ground isolation cock (para.24) to the up side of the door jacks. Displaced air from the down sides of the jacks is exhausted to atmosphere through the door-opening sequence valve. When the door is closed and locked, it trips the plunger of the seal inflation sequence valve and air is admitted to the door seals. Note that this mechanism is normally protected by a screwed cover guard which is readily detachable for servicing purposes.

15. Pressing of the external button operates the plunger of the door-closing sequence valve and admits air to the door jacks in a manner similar to that described in the previous paragraph.

CANOPY JETTISON

Controls

16. The canopy can be jettisoned by any one of the following three methods:-

- (1) Pulling of the firing-blind handle on either the first or second pilot's ejection seat.
- (2) Operation of a lever, labelled CANOPY RELEASE-PULL and identified with black and yellow diagonal stripes, on each side of the cockpit adjacent to each pilot's seat.
- (3) Operation of an external red-painted release handle on the port side of the crew's cabin. Full descriptive and servicing details of the mechanical action of the controls are given in Sect.3, Chap.11 of this Book.

Operation

17. Operation of either ejection seat firing-blind handle opens the canopy control valve to admit air from the 'door-open' cylinder through a pressure-reducing valve set at 1,200 p.s.i. to a pneumatic jack. Extension of the jack piston against a roller in the end of one of the levers of a three-levered torque shaft rotates the torque shaft, and, since the other levers are connected to a push-pull rod and lever assembly that releases the canopy attach-

ments and fires the canopy jettison gun, rotation of the torque shaft will release the attachments and blow off the canopy.

18. When the canopy release handles or the external handle are selected, the push-pull rod and lever assembly is operated independently of the pneumatic jack to release the canopy attachments and fire the canopy gun.

PRESSURE SEALS

Operation

19. Pressure seals, one round the canopy aperture and the other round the door aperture, prevent loss of internal pressure when the air conditioning system is in use.

20. The canopy seal is inflated to 25 p.s.i. from the 'door-close' cylinder through a sequence valve which is normally held in the open position by a spring-loaded plunger on the rear of the canopy. The spring loading on the plunger maintains a constant pressure in the seals during flight by offsetting any upward movement of the canopy. When the canopy is jettisoned, the plunger is no longer in contact with the sequence valve and the seal is deflated.

21. The entrance door seal is inflated to 25 p.s.i. through a sequence valve held in the open position when the door is closed. Operation of the door-opening lever will deflate the seal as described in para.11, sub-para.(1).

22. A Schrader-type air valve in the supply line to the canopy seal, located on the port side of the cockpit, provides the means to inflate the seal, by use of a hand pump, for weather proofing purposes should the air cylinder be empty or removed.

DE-ICING SYSTEM

General

23. The de-icing system fluid tank is pressurised from the 'door close' cylinder. When de-icing is selected, air passes through a ground isolation cock, a pressure-maintaining valve set to 150 p.s.i. and a pressure-reducing valve set to 15 p.s.i. to the tank.

