AIR PUBLICATION

112G-0556-1

(Formerly A.P.1275A,
Vol. 1, Sect. 16, Chap. 19)

INDICATORS, TYPE S127 SERIES

GENERAL AND TECHNICAL INFORMATION

BY COMMAND OF THE DEFENCE COUNCIL

L. T. Dunnett

Ministry of Defence

FOR USE IN THE
ROYAL NAVY
ROYAL AIR FORCE

(Prepared by the Ministry of Technology)

Issued May 1968

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	K. Bartwright	17.2.69
2	E V. Curtis	1968
3	E V. Curtis	1968
4	E V. Curtis	1968
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56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		

CONTENTS

Chapters	List of variants with chapter and reference numbers
1	Indicators, Type S127 series, form 5 - description and operation
1-1	Indicator, Type S127.5.84 or 87
1-2	Indicator, Type S127.5.149 or 139
1-3	Indicator, Type S127.5.175
1-4	Indicator, Type S127.5.195
1-5	Indicator, Type S127.5.196
1-6	Indicator, Type S127.5.197
1-7	Indicator, Type S127.5.198
1-8	Indicator, Type S127.5.72
1-9	Indicator, Type S127.5.93
1-10	Indicator, Type S127.5.117
1-11	Indicator, Type S127.5.123
1-12	Indicator, Type S127.5.147
1-13	Indicator, Type S127.5.148
1-14	Indicator, Type S127.5.151
1-15	Indicator, Type S127.5.157
1-16	Indicator, Type S127.5.159
1-17	Indicator, Type S127.5.163
1-18	Indicator, Type S127.5.122
▶ 1-19	Indicator, Type S127.5.206 ◀

LIST OF VARIANTS WITH REFERENCE NUMBERS AND CHAPTER NUMBERS

Type No.	Reference No.	Chap. No.	
S127.5.72	6A/4141	1-8	
S127.5.84	6A/4333618	1-1	
S127.5.87	6A/4277	1-1	
S127.5.93	6A/4278	1-9	
S127.5.117	6A/6804	1-10	
S127.5.122	6A/4337859	1-18	
S127.5.123	6A/5206	1-11	
S127.5.139	6A/5440	1-2	
S127.5.147	6A/5215	1-12	Obsolescent
S127.5.148	6A/6215	1-13	Obsolescent
S127.5.149	6A/5968	1-2	
S127.5.151	6A/7133	1-14	
S127.5.157	6A/ 6022	1-15	
S127.5.159	6A/ 4338262	1-16	
S127.5.163	6A/6213	1-17	
S127.5.175	6A/ 4339152	1-3	
S127.5.195	6A/ 1993827	1-4	
S127.5.196	6A/ N.I.V.	1-5	
S127.5.197	6A/ 11815	1-6	
S127.5.198	6A/ 11665	1-7	
▶ S127.5.206	6A/N.I.V.	1-19	◀

Chapter 1

INDICATORS, TYPE S127, FORM 5

DESCRIPTION AND OPERATION

Introduction

1. The indicator, Type S127 form 5 is a dual ratiometer indicator with two separate movements, each having a scale arc covering 100 degrees of pointer movement. A temperature-sensitive resistance bulb is connected externally to each movement. The resistance of the bulb governs the currents fed to the coils and therefore the indications of the appropriate pointer.

2. Each indicator (fig. 1) has a manufacturer's code number which consists of three parts. A typical code is S127.5.175 where S127 is the model number, 5 is the 'form' and 175 is the suffix number which represents the application to which the instrument is adapted (variant).

3. Presentation information, a circuit diagram and a standard serviceability test for each variant are contained in the chapter relevant to that variant.

Fig. 1. Indicator. Type S127, form 5

DESCRIPTION

4. The indicator (fig. 2) consists of the following assemblies:—

(1) Case
(2) Base
(3) Magnet and movement assembly

Case

5. The two independent movements of the indicator are housed in a large S.A.E. case which is secured to the aircraft panel by four screws inserted into the flange. The case is fitted with a glass and an integral magnetic shield, and is secured to the base by three screws arranged around its circumference.

Base

6. The base carries three supporting pillars on which a sub-mounting plate is secured; the magnet and movement assembly is secured, in turn, to this sub-mounting plate. Connections to the base are made either via six terminal screws or, if an alternative base assembly is fitted, via a six-pole plug.

Magnet and movement assembly

7. The complete magnet and movement assembly comprises four triangular-shaped magnets, two polepiece blanks, two polepieces and cores, two moving coil assemblies, two front bearing bridges and two rear bearing bridges.

8. The polepieces of each of the two movements are secured to a mounting plate, one on the left-hand side and one on the right-hand side. Two polepiece blanks (of the same shape as the polepieces) are also secured to the plate, one at the top and one at the bottom. A magnet is located in each of the four spaces between the polepieces and polepiece blanks. Thus, the polepieces and the blanks complete the magnetic circuit.

9. Each movement consists of a polepiece, a core, two windings mounted on a common former, a rear bridge assembly and a front bridge assembly. Four pillars, two at each end of the polepiece, support the front and rear bridge assemblies which are electrically insulated from the pillars by insulating bushes and washers. The core is located in the centre of the aperture in the polepiece by two keyways and is secured by a screw, core plate and core clamp. The two windings of each moving coil are wound on a common aluminium former which is pivoted between jewelled bearings located in the front and rear bridge assemblies.

10. Three phosphor bronze ligaments connect the coil-windings in circuit. One ligament is connected to the front bridge; the two rear ligaments are connected to ligament terminals on the rear bridge assembly. The pointer is attached to the coil former which is free to rotate in the gap between the polepiece and the core; a small torque is exerted by the ligaments to return the pointer to the off-scale position when no current flows in the coil-windings. Balance of the pointer is maintained by weights, and pointer-travel is limited, in both directions, by pointer stops.

Scale

11. The scale is supported on internally threaded pillars secured to the mounting plate assembly.

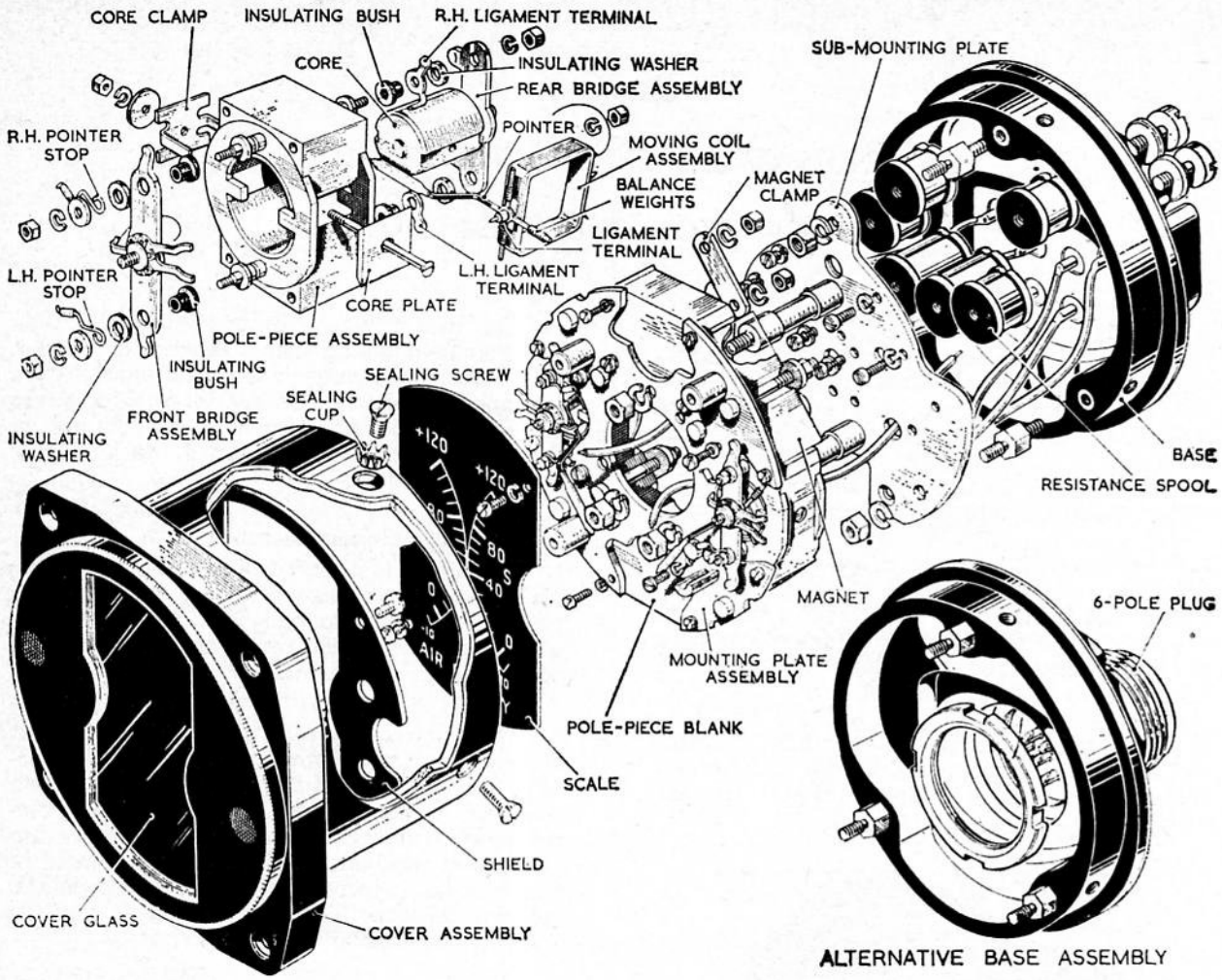

Fig. 2. Exploded view of S127/5

OPERATION

12. The principle employed in the Type S127, form 5 indicator is that of the ratiometer which measures the ratio of two currents. The magnetic circuits of each movement are arranged so that the magnetic field in the gap between the core and the polepiece, in which the coils rotate, is not uniform. This non-uniformity is achieved by the shaping of the soft iron polepiece which encloses the coil assembly. The two windings of each moving coil are wound on a common former and are connected so that the torques produced by the windings are in opposition.

13. Due to the shaping of the core, the winding in which the greater current flows is in a weaker part of the magnetic field than that in which the lesser current flows. Therefore, the moving coil rotates until a state of equilibrium is reached which occurs when the windings are in that part of the field where the torques produced by them are equal and opposite.

14. Theoretically, the indicator is not dependent upon a constant supply voltage because any fluctuation of voltage does not affect, appreciably, the ratio of the currents in the two windings. Assuming that no controlling torque is produced by the ligaments which conduct the current into and out of the windings, then there are no changes in the pointer indications as a result of variations in the supply voltage. In practice, these ligaments exert a small torque on the pointer but this has very little effect upon the overall operation of the indicator which remains virtually unaffected by fluctuations in the supply voltage from the aircraft services.

