GROUP A — FLYING INSTRUMENTS (PRESSURE-STATIC TYPE)

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Introduction

1. The information contained in this group relates to those flying instruments which employ the pitot principal of operation, together with the method of supplying the pressure or static air, or both, as required. The following list contains the specialist Air Air Publication references of the components.

Equipment	Air Publication
Pressure head Mk 8.T	1275A, Vol.1, Sect.27, Chap.8, App.2
Air speed indicator Mk.9H*	1275A, Vol.1, Sect.21, Chap.9
Machmeter Mk.1B (Kelvin & Hughes Ltd.)	1275A, Vol.1, Sect.21, Chap.3
Altimeter Mk.19B	1275A, Vol.1, Sect.22, Chap.17
Rate of climb indicator Mk.3(P)	1275A, Vol.1, Sect.22, Chap.6

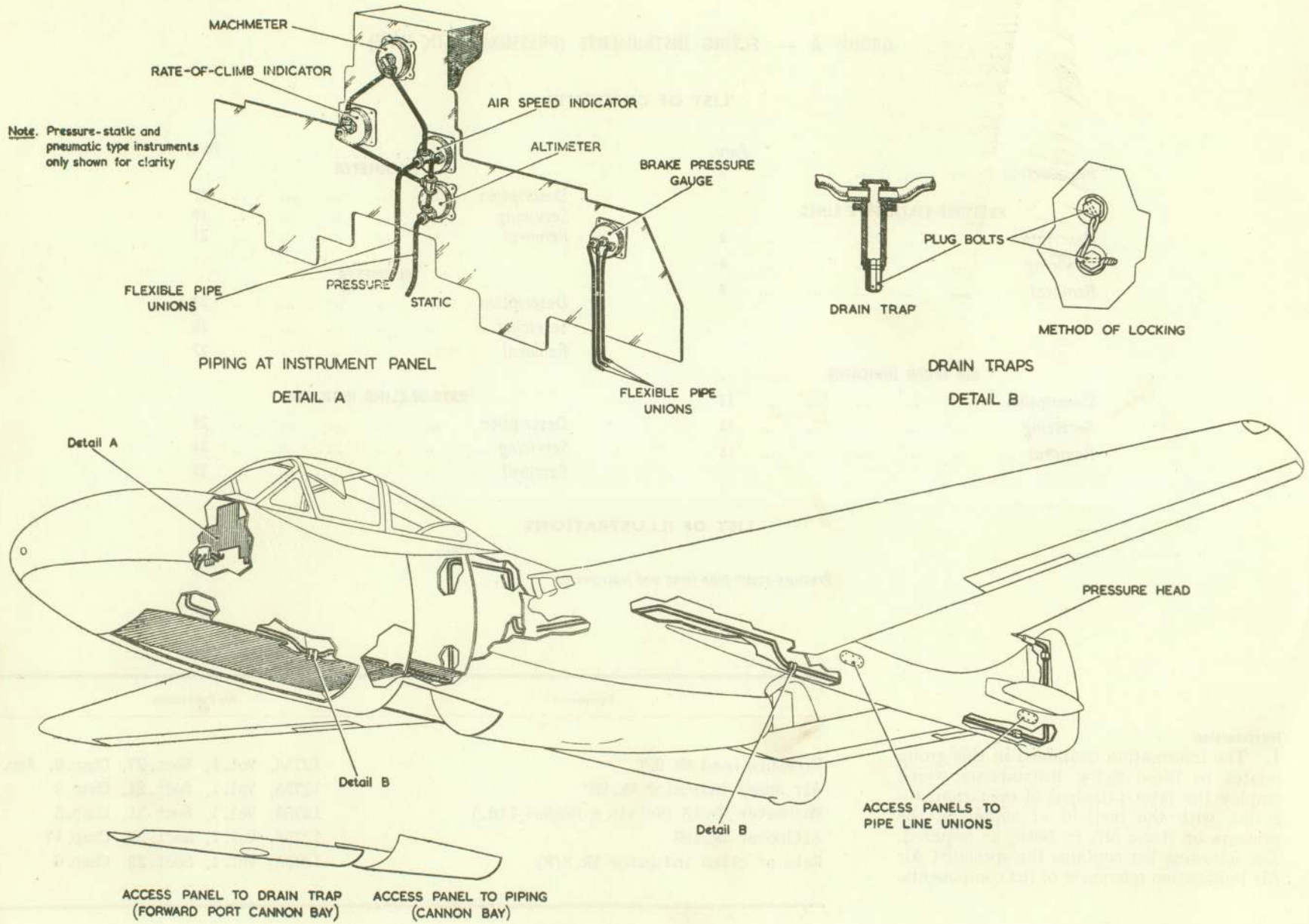

Fig. 1. Pressure-static pipe lines and instruments

PRESSURE-STATIC PIPE LINES

Description

2. A pressure-static head is fitted to the top of the port tail fin, and is mounted with its drain hole facing down and the shoulder of the head butting against the leading edge of a mild steel tube fitted to the tail fin. A 2 B.A. bolt and aero-tight nut lock the mild steel tube around the head, therefore no variation of the head setting can come about.

3. Both the pressure ram air inlet and the static slot of the head are connected by light aluminium alloy piping to unions at the rear of the instrument panel, the pressure pipe being identified, throughout its length, by a broad yellow band flanked by a narrow blue band whilst the static pipe is marked with two narrow yellow bands.