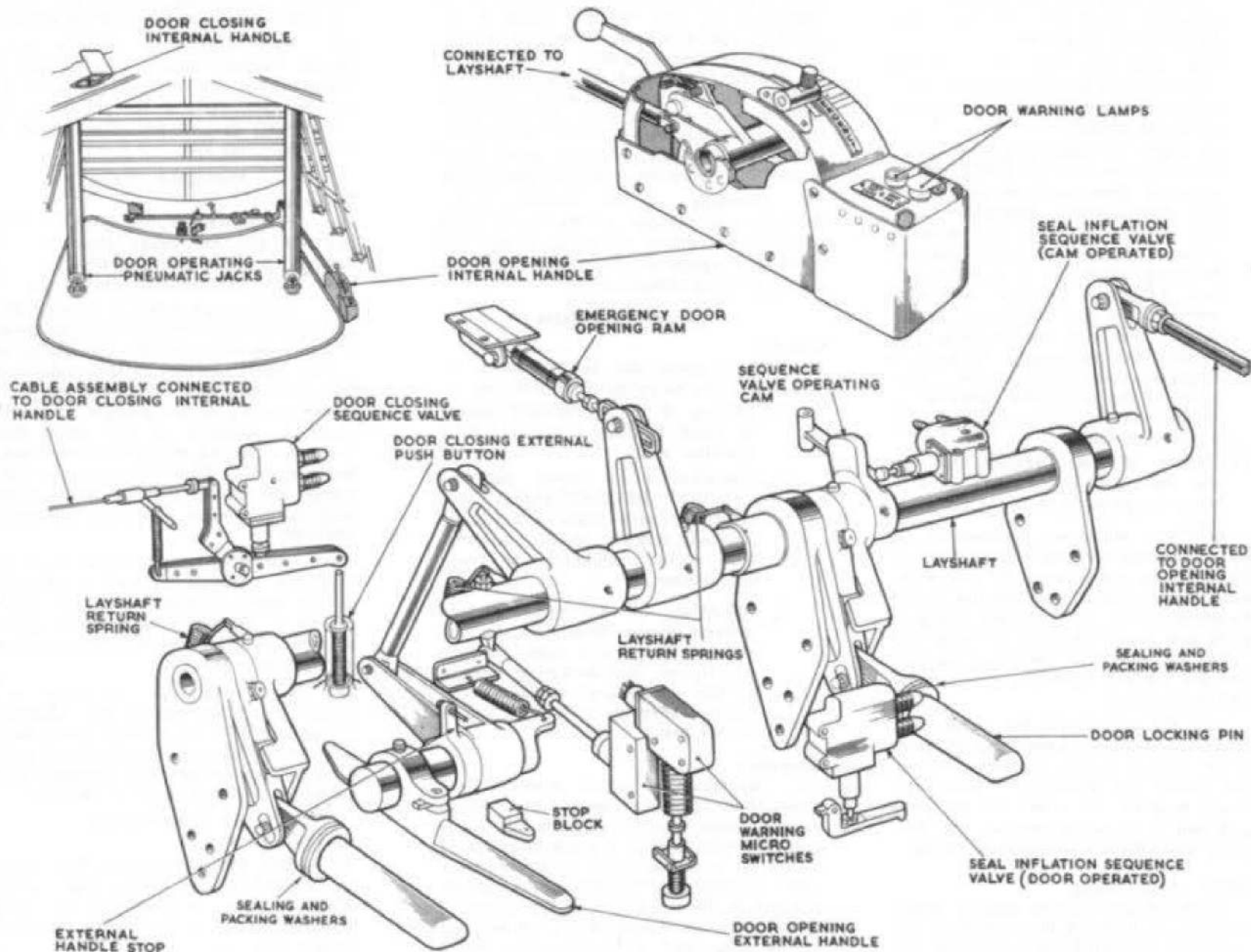


Fig. 3 Door operating mechanism
 (4 Pin sealing washers added)

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The maintaining valve reserves air pressure at 150 p.s.i. for the door and canopy seals, in case of leakage or excessive consumption in the de-icing system lines or tank.

Ground isolation cock

24. A control cock is fitted to the underside of the crew's floor and is normally locked in the ON position by a red cover. When the cover is removed, the cock is turned off to isolate the door closing valve, the pressure seals and the de-icing system. This operation is necessary when fitting the canopy or replenishing the de-icing fluid reservoir.

H2S SCANNER SYSTEM

General

25. Air is supplied to the H2S scanner from a storage system in the nose of the aircraft. A single storage cylinder, of 750 litre capacity, is mounted in the starboard side of the nose and is charged through a filter, ACM.18302, from external sources to 1,800 p.s.i. A blow-off valve, set to 2,250 p.s.i. is embodied in the line between the charging valve and the cylinder. The charging valve and a pressure gauge are revealed when the access panel, to the emergency equipment on the port side of the nose, is removed.

26. From the cylinder, air is piped through a pressure-reducing valve, which lowers the pressure to 30 p.s.i., and then through an electromatic tap to a pressure regulator, Part No.X4447.

27. There are two outlets from the regulator, one supplies the regulated output at 16.2 p.s.i. absolute to the scanner, this line also being tapped to supply the crew's pressure gauge. The other outlet is a relief to the pressure cabin.

28. The function of the regulator in the system is to control the supply to the scanner at 16.2 p.s.i. absolute, irrespective of the ambient pressure. For

this purpose the regulator contains an over-pressure relief valve set to exhaust at 17.2 p.s.i. and a reverse pressure-relief valve which prevents an excessive pressure differential across the pressurised units should the air supply fail.

Controls

29. An ON/OFF switch to open or close the system supply line, and a pressure gauge showing the absolute pressure supplied to the scanner, are mounted on the navigator/plotter's panel.

System components

30. A list of components used in the system is given in Table 2, together with their Air Publication references. Full descriptive and servicing details are given in these Air Publications to which reference must be made if more detailed information is required.

ANCILLARY SYSTEMS

General

31. Air is delivered from the No.1, 2 and 3 engines, at pressures up to 200 p.s.i., through single pipes, each containing a non-return valve, to a common supply line. The function of the non-

return valve is to prevent air pressure being lost, by passing through an immobilised engine, instead of to the systems, from the remaining engines.

32. The common supply line is fitted with a four-way union to the bomb bay door seals, the hydraulic reservoir and the hydraulic system emergency power pack as described under their respective headings in the following paragraphs.

BOMB DOOR SEALS SYSTEM

General

33. Inflatable seals are fitted at the forward and rear ends of the bomb bay to assist in preventing heat losses since they cater for variations in the gaps between the doors and the surrounding structure, caused by deflection of the structure in flight. Note also that non-inflatable seals are fitted at the remaining joints and at all hinge points.