Chapter 1-1

INDICATORS, TYPE S127.5.84 or 87

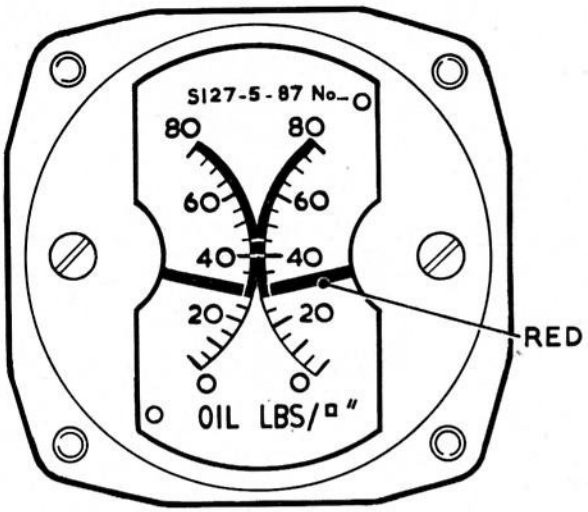

Fig. 1. Indicator, Type S127/5/87

Presentation

1. The indicators, Type S127.5.84 and S127.5.87 are dual movement ratiometer type instruments, calibrated on both scales in units of lb/in² from 0 to 80. Movement of the pointers is controlled by current from two pressure transmitters which constitute two completely separate systems.

Circuit

2. The circuit diagram is shown in fig. 2. Connections to the indicators are made via a 6-pole Breeze socket.

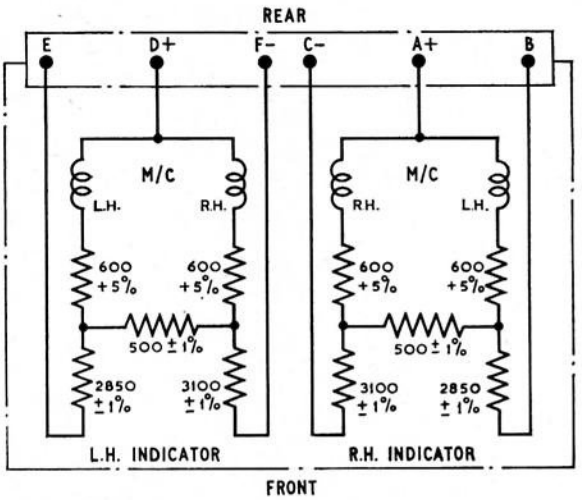

Fig. 2. Circuit diagram

STANDARD SERVICEABILITY TEST

Introduction

3. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

4. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152).

(2) Decade resistance box (Ref. No. 10S/16237) 2 off.

Power supplies

5. A 28V d.c. power supply is required.

TESTING

Insulation resistance test

6. Using the insulation resistance tester, measure the resistance between each pole of the plug and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

7. Set the resistance boxes to be used as R1 and R2 to 490 ohms and 3010 ohms respectively. Connect the left-hand indicator to the test circuit as shown in fig. 3. Set R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, the indicator pointer indicates within the values shown in Table 1. Disconnect the indicator from the test circuit.

8. Repeat the tests detailed in para. 7 but with the test circuit connected to the right-hand indicator. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance in ohms R1	Resistance in ohms R2	Indicator lb/in²
490	3010	—1·6 to 1·6
1075	2425	18·6 to 21·6
1645	1855	38·6 to 41·6
2210	1290	58·6 to 61·6
2760	740	78·6 to 81·6

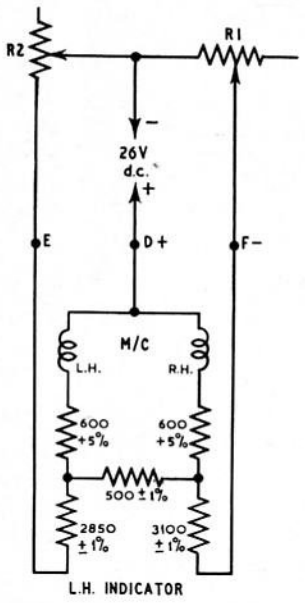

Fig. 3. Test circuit diagram

Chapter 1–2

INDICATORS, TYPE S127.5.149 or 139

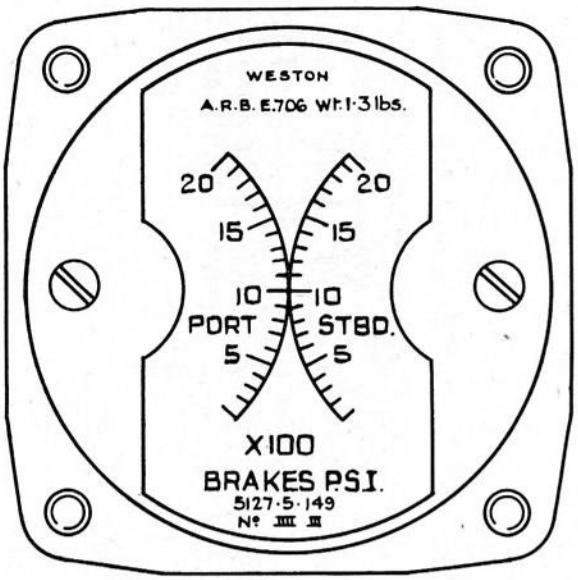

Fig. 1. Indicator, Type S127/5/149

Presentation

1. The indicators, Type S127.5.139 and S127.5.149 are dual pressure ratiometer type indicators, calibrated on both scales in units of lb/in² from 0 to 2000. Movement of the pointers is controlled by current from two pressure transmitters which constitute two completely separate systems.

Circuit

2. The circuit diagram is shown in fig. 2. Connections to the indicator are made via a 6-pole Breeze socket.

STANDARD SERVICEABILITY TEST

Introduction

3. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

4. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152).

(2) Decade resistance box (Ref. No. 10S/16237) 2 off.

Power supplies

5. A 28V d.c. power supply is required.

TESTING

Insulation resistance test

6. Using the insulation resistance tester, measure the resistance between each pole of the plug and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

7. Set the resistance boxes to be used as R1 and R2 to 490 ohms and 2760 ohms respectively. Connect the left-hand indicator to the test circuit as shown in fig. 3. Set R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, the indicator pointer indicates within the values shown in Table 1. Disconnect the indicator from the test circuit.

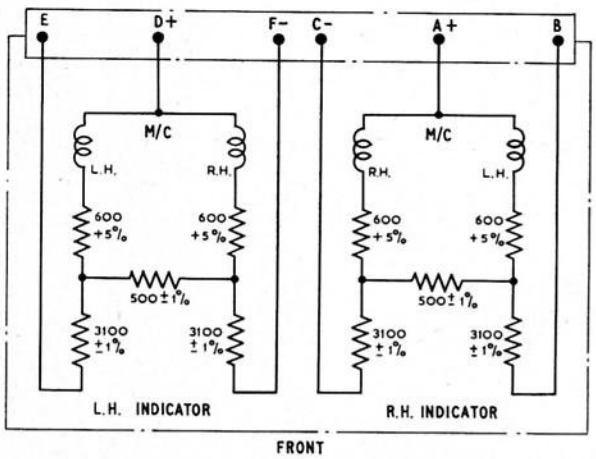

Fig. 2. Circuit diagram

8. Repeat the tests detailed in para. 7 but with the test circuit connected to the right-hand indicator. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance in ohms R1	Resistance in ohms R2	Indicator lb/in²
490	2760	—40 to 40
785	2465	210 to 290
1075	2175	460 to 540
1360	1890	710 to 790
1645	1605	960 to 1040
1930	1320	1210 to 1290
2210	1040	1460 to 1540
2485	765	1710 to 1790
2760	490	1960 to 2040

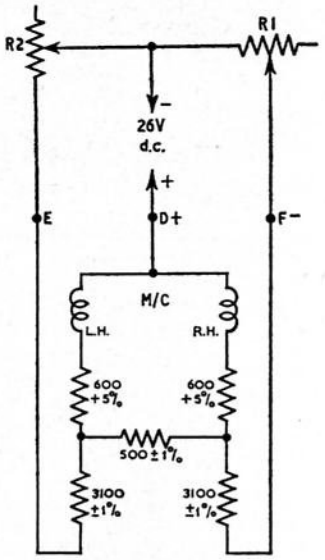

Fig. 3. Test circuit diagram

Chapter 1–3

INDICATOR, TYPE S127.5.175

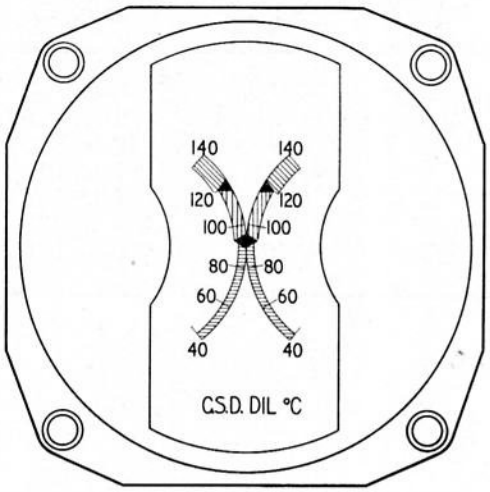

Fig. 1. Indicator, Type S127/5/175

2. Each movement is controlled by variation of temperature of a resistance bulb which obeys a platinum law.

Circuit

3. The circuit diagram is shown in fig. 2. Connections to the indicator are made via six terminal screws.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified must not be exceeded.

Test equipment

5. The following test equipment is required:—

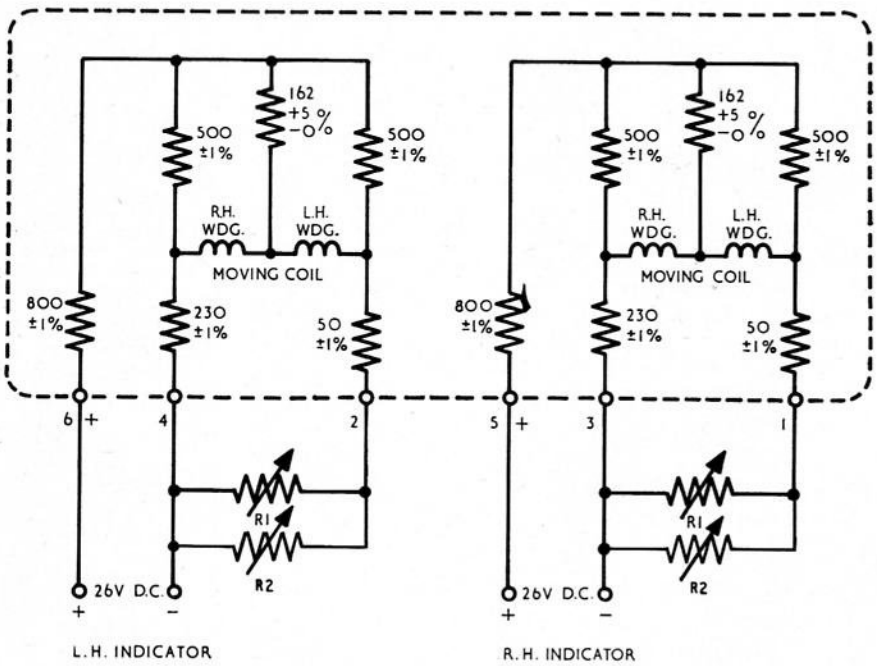

Fig. 2. Combined circuit and test circuit diagram

Dial presentation

1. The dual indicator Type S127.5.175 (fig. 1) Ref. No. 6A/7555 is calibrated in degrees C from 40 to 140. Portions of each scale are coloured as follows:—

(1) Green sector between 40 and 93°C.
(2) Yellow sector between 93 and 120°C.
(3) Red sector between 120 and 140°C.
(4) White triangles at 93 and 120°C.