4. At the instrument panel, the static pipe is connected, by a flexible rubber pipe, to the altimeter and thence to the air speed indicator, the rate-of-climb indicator and the machmeter by the panel rigid piping. The pressure pipe is connected, by a flexible rubber pipe, to the air speed indicator and thence, by the panel rigid piping, to the machmeter.

5. Moisture drain traps are installed at the lowest points of both pipe lines, namely, at the joint of the port boom and the main plane and in the cabin floor, the latter being accessible in the forward cannon bay.

Servicing

6. The pressure head is described in the specialist Air Publication listed in para. 1.

7. To service the drain traps, break the locking wire securing the plug bolt heads and remove both bolts. Blow dry air through the pipe line system to force out any accumulated moisture, the pipe lines being disconnected from the instrument panel and sealed with tapered wooden plugs. Re-fit the bolts, ensuring that serviceable washers are used, and correctly wire-lock the bolt heads together as shown in fig. 1.

8. Whenever the pipe lines have been disconnected and then re-connected, they should be leak tested in accordance with the instructions contained in A.P.1275B, Vol. 2, Part 1, Leaflet A.8.

Note . . .

When refitting the pressure and static pipes to the appropriate instrument panel connectors, ensure that the flexibles are fully fitted to the panel connectors and tightly secured with their A.G.S. 606/D hose clips.

Removal

9. To remove the pressure head, it is first necessary to remove the port rudder (Sect. 3, Chap. 3 of this book). Next, disconnect the static and pressure pipe lines at the top union of the port fin and remove the union nuts and rubber sealing washers from the pipe lines.

10. Straighten the pipe lines and, with the locking nut and bolt at the pressure head removed and the electrical leads disconnected from T.B.22, push the pipe lines forward and withdraw them, together with the pressure head, from the fin.

11. To refit the pressure head, the reverse of the foregoing procedure should be followed, great care being taken when bending the pipe lines so that they again connect to the top union at the fin.

AIR SPEED INDICATOR

Description

12. An air speed indicator, fitted to the instrument panel, has a range from 60 to 600 knots, the reading being indicated by the use of a single pointer. The case of the instrument has been modified in that its top left-hand securing lug has been removed and the contour ridge of the instrument case continued at that corner to afford clearance for the pupil pilot's gyro gun sight mounting.

Servicing

13. The servicing is given in the specialist Air Publication listed in para. 1.

14. Appendix 1 to the specialist Publication listed contains the standard serviceability test for the air speed indicator.

Removal

15. The A.S.I. is secured to the instrument panel by two 2 B.A. csk/hd. screws, distance pieces and nuts. The panel must be lowered (Gen. Inf., para. 8 of this Chapter) before the instrument can be removed.

16. When re-fitting, ensure that the rubber sealing washers at the pressure and static pipe line connections are serviceable and effect a satisfactory seal.

MACHMETER

Description

17. A machmeter is fitted to the instrument panel to indicate to the pilots the ratio of the actual speed of the aircraft to the speed of sound in the air through which the aircraft is flying. The instrument comprises an air speed mechanism corrected by an altimeter mechanism, and gives a reading from 0·5 Mach to 1·0 Mach by means of a centre-pivoted pointer.

18. An adjustable lubber mark is incorporated on the face of the instrument which can be set to indicate the critical Mach. number for the aircraft by rotating a small csk/hd. screw fitted at the bottom centre of the instrument face. To adjust this screw, the two screws securing the lock plate must first be loosened.

Servicing

19. The machmeter is described, and servicing given, in the specialist Air Publication listed in para. 1.

20. The Appendix 1 to that specialist Publication contains the standard serviceability test for the machmeter.

Removal

21. The method of removal of the machmeter will be self-evident when viewed on the aircraft. The instrument panel must first be lowered (Gen. Inf., para. 8 of this Chapter).

22. When re-fitting the instrument, ensure that the rubber sealing washers at the pressure and static pipe line connections are serviceable and effect a satisfactory seal.

ALTIMETER

Description

23. A sensitive altimeter fitted to the instrument panel is calibrated from zero to 60,000ft., the reading being indicated by the use of three pointers, one for "hundreds", one for "thousands" and one for "tens of thousands" of feet.

24. A small knob protruding from the bottom face of the instrument affords a correction in millibars for varying atmospheric conditions. This correction is accomplished by setting the barometric pressure reading on a small subsidiary scale in the instrument face.

Servicing

25. The instrument is described in the specialist Air Publication listed in para. 1.

26. The Appendix 1 to that specialist Publication contains the standard serviceability test for the altimeter.

Removal

27. The method of removing the altimeter will be self-evident when viewed. The instrument panel must first be lowered (Gen. Inf., para. 8 of this Chapter).

28. When re-fitting, ensure that the rubber sealing washer at the static pipe line connector is serviceable and that a satisfactory seal is effected.

RATE-OF-CLIMB INDICATOR

Description

29. This instrument is fitted to the instrument panel and indicates the rate of climb or descent of the aircraft away from its path of straight and level flight.

30. The instrument has a logarithmic scale calibrated from zero to 4, these graduations denoting thousands of feet per minute. Clockwise rotation of the single centrally-pivoted pointer indicates climb, while anti-clockwise rotation indicates descent.

Servicing

31. The instrument is described in the specialist Air Publication listed in para. 1.

32. The Appendix 1 to that specialist Publication contains the standard serviceability test for the instrument.

Removal

33. Removal of the instrument will be self-evident when viewed on the aircraft. The instrument panel must first be lowered (Gen. Inf., para. 8 of this Chapter).

34. When re-fitting the instrument, ensure that the rubber sealing washer at the static pipe line connection is serviceable, and that it forms a satisfactory seal.