34. Maintenance of equable conditions in the bomb bay is important in that certain types of stores and equipment are adversely affected by a low temperature. It is therefore important that the system is serviced to a state of high

TABLE 2
Components in the H2S scanner system

Component	Part No.	Ref.No.	Associated Publication reference			
			A.P.	Sect.	Chap.	Appendix
Cylinder, Mk.5D	-	6D/9429885	4303Z	-	-	-
Gauge, Mk.14H	-	6A/2688	1275A	15	6	-
Valve, pressure-reducing	ACM.17500	27VA/5216	4303B	4	7	13
Valve, blow-off	ACM.15318	27VA/5214	4303B	4	3	3
Filter	ACM.18302	27VA/5212	4303B	2	7	-
Electromatic tap	AC.11312	27VA/5215	4303B	5	7	-
Pressure regulator	X.4447	6W/20	1275A	20	-	-
Charging valve	A.58, Mk.2		4303Z	4	6	2
Gauge, miniature, absolute pressure	KB/554/03	6A/3952	1275A	15	-	-

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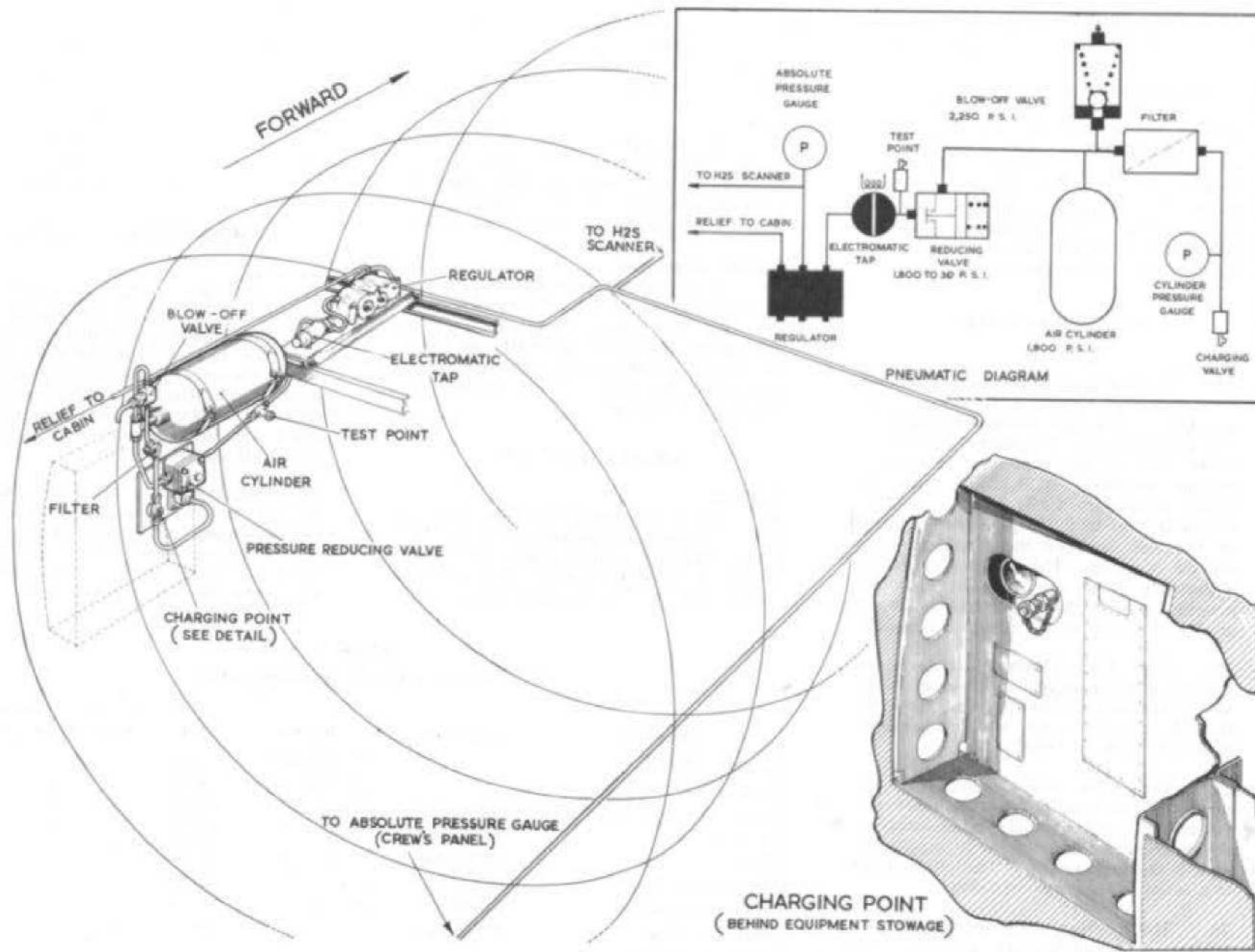


Fig. 4. Pneumatic system H2S scanner.