(1) Insulation resistance tester, Type C (Ref. No. 5G/152),

(2) Decade resistance box (Ref. No. 10S/16237) 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each case the resistance is to be not less than 20 megohms.

Accuracy test

8. Connect the left-hand side of the indicator to the test circuit as shown in fig. 3. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

9. Disconnect the indicator from the test circuit and connect the right-hand side of the indicator to the test circuit as in fig. 3. Carry out the tests detailed in para. 8. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance in ohms		Indicator
R1	R2	deg. C
152	12 072	38 to 42
162	26 081	58 to 62
172	32 699	78 to 82
178	49 032	91 to 95
182	36 622	98 to 102
192	42 990	118 to 122
202	40 604	138 to 142

Chapter 1–4

INDICATOR, TYPE S127.5.195

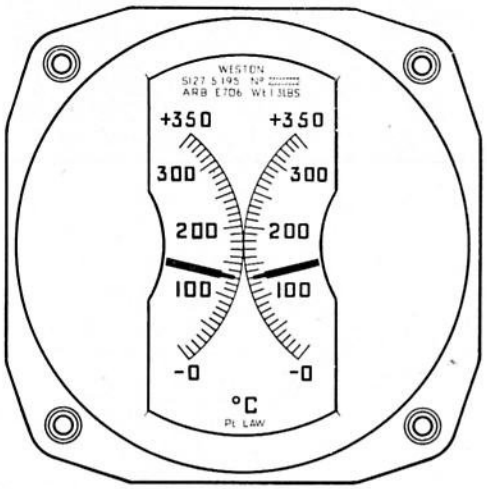

Fig. 1. Indicator, Type S127/5/195

Dial presentation

1. The dual temperature indicator Type S127.5.195 (fig. 1) is calibrated in deg. C from 0 to 350 on each of two scales. The deflection of each pointer is controlled by the variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the 0 deg. C cardinal when the indicator is unenergized.

Circuit

3. The circuit diagram is shown in fig. 2. Connection to the indicator is made by means of six unified thread (6-32 UNC) terminal screws (fitted with captive washers) at the rear of the indicator. The terminals are numbered 1, 3 and 5 (Right hand movement) and 2, 4 and 6 (Left hand movement); terminals 5 and 6 being positive and terminals 3 and 4 negative.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified must not be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152),

(2) Decade resistance box (Ref. No. 10S/16237) 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each case the resistance is to be not less than 20 megohms.

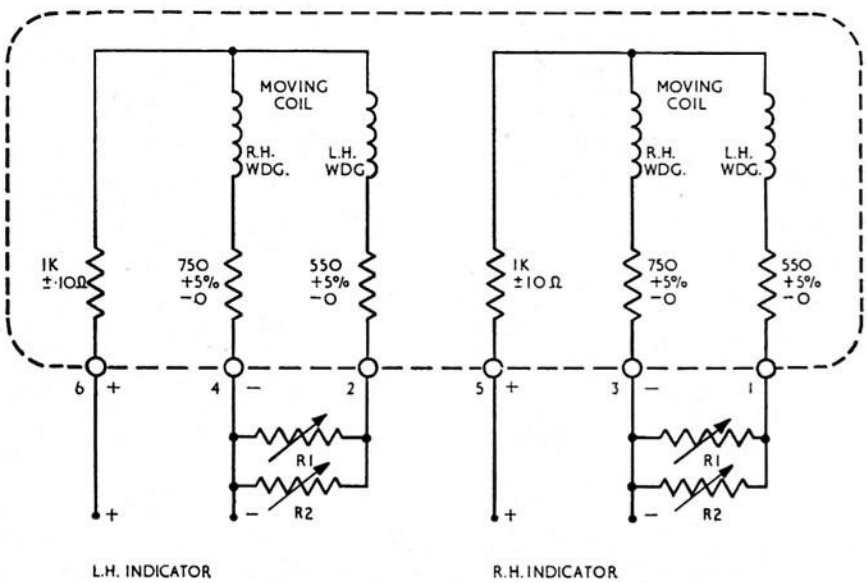

Fig. 2. Combined circuit and test circuit diagram

Accuracy test

8. Connect the left-hand side of the indicator to the test circuit as shown in fig. 3. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

9. Disconnect the indicator from the test circuit and connect the right-hand side of the indicator to the test circuit as shown in fig. 3. Carry out the tests detailed in para. 8. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance in ohms		Indicator
R1	R2	deg. C
131	28 470	—7 to 7
157	22 251	43 to 57
182	36 622	93 to 107
207	38 746	143 to 157
219	53 071	168 to 182
231	75 999	193 to 207
255	92 638	243 to 257
280	77 840	293 to 307
303	16 900	343 to 357

Chapter 1–5

INDICATOR, TYPE S127.5.196

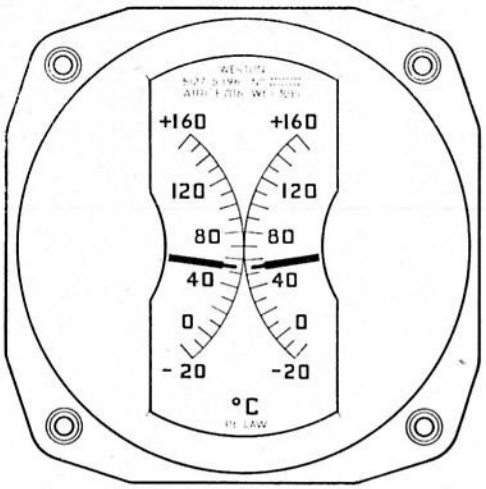

Fig. 1. Indicator, Type S127/5/196

Dial presentation

1. The dual temperature indicator Type S127.5.196 (fig. 1) is calibrated in deg. C from —20 to +160 on each of two scales. The deflection of each pointer is controlled by the variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the —20 deg. C cardinal when the indicator is unenergized.

Circuit

3. The circuit diagram is shown in fig. 2. Connection to the indicator is made by means of six unified thread (6–32 UNC) terminal screws (fitted with captive washers) at the rear of the indicator. The terminals are numbered 1, 3 and 5 (Right hand movement) and 2, 4 and 6 (Left hand movement); terminals 5 and 6 being positive and terminals 3 and 4 negative.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified must not be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152).

(2) Decade resistance box (Ref. No. 10S/16237) 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each case the resistance is to be not less than 20 megohms.

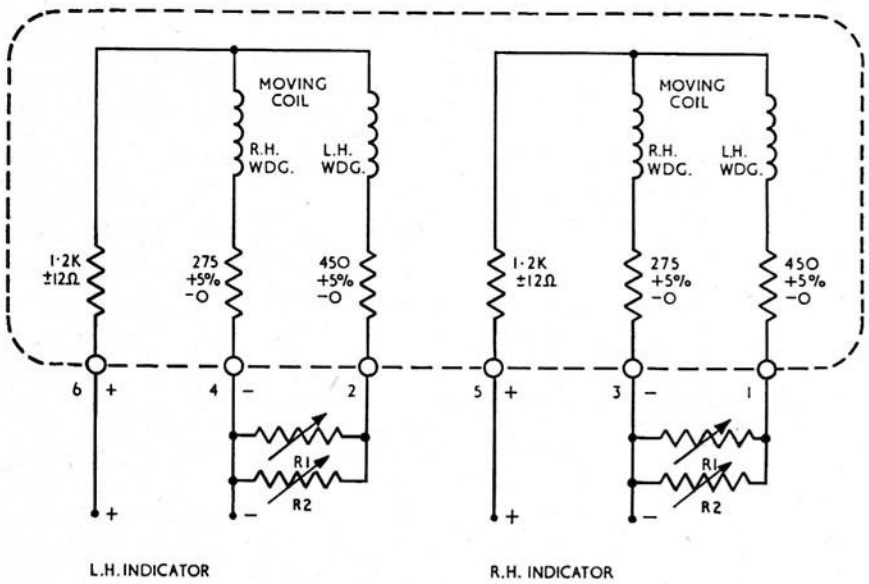

Fig. 2. Combined circuit and test circuit diagram

Accuracy test

8. Connect the left-hand side of the indicator to the test circuit as shown in fig. 3. Set the resistance boxes R1 and R2 to each set of values shown in Table 1 in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

9. Disconnect the indicator from the test circuit and connect the right-hand side of the indicator to the test circuit as shown in fig. 3. Carry out the tests detailed in para. 8. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance in ohms		Indicator
R1	R2	deg. C
121	16 152	—23·6 to —16·4
131	28 470	—3·6 to 3·6
142	15 368	16·4 to 23·6
152	12 072	36·4 to 43·6
162	26 081	56·4 to 63·6
167	27 722	66·4 to 73·6
172	32 699	76·4 to 83·6
182	36 622	96·4 to 103·6
192	42 990	116·4 to 123·6
202	40 604	136·4 to 143·6
212	37 241	156·4 to 163·6

Chapter 1–6

INDICATOR, TYPE S127.5.197

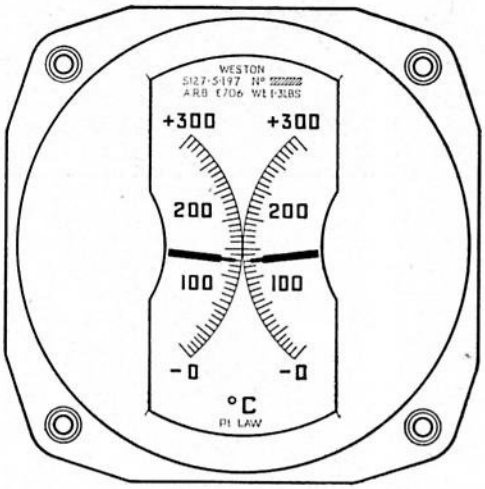

Fig. 1. Indicator, Type S127/5/197

Dial presentation

1. The dual temperature indicator Type S127.5.197 (fig. 1) is calibrated in deg.C from —50 to +350 on each of two scales. The deflection of each pointer is controlled by variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the —50 deg.C cardinal when the indicator is unenergized.

