

(66) 1 MCC75

MARCH 1972

# A.P.112G-0939-1

(Formerly A.P.1275A, Vol. 1, Sect.21  
Chap.20)

## STANDBY AIR SPEED INDICATORS, Mk. 14 and 18

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

*J. Dunnett*

Ministry of Defence

FOR USE IN THE  
ROYAL AIR FORCE

Prepared by Procurement Executive, Ministry of Defence.

Issued Mar. 72

Prelim  
Page 1/2

**AMENDMENT RECORD SHEET**

To record the incorporation of an Amendment List in this publication, sign against the appropriate A.L. No. and insert the date of incorporation

A.L. No.	Amended by	Date
1	<i>J. Smith</i>	3/86
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		

A.L. No.	Amended by	Date
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		

CONTENTS

Chapters

1	Description
2	Standard serviceability tests for air speed Indicator Mk.14 and 18

## Chapter 1

## DESCRIPTION

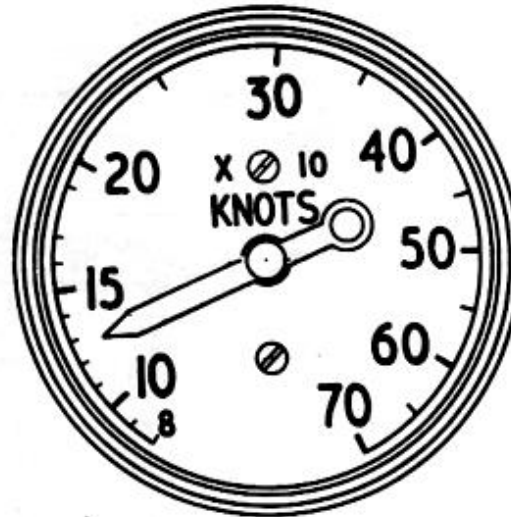


Fig.1 Standby air speed indicator, Mk.14 (front view)

Introduction

1. The standby air speed indicators, Mk. 14 (Ref. No. 6A/5402) and 18 are intended for use in instrument flight systems. They are modified versions of the Mk. 9 air speed indicator described in A.P. 112G-0926-1, the main modifications being such as to make these instruments more robust to withstand shock. ▶◀

DESCRIPTION - Mk. 14 INDICATOR

2. An external view of the instrument is shown in fig.1 from which it will be seen that the instrument scale (range 80 to 700 knots) is expanded for lower speeds and contracted for higher speeds. In fig.2 is given a sectional view of the mechanism which is of the diaphragm type. Unlike the Mk. 9 instrument, this instrument has no bezel, and the sealing is effected by tightening of the nozzle nuts, thereby causing expansion of the sealing ring (6, fig.2). The instrument is contained in a 2 in flangeless case. The instrument is not anti-vibration mounted and is held in position by means of a circlip.

DESCRIPTION - Mk. 18 INDICATOR

3. The Mk. 18 air speed indicator is identical in construction with the Mk. 14 instrument. The only difference between these two instruments is that the static connection fitted to the Mk. 18 indicator is of a larger external diameter than the pitot connection. This is to suit particular installation requirements.

SERVICING

4. The instrument should be examined for damage, particular attention being given to the condition of the glass, the fixing and locking devices and to establish that there is no sign of leakage. If a fault is suspected, the instrument should be removed and tested as described in Chapter 2. Defective instruments should be sent to an appropriate repair depot.