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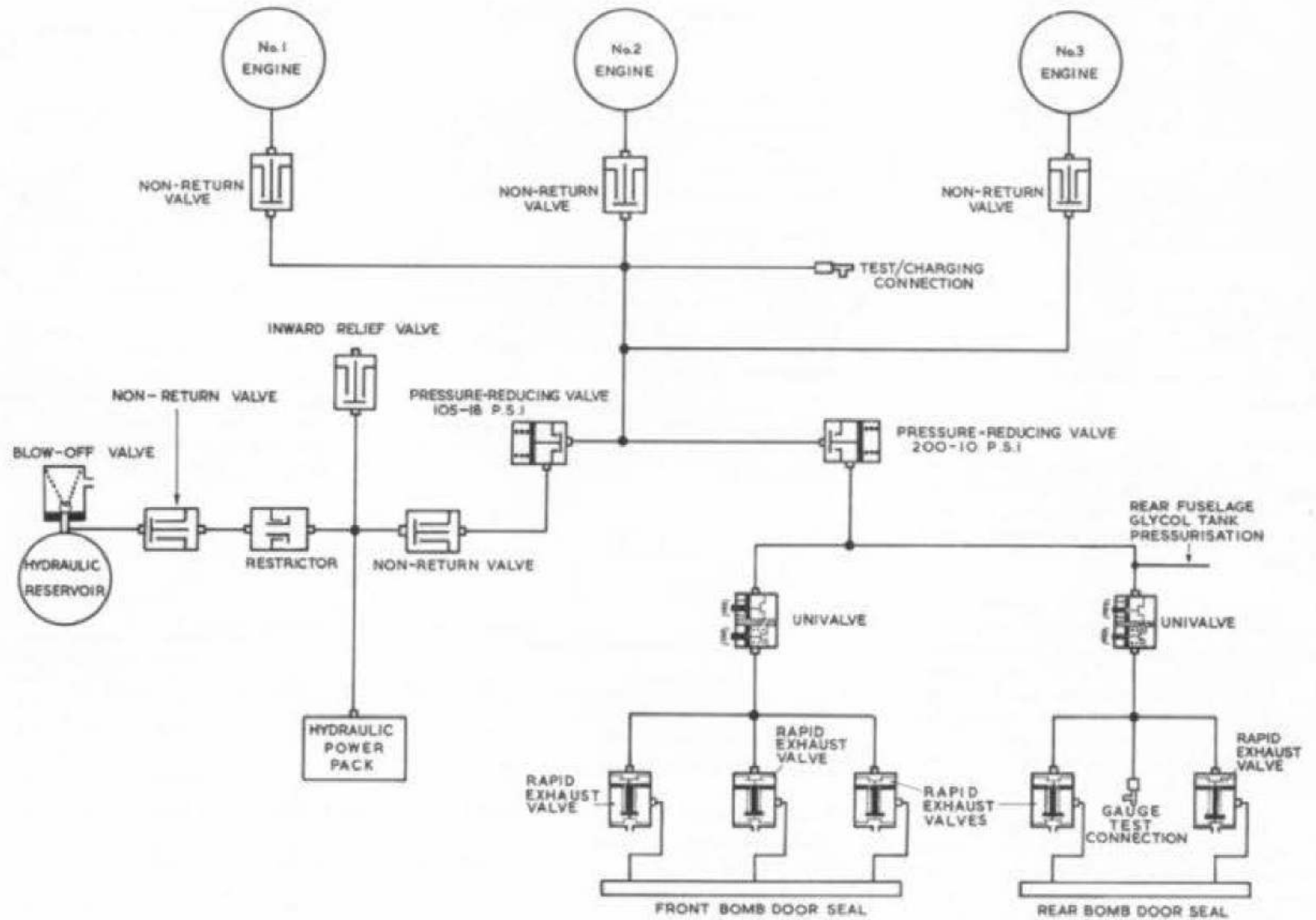


Fig. 5. Pneumatic system diagram - ancillary supplies

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efficiency otherwise the purpose of an aircraft's mission would be wasted.

System installation

35. From the four-way union in the main supply line (para.32) air for the inflatable seals passes through a 200 to 10 p.s.i. reducing valve located to the port and rear of the hydraulic reservoir and thence through a fore-and-aft pipe along the bomb bay to the front and rear spars.

36. At the front spar, the air passes through a unimatic control valve and three rapid exhaust valves to the seal at the aft side of the spar.

37. At the rear spar the air passes through a unimatic valve and two rapid exhaust valves to the seal on the forward side of the spar. Also interposed in this line before the rapid exhaust valves is a test point.

Operation

38. Initial control of the inflation and deflation of the seals is by the action of the doors on the 'bomb doors closed' micro switch situated at the forward end of the doors, on the port side.

39. Closing of the doors operates the micro switch to complete the electrical circuit to the unimatic valves, the solenoids of which are energised, and the valves open to allow air pressure to the rapid exhaust valves. Air pressure moves the pistons of the latter valves to seal off the exhaust and air is thus allowed to pass into and inflate the seals.

40. When the bomb doors are opened, the electrical circuit to the unimatic valves is broken, by release of the micro switch. These solenoids are de-energised causing the inlet side of the valve to close and the exhaust to open, thus cutting off the air supply to the rapid exhaust valves and the seals. Loss of air pressure to the inlet side of the rapid exhaust valves

causes their exhaust ports to open, by reverse action of the pistons, allowing air from the seals to exhaust to atmosphere through these valves.

RESERVOIR AND POWER PACK PRESSURISATION

General

41. The hydraulic reservoir and the cylinder fluid container of the power pack are pressurised with air to ensure that a positive head is maintained on their outlet connections to prevent cavitation.

System installation

42. From the four-way union in the main supply line (para.32), air passes through a reducing valve, which reduces the pressure to 18 p.s.i., and a non-return valve before branching to the hydraulic reservoir and emergency power pack.