Circuit

3. The circuit diagram is shown in fig. 2. Connection to the indicator is made by means of six unified thread (6–32 UNC) terminal screws (fitted with captive washers) at the rear of the indicator. The terminals are numbered 1, 3 and 5 (Right hand movement) and 2, 4 and 6 (Left hand movement); terminals 5 and 6 being positive and terminals 3 and 4 negative.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified must not be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152).

(2) Decade resistance box (Ref. No. 10S/16237) 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each case the resistance is to be not less than 20 megohms.

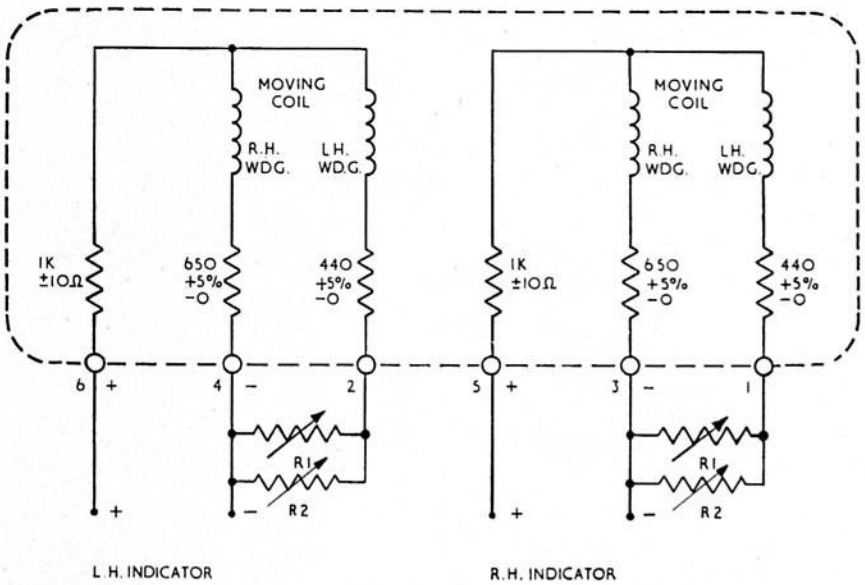

Fig. 2. Combined circuit and test circuit diagram

Accuracy test

8. Connect the left-hand side of the indicator to the test circuit as shown in fig. 3. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

9. Disconnect the indicator from the test circuit and connect the right-hand side of the indicator to the test circuit as shown in fig. 3. Carry out the tests detailed in para. 8. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance in ohms		Indicator
R1	R2	deg.C
105	21 945	—58 to —42
131	28 470	—8 to 8
157	22 251	42 to 58
182	36 622	92 to 108
207	38 746	142 to 158
231	75 999	192 to 208
255	92 368	242 to 258
280	77 840	292 to 308
303	16 900	342 to 358

Chapter 1–7

INDICATOR, TYPE S127.5.198

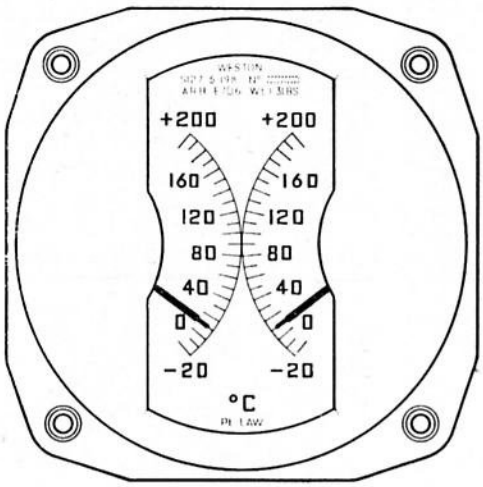

Fig. 1. Indicator, Type S127/5/198

Dial presentation

1. The dual temperature indicator Type S127.1.198 (fig. 1) is calibrated in deg.C from —20 to +200 on each of two scales. The deflection of each pointer is controlled by variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer to below the —20°C cardinal when the indicator is unenergized.

Circuit

3. The circuit diagram is shown in fig. 2. Connection to the indicator is made by means of six unified thread (6–32 UNC) terminal screws (fitted with captive washers) at the rear of the indicator. The terminals are numbered 1, 3 and 5 (Right hand movement) 2, 4 and 6 (Left hand movement); terminals 5 and 6 being positive and terminals 3 and 4 negative.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified must not be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152),

(2) Decade resistance box (Ref. No. 10S/16237) 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each case the resistance is to be not less than 20 megohms.

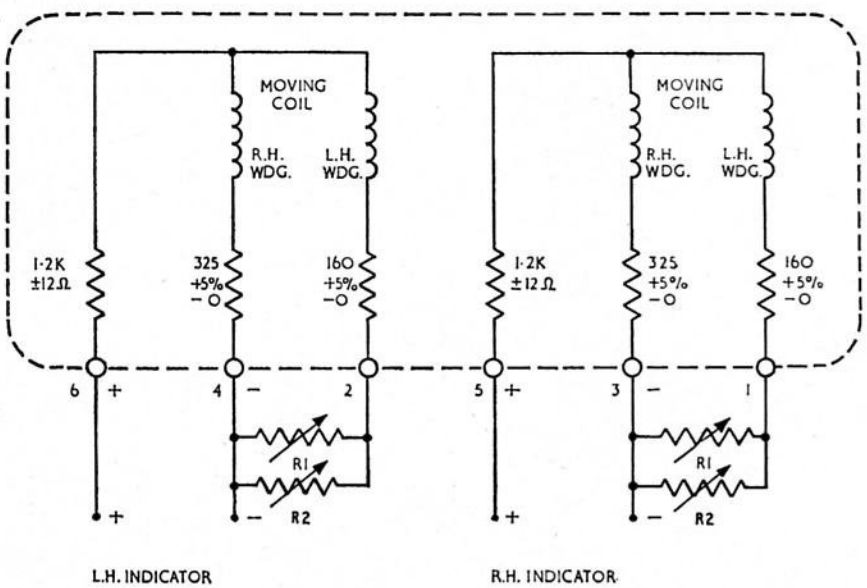

Fig. 2. Combined circuit and test circuit diagram

Accuracy test

8. Connect the left-hand side of the indicator to the test circuit as shown in fig. 3. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

9. Disconnect the indicator from the test circuit and connect the right hand side of the indicator to the test circuit as in fig. 3. Carry out the tests detailed in para. 8. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance in ohms R1	Resistance in ohms R2	Indicator deg.C
121	16 152	—24.4 to 15·6
131	28 470	—4·4 to 4·4
142	15 368	15·6 to 24·4
152	12 072	35·6 to 44·4
162	26 081	55·6 to 64·4
172	32 699	75·6 to 84·4
177	34 633	85·6 to 94·4
182	36 622	95·6 to 104·4
192	·42 990	115·6 to 124·4
202	40 604	135·6 to 144·4
212	37 241	155·6 to 164·4
221	81 254	175·6 to 184·4
231	76 000	195·6 to 204·4

Printed for Her Majesty's Stationery Office by George Over Ltd., London and Rugby. 630965 440 9/68 G.483/5

Chapter 1-8

INDICATOR, TYPE S127.5.72

DIAL PRESENTATION

1. The indicator, Type S127.5.72 (fig.1) is calibrated in deg.C from 0 to 120 on each of the two scales.
The captions, figures, arc lines and figured cardinals are fluorised; the minor scale marks are finished white on a matt-black background. The pointers also have a fluorescent finish.
Red radial lines are positioned on each scale at 15°C and 100°C.
For each scale, coloured arc bands span the scale at the following temperatures:

Yellow band	:	15°C to 60°C
Green band	:	60°C to 80°C
Yellow band	:	80°C to 100°C

2. The deflection of each pointer is controlled by the variation of resistance of an externally connected nickel law resistance thermometer element. The two indicator movements are each designed as a ratiometer.
Each movement of the indicator is fitted with a pull-off ligament which returns the pointer below the 0 deg.C cardinal when the indicator is unenergised.

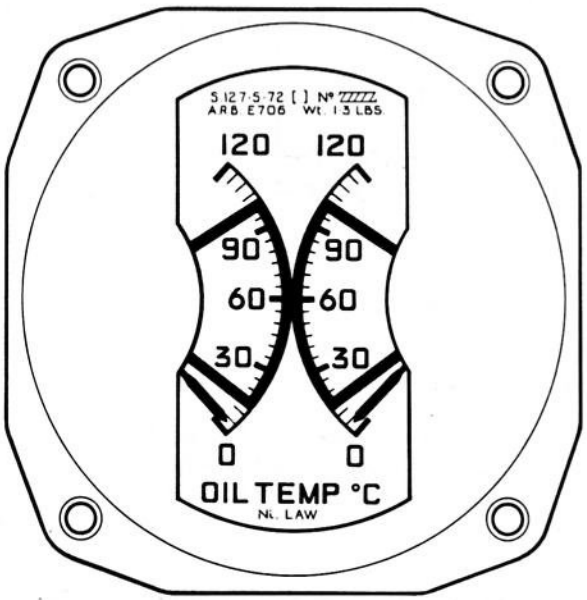

Fig.1 Indicator, Type S127.5.72

CIRCUIT AND CONNECTIONS

3. The combined circuit and test circuit diagram is shown in fig.2. Connection to the indicator is made by means of six 4 B.A. terminal screws, fitted with captive washers, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified must not be exceeded.

TEST EQUIPMENT

5. The following test equipment is required:-
(1) Insulation resistance tester, Type C (Ref.No.5G/9156675)or -
Comark Mk.2 (Ref.No. 5G/1112740).
(2) Decade resistance box (Ref.No.10S/16237) - 2 off.

Power supplies

6. A 28V d.c. power supply is required.

TESTING

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 91 ohms and 10260 ohms respectively, then connect the indicator to the test circuit shown in fig.2 for the left-hand indicator.