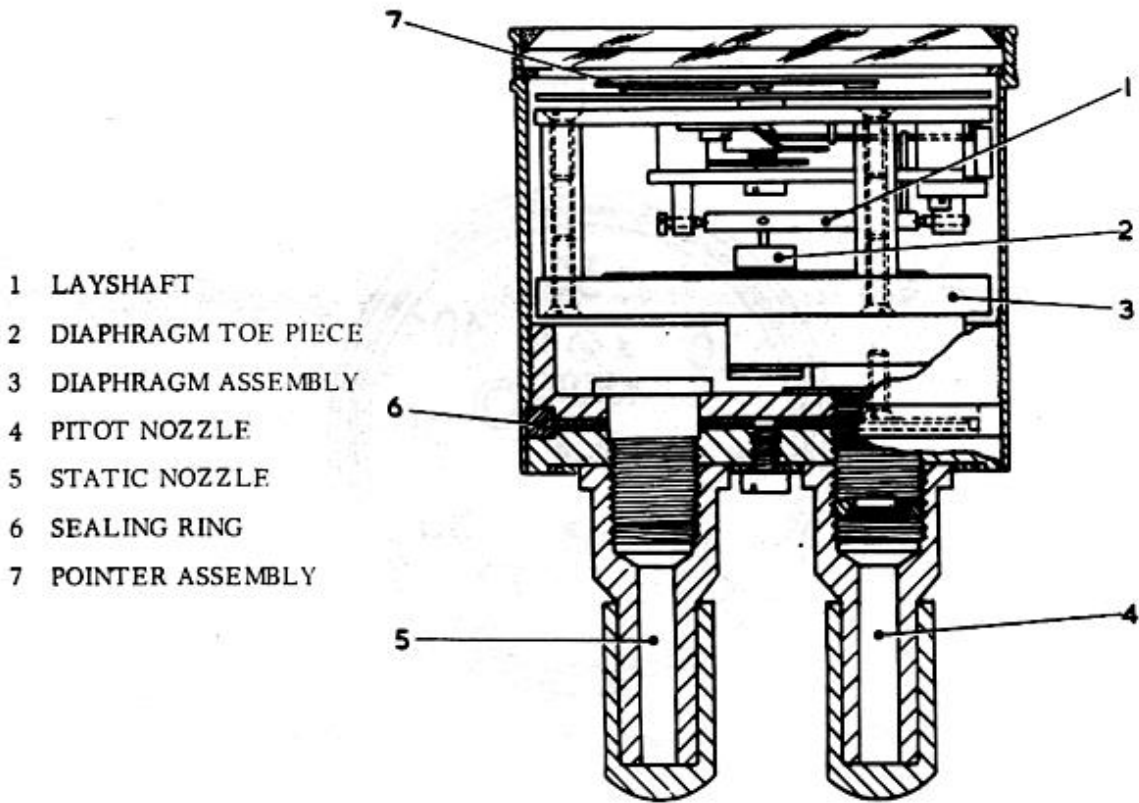


Fig.2 Sectional view of mechanism

## Chapter 2

STANDARD SERVICEABILITY TESTS  
for  
AIR SPEED INDICATOR, Mk.14 and 18

Introduction

1. The tests detailed in this chapter are to be applied to the air speed indicator prior to installation in the aircraft, or whenever the serviceability of the indicator is suspect. Tolerances specified must not be exceeded.

◀ Test equipment

2. The following test equipment is required:-

<u>Item</u>	<u>Ref. No.</u>
(1) Differential pressure chamber	6C/4360661
(2) Differential digital pressure gauge	6C/1997676
(3) Bellows control unit	6C/4360723
(4) Control panel	6C/1041351
(5) Water container	Local manufacture

TEST PROCEDURELeak test (fig.1)

3. (1) Fit necessary blanking caps to the indicator and D.P. chamber and connect the test equipment as shown in fig.1.
- (2) Ensure that the tube connection to the water container is not immersed more than 25.4mm to 38mm (1in to 1½in) below the water level so that any air bubbles arising from leakage can be readily observed.
- (3) Close both control valves and the balance valve of the D.P. chamber and set the pitot and static selector valves to 'A'.
- (4) Ensure that the D.P. chamber door is closed and all pressure connections are secure.
- (5) Set the static selector valve to 'P' and slowly open the static control valve until pressure in the D.P. chamber, as indicated by the differential digital pressure gauge, is 1037mb (30.63in Hg).
- (6) Close the control valve and maintain the pressure for at least one minute. Check that the indicator case is free from leaks. Any leakage will be indicated by a continuous stream of bubbles emerging from the end of the tube in the water container.

## Note...

Any non-recurrent bubbling produced during initial application of pressure may be due to thermal expansion or case deflection and should be disregarded.