43. The branch to the reservoir passes through a restrictor, a non-return valve and a 22 to 27 p.s.i. pressure-relief valve to the reservoir.

44. The second branch passes through a non-return valve to the power pack; the line is connected to atmosphere by an inward relief valve.

System components

45. Table 3 gives a list of components used in the system together with their Air Publication references.

T4 BOMBSIGHT SYSTEM

General

46. Air is supplied to the T4 bombsight system computer from a single storage cylinder of 374 cu.in. capacity mounted under the pilots' floor on the starboard side. The storage cylinder is charged from an external supply to 2,000 p.s.i.

47. The normal pneumatic system charging point (para.5) is utilised for charging the storage cylinder, the supply line being tapped into the normal system supply line. Incorporated in both lines are non-return valves to isolate one system from the other. An independent supply

TABLE 3

Components in the ancillary systems

Component	Part No.	Ref.No.	Associated Publication reference			
			A.P.	Sect.	Chap.	Appendix
Valve, non-return (Dowty)	D7313Y	27Q/607	1803D	9	79	-
Valve, non-return (Dowty)	D446Y	27Q/1378	1803D	9	32	1,2
Valve, charging and test	A58, Mk.2 (or DC.22)	-	4303Z	4	6	2
Valve, blow-off	ACM15318	27VA/5214	4303B	4	3	2
Valve, pressure-reducing 105-18 p.s.i.	ACM16354	27VA/4471	4303B	4	7	11
Valve, pressure-reducing 200/10 p.s.i.	ACM17456	27VA/4819	4303B	4	7	9
Valve, unimatic	AC11306	27VA/4822	4303B	5	4	1
Valve, rapid exhaust	ACM17898	27VA/4821	4303B	4	13	1
Restrictor	196/Q1866	-	-	-	-	-