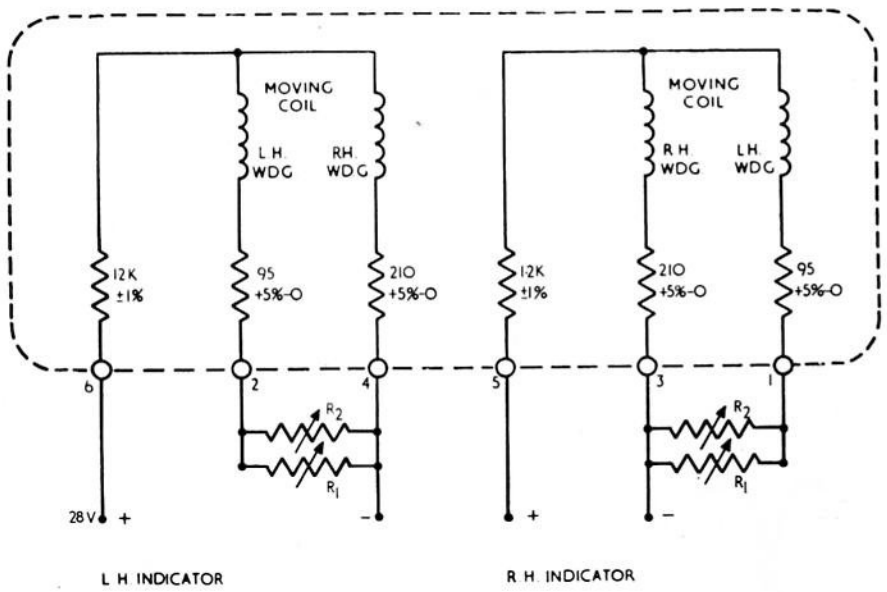

Fig.2 Circuit and test circuit diagram

CAUTION: At no time during the following tests are the values of R1 and R2 to be allowed to fall below 85 ohms and 9000 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the resistance boxes R1 and R2, in turn, to each set of values shown in Table 1. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, that the pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and repeat paragraphs 8 and 9 with the right-hand indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	R2	Indicator deg.C
91	10260	-3 to 3
95	22467	7 to 13
100	12490	17 to 23
105	9918	27 to 33
109	39441	37 to 43
114	29536	47 to 53
119	35333	57 to 63
124	76755	67 to 73
130	18648	77 to 83
135	36325	87 to 93
141	19740	97 to 103
146	53144	107 to 113
152	38354	117 to 123

Chapter 1–9

INDICATOR, TYPE S127.5.93

Dial presentation

1. The dual temperature indicator, Type S127.5.93 (fig. 1) is calibrated in deg. C from 0 to 120 on each of the two scales. The deflection of each pointer is controlled by the variation of resistance of an externally connected nickel law resistance thermometer element. The two indicator movements are each designed as a ratiometer.

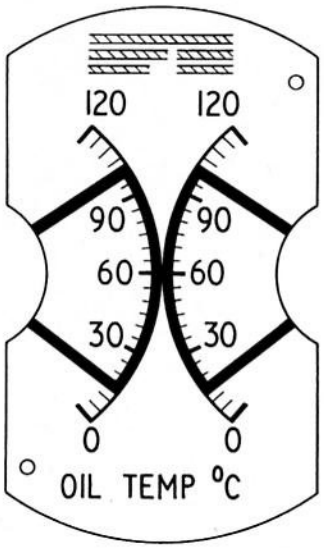

Fig. 1. Indicator, Type S127.5.93

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the 0 deg. C cardinal when the indicator is unenergized.

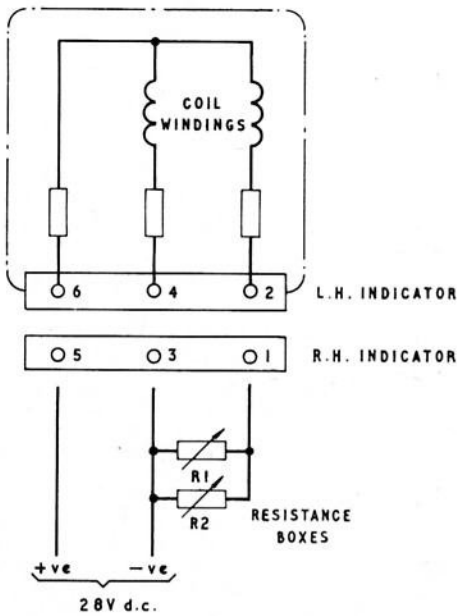

Fig. 2. Circuit and test circuit diagram

Circuit

3. The combined circuit and test circuit diagram is shown in fig. 2. Connection to the indicator is made by means of six 4 B.A. terminal screws, fitted with captive washers, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152)

(2) Decade resistance box (Ref. No. 10S/16237) . . . 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 90 ohms and 40590 ohms respectively, then connect the indicator to the test circuit shown in fig. 2 for the left-hand indicator.

Caution . . .

At no time during the following tests are the values of R1 and R2 to be allowed to fall below 90 ohms and 10000 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and repeat para. 8 and 9, with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	R2	Indicator deg. C
90	40590	−3 to 3
95	22467	7 to 13
100	12490	17 to 23
104	10806	27 to 33
109	39441	37 to 43
114	29536	47 to 53
119	45333	57 to 63
124	38378	67 to 73
131	15375	77 to 83
135	36325	87 to 93
141	19740	97 to 103
146	53144	107 to 113
152	38354	117 to 123

Chapter 1–10
INDICATOR, TYPE S127.5.117

Dial presentation

1. The dual pressure indicator, Type S127.5.117 (fig. 1) is calibrated in lb/in² from 0 to 40 on each of the two scales. The deflection of each pointer is controlled by variation of resistance of an externally connected pressure transmitter. The two indicator movements are each designed as a ratiometer. The indicator is designed to be used in parallel with another indicator of the same type, and must be so connected.

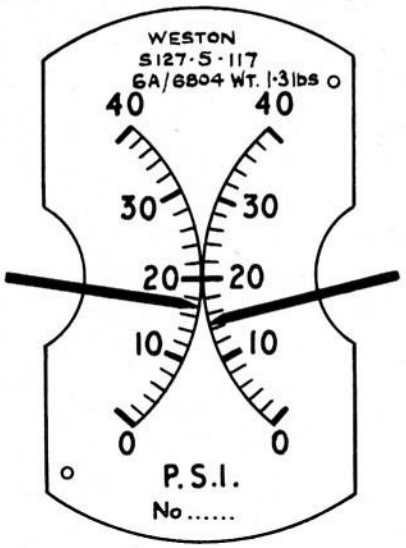

Fig. 1. Indicator, Type S127.5.117

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the 0 lb/in² cardinal when the indicator is un-energized.

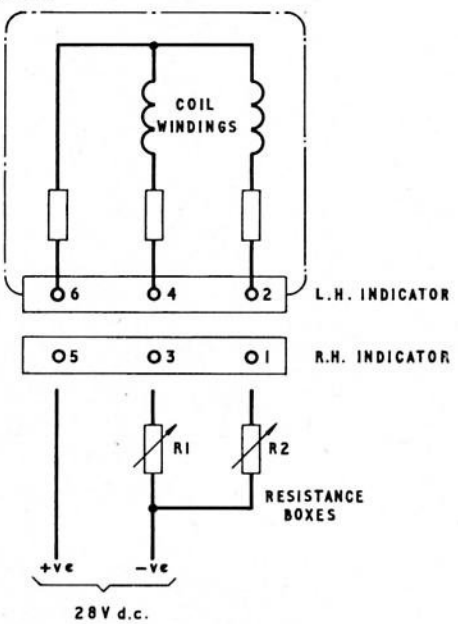

Fig. 2. Circuit and test circuit diagram

Circuit

3. The combined circuit and test circuit diagram is shown in fig. 2. Connection to the indicator is made via six 4 B.A. screws fitted with captive washers, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152)

(2) Decade resistance box (Ref. No. 10S/16237) . . . 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 490 ohms and 3010 ohms respectively, then connect the left-hand side of the indicator to the test circuit shown in fig. 2, connect a second indicator of the same type in parallel with the indicator under test.

Caution . . .

At no time during the following tests is the value of either resistance box to be allowed to fall below 450 *ohms. Failure to observe this caution may result in damage to the indicator.*

9. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, the indicator pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and repeat para. 8 and 9 with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	Resistance (ohms) R2	Indicator lb/in²
490	3010	−1 to 1
1075	2425	9 to 11
1645	1855	19 to 21
2210	1290	29 to 31
2760	740	39 to 41

Chapter 1–11

INDICATOR, TYPE S127.5.123

Dial presentation

1. The dual temperature indicator, Type S127.5.123 (fig. 1) is calibrated in deg. C from −20 to 160 on each of the two scales. The deflection of each pointer is controlled by the variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.

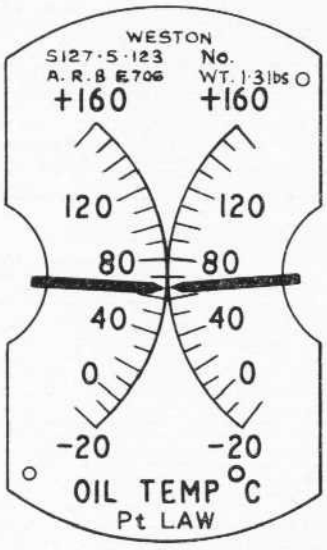

Fig. 1. Indicator, Type S127.5.123

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the −20 deg. C cardinal when the indicator is unenergized.

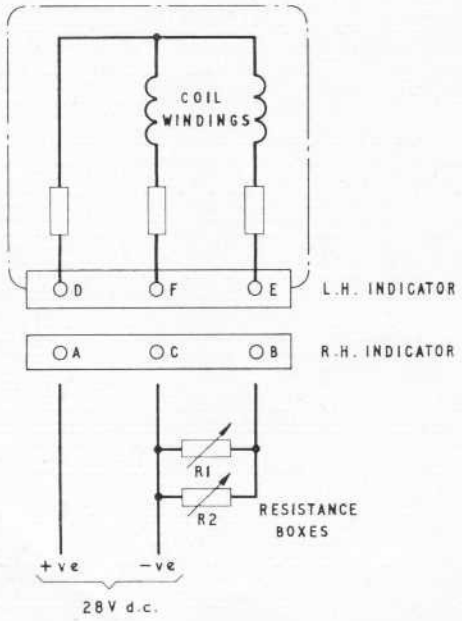

Fig. 2. Circuit and test circuit diagram

Circuit

3. The combined circuit and test circuit diagram is shown in fig. 2. Connection to the indicator is made by means of a 6 pole Mk. 4 plug, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152)

(2) Decade resistance box (Ref. No. 10S/16237) . . . 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each pole of the plug in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 121 ohms and 16152 ohms respectively, then connect the indicator to the test circuit shown in fig. 2 for the left-hand indicator.

Caution . . .

At no time during the following tests are the values of R1 and R2 to be allowed to fall below 120 ohms and 10000 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and repeat para. 8 and 9 with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	R2	Indicator deg. C
121	16152	−24 to −16
131	28470	−4 to 4
152	12072	36 to 44
172	32699	76 to 84
192	42990	116 to 124
212	37241	156 to 164

Chapter 1–12

INDICATOR, TYPE S127.5.147

Dial presentation

1. The dual temperature indicator, Type S127.5.147 (fig. 1) is calibrated in deg. C from −10 to 120 each of the two scales. The deflection of each pointer is controlled by the variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.