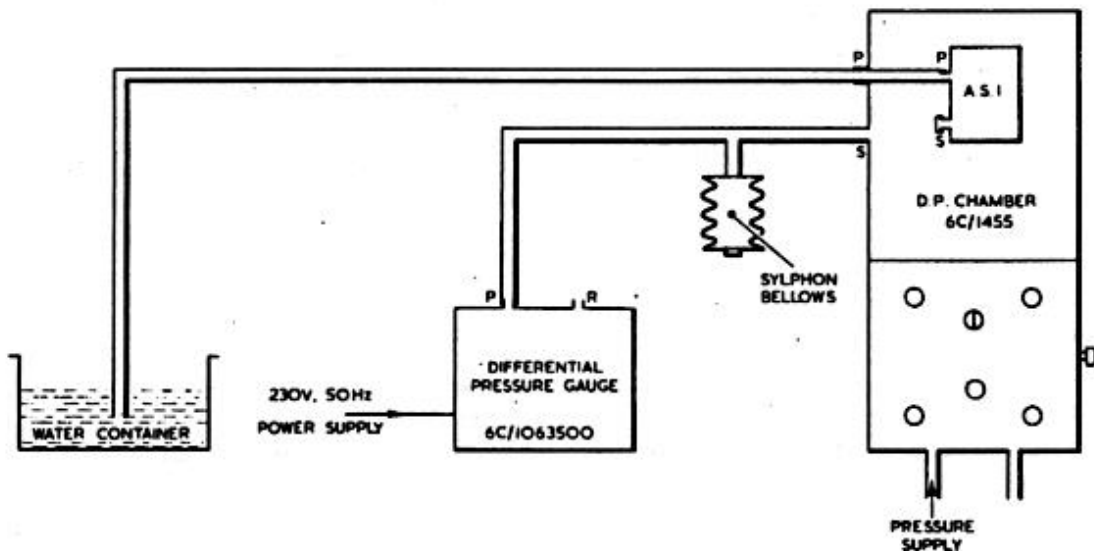


Fig.1 Layout of test equipment for leak test

(7) On completion of the leak test, set the static selector valve on the D.P. chamber to 'A', remove the rubber tube from the water container and gradually open the static control valve until pressure in the chamber returns to atmospheric. Remove the indicator from the chamber.

#### Ranging test

4. Connect the indicator and test equipment as shown in fig.2 and proceed as follows:-

- (1) Ensure that the control valve of the control panel is closed and set the selector valve to 'P'.
- (2) Open the control valve until the air speed indicator reads 700 knots, then close the valve. Set the selector valve to 'A' and slowly open the control valve until the indicator returns to zero. Ensure that the pointer movement is smooth over the full range of the scale.
- (3) Close the control valve and set the selector valve to 'P'.
- (4) Open the control valve until the digital gauge indicates 10.41mb and check that this corresponds with the airspeed indicator minimum reading of 80 knots  $\pm$  5 knots. Fine adjustment to the test pressure can be made using the bellows control unit.
- (5) Repeat operation (4) at three further speeds selected at random to cover the instrument range. See Table 1 for the corresponding test pressures and tolerances.
- (6) Set the selector valve to 'A', then test the indicator at the same readings as selected in operation (6) by gradually opening the control valve, to decrease pressure, at each stage. Check the indicator readings are within the tolerances stated in Table 1.

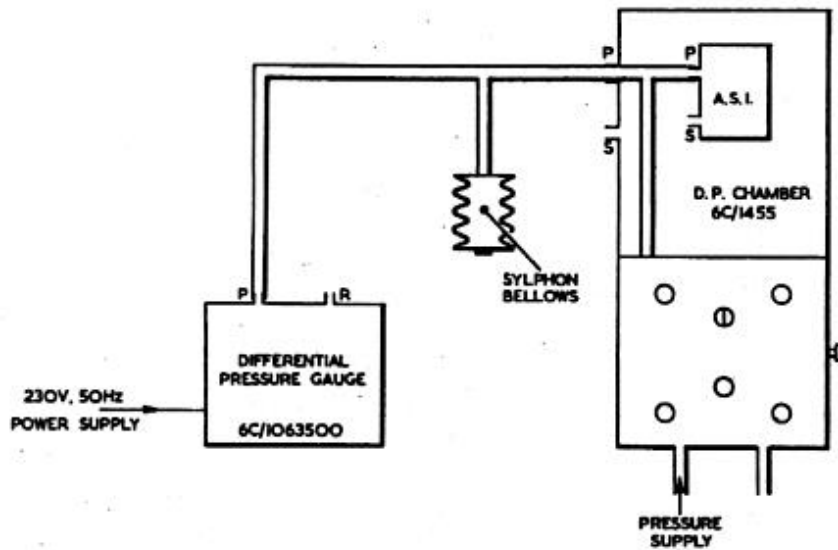


Fig.2 Layout of test equipment for ranging test

TABLE 1

## Test pressures and tolerances

Air speed (knots)	Pressure (mb)	Tolerances (knots)
80	10.41	±5
100	16.30	±5
150	36.94	±5
200	66.64	±5
300	153.55	±10
400	283.95	±10
500	466.50	±15
600	713.68	±15
700	1041.79	±15

(7) On completion of tests slowly open the control valve until the indicator returns to zero.

(8) Disconnect the indicator and test equipment. ▶