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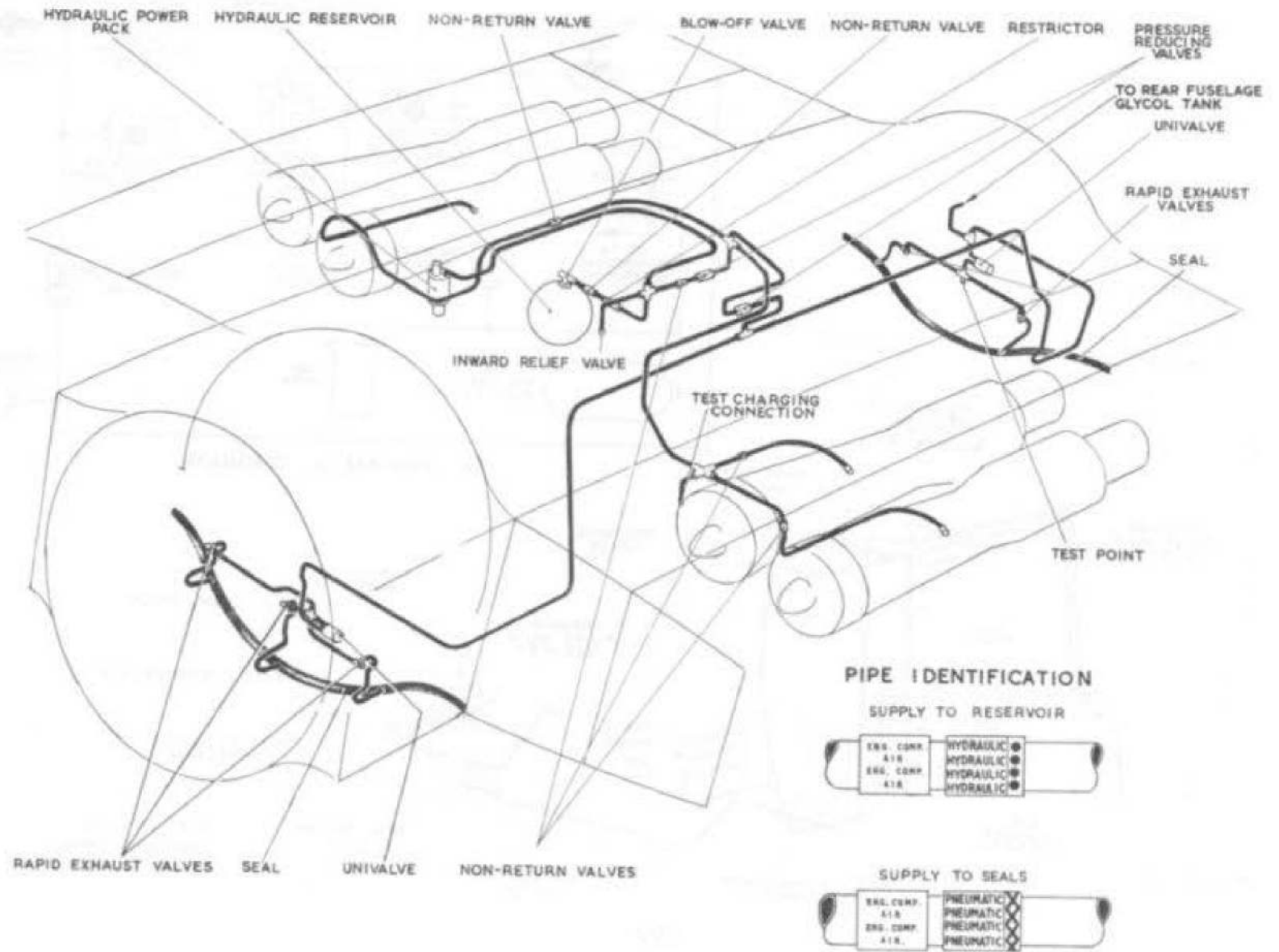
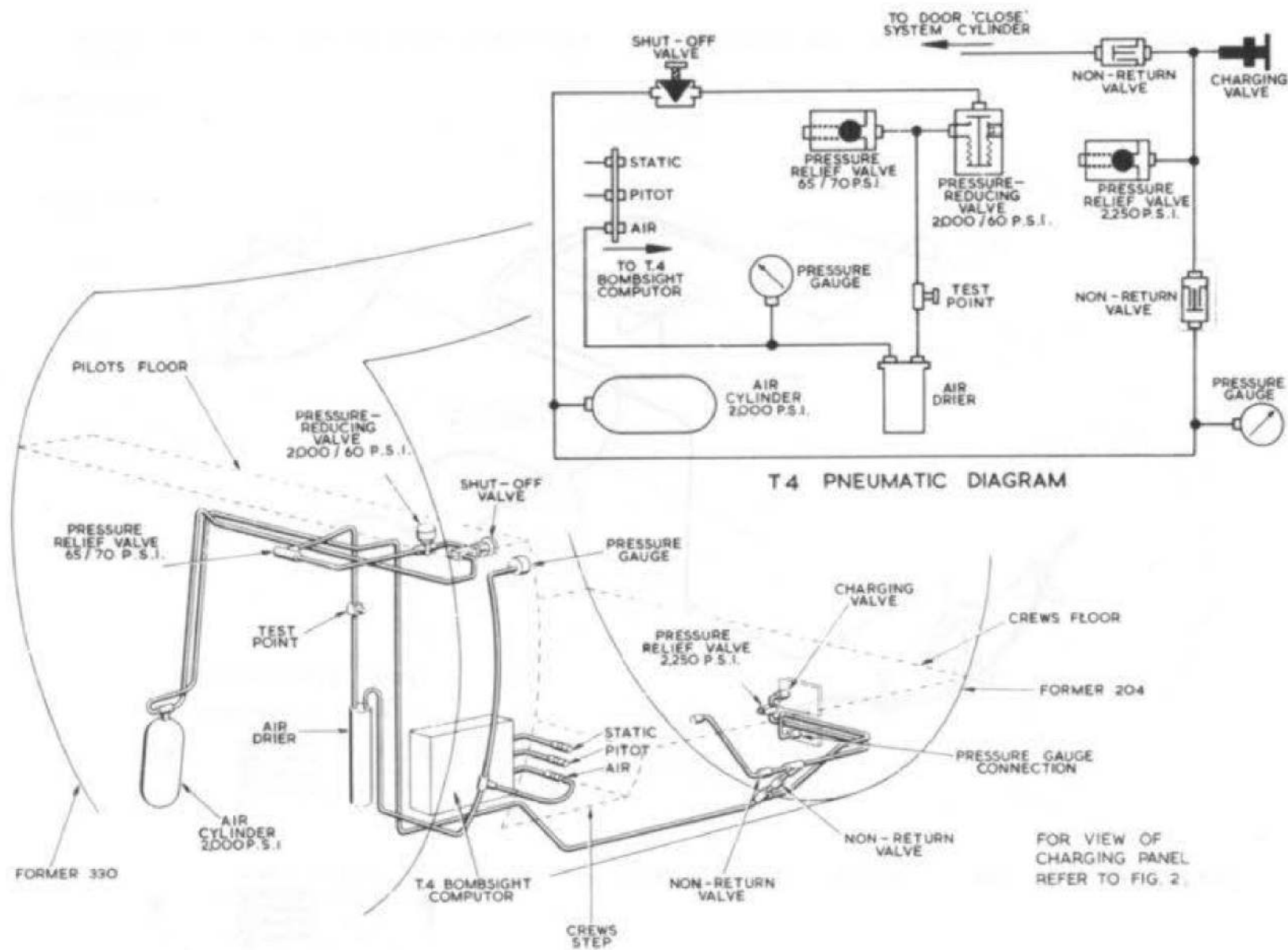


Fig. 6. Pneumatic system installation - ancillary supplies

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pressure gauge is mounted on the nose-wheel bay charging panel.

48. Air is piped from the storage cylinder through an H.P. shut-off valve to the Hymatic pressure reducing valve which reduces the pressure from 2,000 to 60 p.s.i.

49. To counteract the possibility of failure of the pressure-reducing valve and ensure a supply of air to the computer at the correct working pressure, a Hymatic pressure relief valve designed to relieve at 65 to 70 p.s.i. is incorporated in the system. The valve is fitted in the system between the pressure-reducing valve and the air drier.