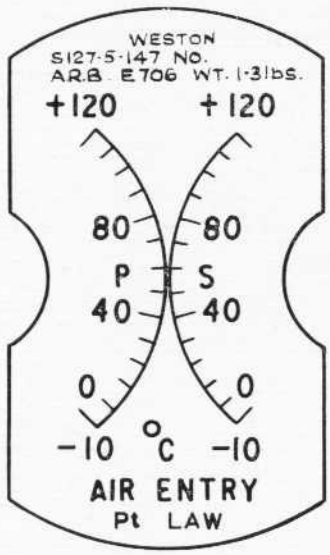

Fig. 1. Indicator, Type S127.5.147

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the −10 deg. C cardinal when the indicator is unenergized.

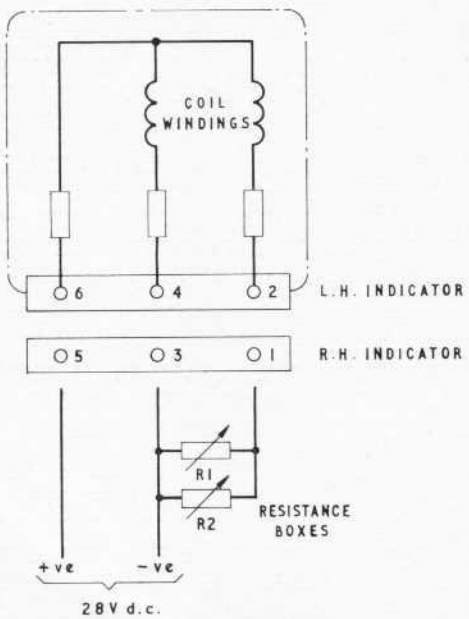

Fig. 2. Circuit and test circuit diagram

Circuit

3. The combined circuit and test circuit diagram is shown in fig. 2. Connection to the indicator is made by means of terminal screws, fitted with captive washers, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152)

(2) Decade resistance box (Ref. No. 10S/16237) . . . 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 126 ohms and 19720 ohms respectively, then connect the indicator to the test circuit shown in fig. 2 for the left-hand indicator.

Caution . . .

At no time during the following tests are the values of R1 and R2 to be allowed to fall below 120 ohms and 10000 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

10 Disconnect the indicator from the test circuit and repeat para. 8 and 9 with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	R2	Indicator deg. C
126	19720	−13 to −7
131	28470	−3 to 3
136	36856	7 to 13
142	15368	17 to 23
152	12072	37 to 43
162	26081	57 to 63
172	32699	77 to 83
182	36622	97 to 103
187	38667	107 to 113
192	42990	117 to 123

Chapter 1–13
INDICATOR, TYPE S127.5.148

Dial presentation

1. The dual temperature indicator, Type S127.5.148 (fig. 1) is calibrated in deg. C from −40 to 140 on each of the two scales. The deflection of each pointer is controlled by the variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.

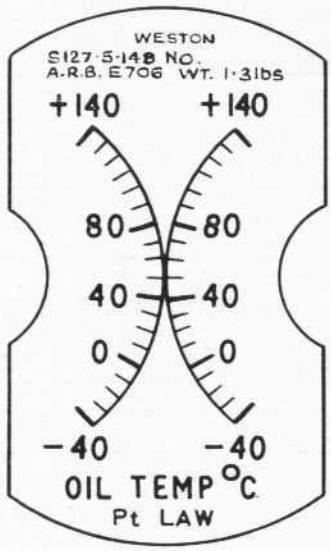

Fig. 1. Indicator, Type S127.5.148

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the −40 deg. C cardinal when the indicator is unenergized.

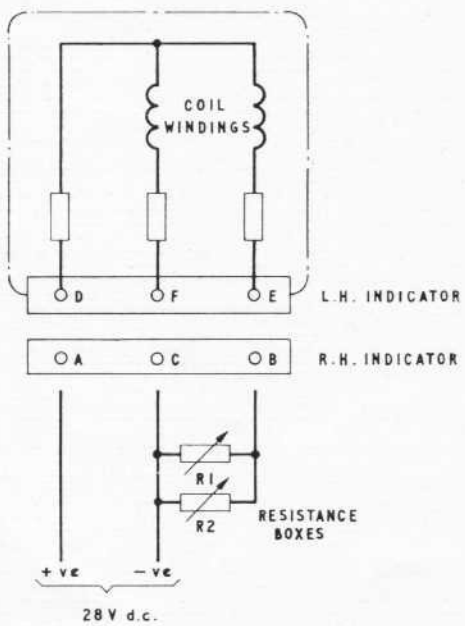

Fig. 2. Circuit and test circuit diagram

Circuit

3. The combined circuit and test circuit diagram is shown in fig. 2. Connection to the indicator is made by means of 3 terminal screws, fitted with captive washers, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152)

(2) Decade resistance box (Ref. No. 10S/16237) . . . 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each pole of the plug in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 110 ohms and 40223 ohms respectively, then connect the indicator to the test circuit shown in fig. 2 for the left-hand indicator.

Caution . . .

At no time during the following tests are the values of R1 and R2 to be allowed to fall below 100 ohms and 10000 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the resistance boxes R1 and R2 to each set of values shown in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing values of the scale, the indicator pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and repeat para. 8 and 9 with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	R2	Indicator deg. C
110	40223	−44 to −36
121	16152	−24 to −16
131	28470	−4 to 4
142	15368	16 to 24
152	12072	36 to 44
157	22251	46 to 54
162	26081	56 to 64
172	32699	76 to 84
182	36622	96 to 104
192	42990	116 to 124
202	40604	136 to 144

Chapter 1-14

INDICATOR, TYPE S127.5.151

DIAL PRESENTATION

1. The indicator, Type S127.5.151 (fig.1) is calibrated in deg.C from -20 to 200 on each of the two scales.
The caption, the figures and all dividing lines are finished white on a matt black background; the pointers are also finished in white.

2. The deflection of each pointer is controlled by the variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.
Each movement of the indicator is fitted with a pull-off ligament which returns the pointer below the -20 deg.C cardinal when the indicator is unenergised.

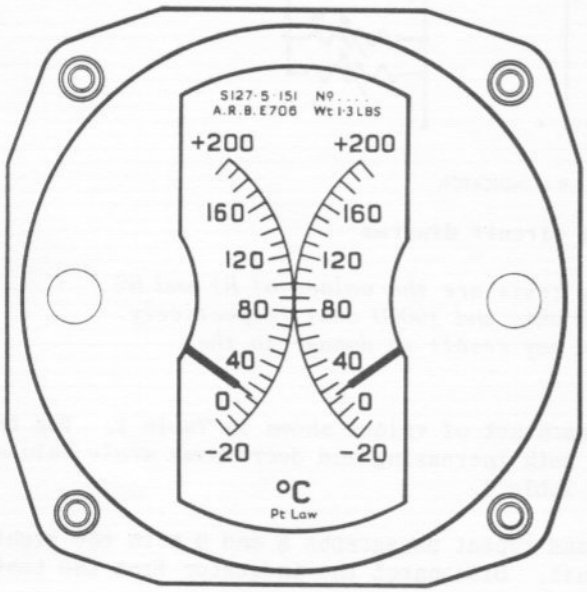

Fig.1 Indicator, Type S127.5.151

CIRCUIT AND CONNECTIONS

3. The combined circuit and test circuit diagram is shown in fig.2. Connection to the indicator is made by means of six - 4 B.A. terminal screws, fitted with captive washers, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

TEST EQUIPMENT

5. The following test equipment is required:-

(1) Insulation resistance tester, Type C, (Ref.No.5G/9156675) or Comark Mk.2 (Ref.No. 5G/1112740).
(2) Decade resistance box (Ref.No.10S/16237)- 2 off.

Power supplies

6. A 28V d.c. power supply is required.

TESTING

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 121 ohms and 16152 ohms respectively, then connect the indicator to the test circuit shown in fig.2 for the left hand indicator.

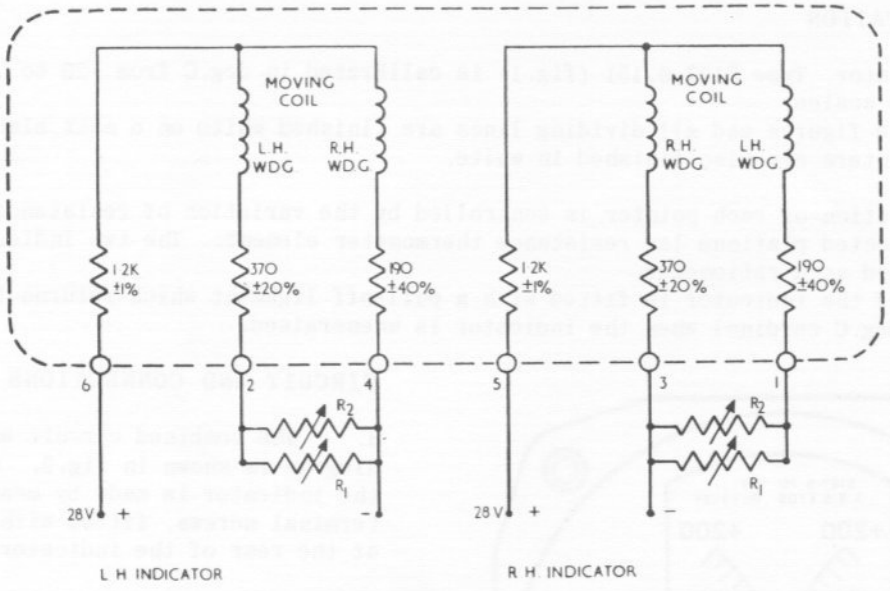

Fig.2 Circuit and test circuit diagram

CAUTION: At no time during the following tests are the values of R1 and R2 to be allowed to fall below 110 ohms and 10000 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the resistance boxes R1 and R2 in turn, to each set of values shown in Table 1. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, that the pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and repeat paragraphs 8 and 9 with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	R2	Indicator deg.C
121	16152	-25 to -15
131	28470	-5 to 5
152	20852	35 to 45
172	32699	75 to 85
192	42990	115 to 125
212	37241	155 to 165
231	76000	195 to 205

Chapter 1-15

INDICATOR, TYPE S127.5.157

DIAL PRESENTATION

1. The indicator, Type S127.5.157 (fig.1) is calibrated in deg.C from -40 to 140 on each of the two scales.
The caption, the figures and all dividing lines are finished white on a matt-black background; the pointers are also finished in white.

2. The deflection of each pointer is controlled by the variation in resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.
Each movement of the indicator is fitted with a pull-off ligament which returns the pointer below the -40 deg.C cardinal when the indicator is unenergised.