50. To ensure a moisture free supply of air to the computer, an air drier is fitted in the system immediately prior to the computer. It is of the silica gel type and must only be filled with silica gel

ADJUSTMENT AND TESTING

52. Components of the pneumatic systems are to be adjusted and tested in accordance with the general instructions contained in the A.P.4303 series. Refer to the list of components given in Table 1 to 4 covering the various systems for the relevant volume and chapter.

TEST POINTS

53. Test points (these are A58, Mk.2 (or DC.22) valves) are provided downstream of each pressure-reducing valve in the pneumatic supply lines to the entrance door, canopy seals and the de-icing system reservoir. The output from the pressure-reducing valves can be checked at these test points using a gauge and an inflation adapter (Ref.No.4G/6246). The gauges are as follows:-

0 to 10 p.s.i. (Ref.No.4G/-)

TABLE 4

Components in the T4 bombsight system

Component	Part No.	Ref.No.	Associated Publication reference			
			A.P.	Sect.	Chap.	Appendix
Cylinder, Mk.50	-	6D/9429887				
Gauge, Mk.14KK 0-3,000 p.s.i.	-	6A/2691	1275A	15	6	-
Gauge, Mk.14B, 0-80 p.s.i.	-	6A/2685	1275A	15	6	-
Valve, non-return	D5220Y		1803D	9	58	1
Valve, pressure reducing 2,000/60 p.s.i.	PS82/4		4303C	4	30	1
Valve relief	RV31/5		4303C	4	36	
Air drier		9/4592	1469C			

(Ref.No.33C/1454). Fitted in the system between the air drier and the computer is a pressure gauge which registers the pressure of the air supply to the computer.

System components

51. Table 4 gives a list of the components used in the system together with their Air Publication references.

SERVICING

0 to 25 p.s.i. (Ref.No.4G/-)
0 to 600 p.s.i. (Ref.No.4G/3026)
0 to 1,500 p.s.i. (Ref.No.4G/3027)

CHARGING

Entrance door system

54. The two storage cylinders are charged through standard A58, Mk.2 (or DC.22) valves, one to each cylinder. The charging panel is mounted on the aft face of the pressure bulkhead at the forward end of the nose-wheel compartment. Gauges on the charging panel indicate the storage cylinder pressure. Brief details of the system charging is contained in Sect.2, Chap.2. The method of charging the high-pressure systems is given in A.P.1464G, Vol.1, Part 2, Sect.5, Chap.17 to which reference must be made if further details are required.

H2S scanner system

55. The storage cylinder for the H2S

scanner pneumatic system is charged through an A58 Mk.2 (or DC.22) charging valve, which is accessible when the access panel to the emergency equipment storage on the port side of the nose section is released. Brief details of the method of charging the system are contained in Sect.2, Chap.2 of this Book. Full details of the method of charging high-pressure systems is given in A.P.1464G as quoted in the previous paragraph.

T4 bombsight

56. The storage cylinder for the T4 bombsight pneumatic system is charged through the same charging valve used to charge the door close system. System pressure is indicated on the pressure gauge mounted on the lower portion on the main pneumatic charging panel. Brief details of the method of charging the system are contained in Sect.2, Chap.2, of this Book. Full details of the method of

charging high-pressure system is given in A.P.1464G as quoted in a previous paragraph.

LEAKAGE TESTS

Entrance door system

57. To check the entrance door system for leakage the system must be fully charged and then left for a period of 12 hours. Should the pressure fall by more than 35 p.s.i. the cause of the leakage must be investigated, using a soap solution at pipe joints, and when found rectified.

M25 scanner system

58. To check for leakage it is necessary to blank off at the outlet end of the pipe to the scanner. The system must be fully charged and, with the line valve switch at the starboard side of the crew's instrument panel selected ON, left for a period of 12 hours. Should the pressure fall by more than 50 p.s.i. the cause must be investigated using a soap solution at all pipe joints, and when found rectified.

T4 bombsight system

59. To check for leakage in the T4 bombsight pneumatic system it is necessary to blank off the outlet end of the pipe to the bombsight computer. The system must be fully charged and, with the shut-off valve open, left for a period of 12 hours. Should the pressure drop by more than 35 p.s.i. the cause must be investigated, using a soap solution at all pipe joints, and when found rectified.

Ancillary systems

60. Tests of the series of systems served by air from the engines, i.e., the hydraulic reservoir, the hydraulic power pack and the bomb door seals are given in the following paragraphs. A ground electrical supply will be required and, if available, a ground servicing trolley (Ref.No.4G/1796) to operate the bomb doors. It is permissible, however, to use the aircraft hydraulic power pack

unit by selection of the bomb door emergency control switch situated on the cockpit port console, if a ground servicing trolley is not readily available, provided regard is paid to the power pack operating limitations printed on a label adjacent to the switch.

WARNING . . .

The utmost cleanliness must be observed when using the hydraulic servicing trolley. The end caps to the hoses must always be fitted immediately after use.

Bomb door seal system

61. It is anticipated that the bomb door seal portion of the system will require more frequent testing than the remainder owing to the seals, which are of rubber, being in an exposed position and subject to variations in climatic conditions as compared with the metal components in the remainder of the system. The method is as follows:-

- (1) Ensure that a ground electrical supply is connected to the aircraft.
- (2) Select bomb doors OPEN and check visually that the seals are deflated and are undamaged, close the bomb doors.
- (3) Connect an adapter (Ref. No.4G/6246), fitted with an 0 to 20 p.s.i. pressure gauge to the test point located on the front face of the rear spar in the bomb bay.
- (4) Disconnect the bomb door seal supply pipe at the four-way union upstream of the 200 to 10 p.s.i. pressure-reducing valve and apply an air pressure not exceeding 200 p.s.i. to the seal system. Check that the pressure gauge (sub.para.3) registers 10 p.s.i.
- (5) Stop the supply and check, by

reference to the gauge, that the time taken for the pressure to fall from 10 to 9 p.s.i. is not less than 20 sec. Should the leakage exceed this figure, again pressurise the system, and check the seals and all pipe connections for leaks, using a soap solution. Should this prove non-effective, faulty components are indicated and it will be necessary to remove the components for bench testing and overhaul.

Complete system

62. The complete system can be tested by the following method:-

- (1) Ensure that a ground electrical supply is connected to the aircraft.
- (2) Attach the ground servicing trolley, if available, to the connection in the port main-wheel bay.
- (3) Examine the bomb door seals for superficial damage then select bomb doors CLOSE on the normal selector switch, if a servicing trolley is connected or, on the emergency switch if the trolley is not connected.
- (4) Connect an inflation adapter (Ref.No.4G/6246) fitted with a 0 to 600 p.s.i. pressure gauge (para.53) to the charging connection on the starboard side of the No.2 engine bay.
- (5) Pressurise the system to 200 p.s.i. using a high pressure servicing trolley (Ref.No.4F/4).
- (6) Shut off the pneumatic supply when the system is pressurised to 200 p.s.i. Allow the pressure to fall to 150 p.s.i., then time the fall from 150 to 50 p.s.i. This time must be not less than 5 minutes.

RESTRICTED

63. Should the pressure drop exceed the figure given in para.62 sub.para.(6) a test of the joints and connections must be made using a soap solution.

64. If the pressure loss has been extremely rapid during leakage rate tests of the complete system and no leaks have been found when using a soap solution, the non-return valves in the supply lines from the engines are suspect. It is probable that extraneous matter is preventing one or more of the valves from closing correctly, these must be removed for bench testing and overhaul.

65. Should the foregoing checks have proved that the supply line from the engines and the bomb door seal lines are correct and there is an excessive rate of leakage over the complete system, then that portion of the system supplying the hydraulic components is obviously defective. It will therefore become necessary to bench test the components and rectify as necessary.

ENTRANCE DOOR

◀ Restrictor adjustment

66. When adjustment is required on the entrance door 'open' pneumatic system restrictor the recommended method is as follows:-

- (1) Disconnect the operating jacks from the door.

WARNING . . .

Before removal of a component or the release of any union in a system not fitted with an isolation cock the air pressure in the system must be discharged by using an inflation adapter (Ref.

- (2) Disconnect the door opening system piping between the restrictor and the door operating jacks. Connect a 0 to 1,500 p.s.i. gauge to the line from the restrictor.
- (3) Ensure that the storage cylinders are fully charged.
- (4) Screw the restrictor adjuster to fully closed, then open $\frac{1}{4}$ turn.
- (5) Select emergency 'open' at the door control lever. Note that with the alighting gear down, the nose-wheel unit operated by-pass valve will be closed.
- (6) Check the time taken for the pressure to travel from 0 to 1,200 p.s.i. as indicated on the gauge. Adjust as necessary on the restrictor adjuster to obtain a time of 20 to 25 sec.
- (7) Disconnect the mechanical link connecting the by-pass valve to the nose-wheel unit cross shaft.
- (8) Simulate alighting gear 'up' by moving the link and opening the by-pass valve.
- (9) Select emergency 'open' at the

REMOVAL AND ASSEMBLY

◀ No.4G/6246) at the A58 Mk.2 (or DC.22) test point of the system concerned. ▶

ENTRANCE DOOR JACKS

69. When both door jacks are removed,

door control lever. Check that the pressure, as indicated on the gauge, rises from 0 to 1,200 p.s.i. in 8 to 18 sec.

NOTE . . .

The storage cylinder must be fully charged before each operation.

- (10) Connect the by-pass valve operating link, remove the gauge and return the pneumatic system to normal.
- (11) Attach the operating jacks to the door.
- (12) Ensure that all locking devices are correctly applied.
- (13) Charge the storage cylinder. ▶

T4 BOMBSIGHT SYSTEM

67. The silica gel contents of the air drier must be changed as necessary. Silica gel (Ref.No.33C/1454) only must be used in the air drier.

68. To avoid total loss of pressure from the system when servicing the air drier or removing the computer, pressure-reducing valve and the pressure relief valve for servicing, the shut-off valve must be closed.

the door must be supported to prevent it falling beyond its normal range of travel. If the door is not supported and is allowed to fall, the metal skin in the vicinity of the hinges will be damaged.

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