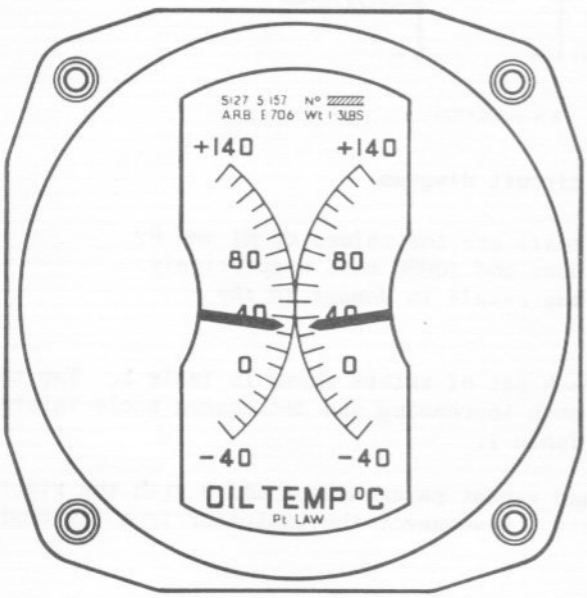

Fig.1 Indicator, Type S217.5.157

CIRCUIT AND CONNECTIONS.

3. The combined circuit and test circuit diagram is shown in fig.2. Connection to the indicator is made by means of a 6-pole Mk.4 plug, fitted at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

TEST EQUIPMENT

5. The following test equipment is required:-

(1) Insulation resistance tester, Type C, (Ref.No. 5G/9156675) or -
Comark Mk.2 (Ref.No.5G/1112740).
(2) Decade resistance box (Ref.No.10S/16237) - 2 off.

Power supplies

6. A 28V d.c. power supply is required.

TESTING

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each plug pin in turn and the case of the indicator. In each instance the resistance is not to be less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 110 ohms and 40223 ohms respectively, then connect the indicator to the test circuit shown in fig.2 for the left-hand indicator.

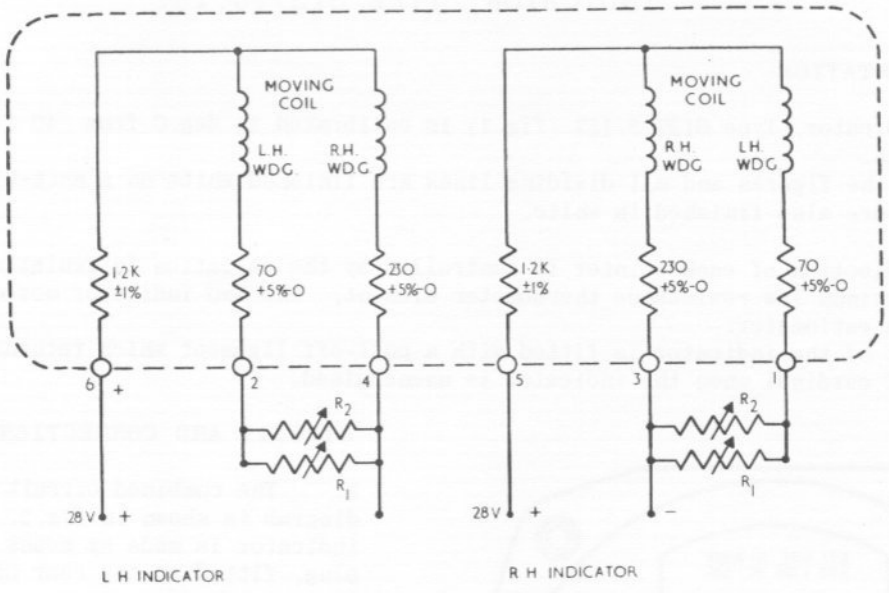

Fig.2 Circuit and test circuit diagram

CAUTION: At no time during the following tests are the values of R1 and R2 to be allowed to fall below 100 ohms and 10000 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the resistance boxes R1 and R2 in turn, to each set of values shown in Table 1. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, that the pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and repeat paragraphs 8 and 9 with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	R2	Indicator deg.C
110	40223	-44 to -36
131	28470	- 4 to 4
152	20852	36 to 44
172	32699	76 to 84
202	40604	136 to 144

Chapter 1–16

INDICATOR, TYPE S127.5.159

Dial presentation

1. The dual pressure indicator, Type S127.5.159 (fig. 1) is calibrated in lb/in² from 0 to 2000 on each of the two scales, The deflection of each pointer is controlled by variation of resistance of an externally connected pressure transmitter of the S122 series. The two indicator movements are each designed as a ratiometer.

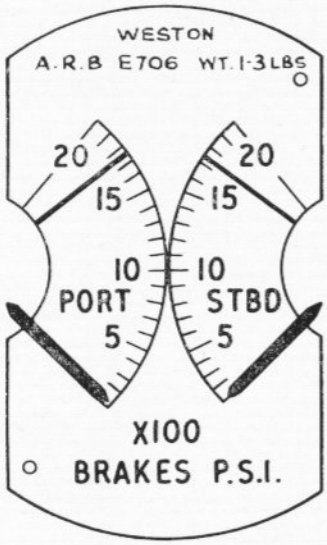

Fig. 1. Indicator, Type S127.5.159

General

2. Each movement of the indicator is fitted with pull-off ligaments which return the pointer below the 0 lb/in² cardinal when the indicator is unenergized.

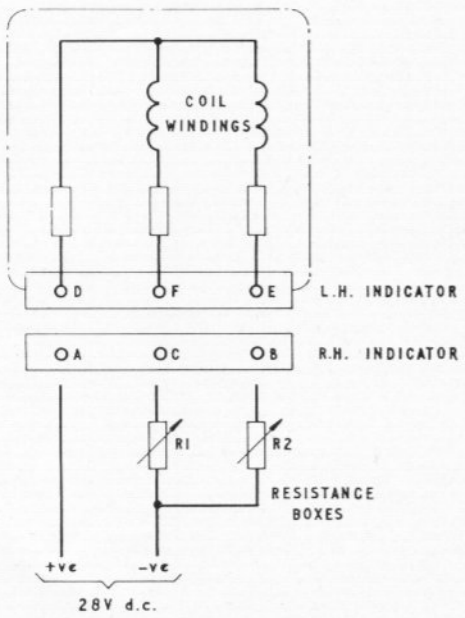

Fig. 2. Circuit and test circuit diagram

Circuit

3. The combined circuit and test circuit diagram is shewn in fig. 2. Connection to the indicator is made via a six-pole Mk. 4 plug, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

Test equipment

5. The following test equipment is required:—

(1) Insulation resistance tester, Type C (Ref. No. 5G/152)

(2) Decade resistance box (Ref. No. 10S/16237) . . . 2 off.

Power supplies

6. A 28V d.c. power supply is required.

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each pole of the plug, in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 490 ohms and 2760 ohms respectively, then connect the indicator to tha test circuit shewn in fig. 2 for the left-hand indicator.

Caution . . .

At no time during the following tests is the value of either resistance box to be allowed to fall below 450 *ohms. Failure to observe this caution may result in damage to the indicator.*

9. Set the resistance boxes R1 and R2 to each set of values shewn in Table 1, in turn. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, the indicator pointer indicates within the values shewn in Table 1.

10. Disconnect the indicator from the test circuit and repeat para. 8 and 9 with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms)		Indicator
R1	R2	lb/in²
490	2760	−40 to 40
1075	2175	460 to 540
1645	1605	960 to 1040
2210	1040	1460 to 1540
2760	490	1960 to 2040

Chapter 1-17

INDICATOR, TYPE S127.5.163

DIAL PRESENTATION

1. The indicator, Type S127.5.163 (fig.1) is calibrated in deg.C from -10 to 120 on each of the two scales.
The captions, the figures and all dividing lines are finished white on a matt-black background; the pointers are also finished in white.

2. The deflection of each pointer is controlled by the variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer.
Each movement of the indicator is fitted with a pull-off ligament which returns the pointer below the -10 deg.C cardinal when the indicator is unenergised.

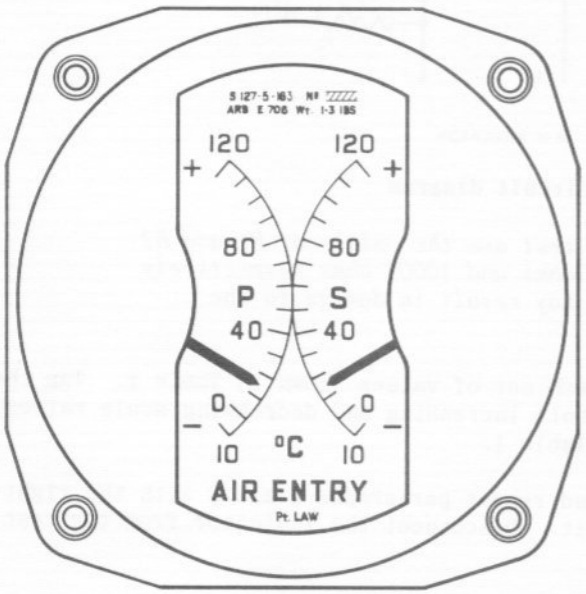

Fig.1 Indicator, Type S127.5.163

CIRCUIT AND CONNECTIONS

3. The combined circuit and test circuit diagram is shown in fig.2. Connection to the indicator is made by means of six - 4 B.A. terminal screws, fitted with captive washers, at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator immediately prior to installation in an aircraft and at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

TEST EQUIPMENT

5. The following test equipment is required:-
(1) Insulation resistance tester, Type C, (Ref.No.5G/9156675) or -
Comark Mk.2 (Ref.No. 5G/1112740)
(2) Decade resistance box (Ref.No.10S/16237) - 2 off.

Power supplies

6. A 28V d.c. power supply is required.

TESTING

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the resistance boxes to be used as R1 and R2 to 126 ohms and 19720 ohms respectively, then connect the indicator to the test circuit shown in fig.2 for the left-hand indicator.

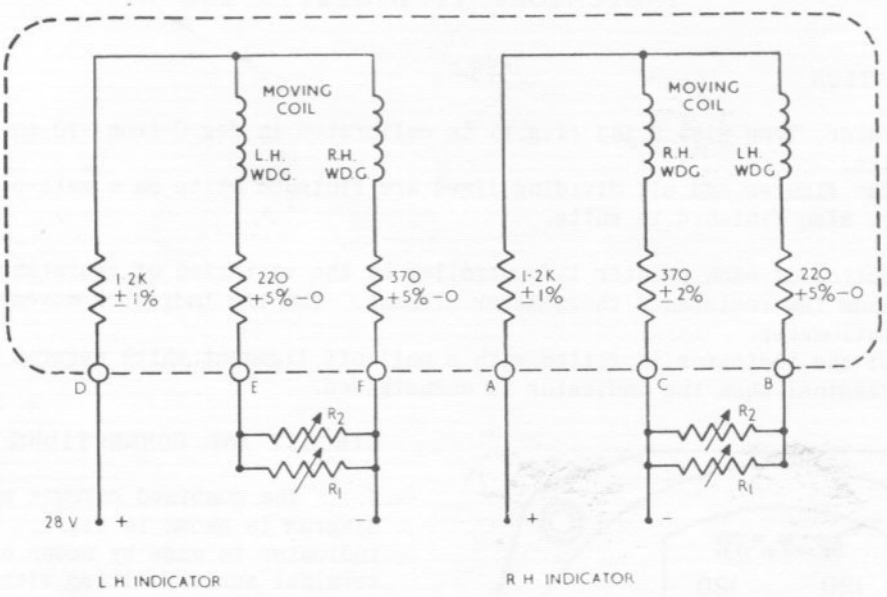

Fig.2 Circuit and test circuit diagram

CAUTION: At no time during the following test are the values of R1 and R2 to be allowed to fall below 120 ohms and 10000 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the resistance boxes R1 and R2 in turn, to each set of values shown in Table 1. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, that the pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and repeat paragraphs 8 and 9 with the right-hand side of the indicator connected to the test circuit. Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Resistance (ohms) R1	R2	Indicator deg.C
126	19720	-13 to -7
131	28470	- 3 to 3
152	20852	37 to 43
172	32699	77 to 83
192	42990	117 to 123

Chapter 1-18

INDICATOR, TYPE S127.5.122

DIAL PRESENTATION

1. The indicator, Type S127.5.122 (fig.1) is calibrated from 0-45 on each of the two scales. The figures are related to FLAP position.
The figures and scale marks are finished white on a matt-black background; the pointers are also finished white.

2. The deflection of each pointer is controlled by the variation in resistance of an external position transmitter. The transmitters are Sangamo Weston, Model S132, Form 1/2 types.
Each movement of the indicator is fitted with a pull-off ligament which returns the pointer below the bottom end of its scale arc when the indicator is unenergized.

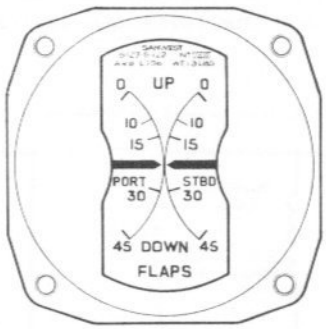

Fig.1 Indicator, Type S127.5.122

CIRCUIT AND CONNECTIONS

3. The combined circuit and test circuit diagram is shown in fig.2. Connections to the indicator are made by means of a 6-pole Mk.4 plug at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator at any time the serviceability is suspect. The tolerance specified must not be exceeded.

TEST EQUIPMENT

5. The following test equipment is required:-

(1) Insulation resistance tester, Type C (Ref.No. 5G/9156675) or
Comark Mk.2 (Ref.No. 5G/1112740)

(2) Decade resistance box - Cammetric Ltd. Type 5503 - 3 off.

Power supply

6. A 28V d.c. power supply is required.

TESTING

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each plug pin in turn and the case of the indicator.
In each test the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the decade resistance boxes R1 and R2 each to 500 ohms and then connect the indicator to the test circuit shown in fig.2 for the left-hand indicator. Set R3 to 115 ohms.

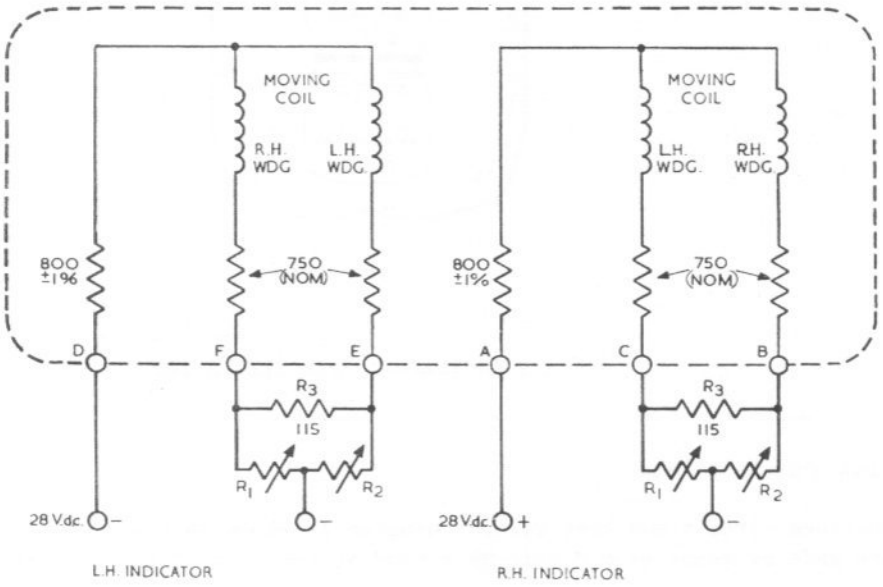

Fig.2 Circuit and test circuit diagram

9. Set the resistance boxes and R2 and R2 in turn to each set of values shown in Table 1. Energize the circuit and tap the indicator lightly at each setting and check that for both increasing and decreasing values that the pointer indicates the required accuracy.

10. Disconnect the indicator from the test circuit and repeat paragraphs 8 and 9 with the right-hand side of the indicator connected to the test circuit.
Disconnect the indicator from the test circuit.

TABLE 1

Calibration values

Scale value	Resistance (ohms) R1	R2
0	1000.0	0.0
10	777.8	222.2
15	666.7	333.3
30	333.3	666.7
45	0.0	1000.0

Accuracy: ± 2% of full scale deflection, that is, ± 2° angular.

Chapter 1-19

INDICATOR, TYPE S127.5.206

DIAL PRESENTATION

1. The indicator, Type S127.5.206 (fig.1) is calibrated in deg.C from -10 to +120 on the left hand scale and from 0 to +250 on the right hand scale. The captions, the figures and all dividing lines are finished white on a matt-black background: the pointers are also finished in white.

2. The deflection of each pointer is controlled by the variation of resistance of an externally connected platinum law resistance thermometer element. The two indicator movements are each designed as a ratiometer. Each movement of the indicator is fitted with a pull-off ligament which returns the pointer below the -10 deg.C or 0 cardinal when the indicator is unenergised.

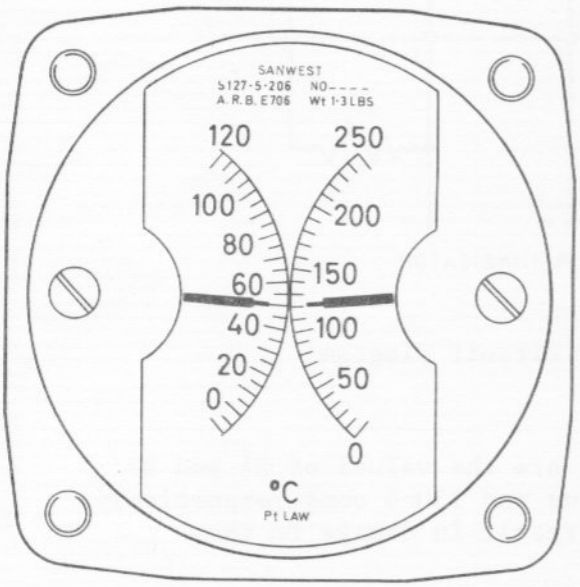

Fig.1 Indicator, Type S127.5.206

CIRCUIT AND CONNECTIONS

3. The combined circuit and test circuit is shown in fig.2. Connection to the indicator is made by means of six - 32 UNC terminal screws, fitted with captive washers at the rear of the indicator.

STANDARD SERVICEABILITY TEST

Introduction

4. The following paragraphs detail the tests to be applied to the indicator at any time the serviceability is suspect. The tolerances specified are not to be exceeded.

TEST EQUIPMENT

5. The following test equipment is required:-

(1) Insulation resistance tester, Type C, (Ref.No.5G/9156675) or - Multi range insulation resistance tester BM8 Mk 2 (Ref.No.5G/6501 361)

(2) Decade resistance box. Cammetric, Type 5502 (Ref No.10S/6327 624)

Power supplies

6. A 28V d.c. power supply is required.

TESTING

Insulation resistance test

7. Using the insulation resistance tester, measure the resistance between each terminal in turn and the case of the indicator. In each instance the resistance is to be not less than 20 megohms.

Accuracy test

8. Set the decade resistance box to be used as R1 to 125·2 ohms, then connect the indicator to the test circuit shown in fig.2 for the left-hand indicator.

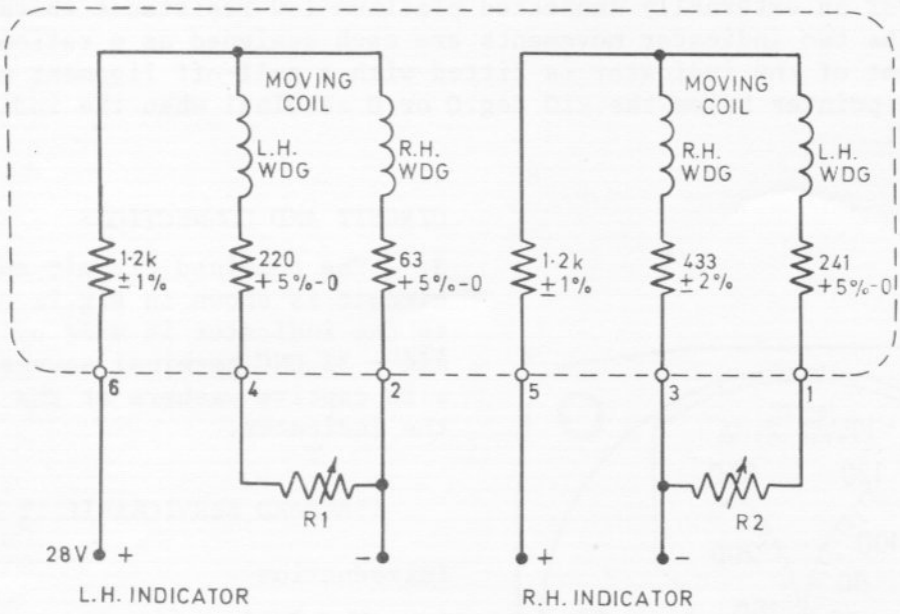

Fig.2 Circuit and test circuit diagram

CAUTION...

At no time during the following test are the values of R1 and R2 to be allowed to fall below 125.2 ohms and 130·4 ohms respectively. Failure to observe this caution may result in damage to the indicator.

9. Set the decade resistance box R1 in turn to each value shown on Table 1. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, that the pointer indicates within the values shown in Table 1.

10. Disconnect the indicator from the test circuit and set the decade resistance box, now to be used as R2, to 130·4 ohms, with the right-hand side of the indicator connected to the test circuit.

TABLE 1

Calibration values

LH Indicator		RH Indicator	
Resistance (ohms) R1	Indicator deg C	Resistance (ohms) R2	Indicator deg C
125·2	-13 to -7	130·4	-5 to 5
130·4	-3 to 3	155·9	45 to 55
135·5	7 to 13	171·1	75 to 85
140·7	17 to 23	181·1	95 to 105
145·8	27 to 33	191·1	115 to 125
150·9	37 to 43	196·0	125 to 135
155·9	47 to 53	205·9	145 to 155
161·0	57 to 63	210·8	155 to 165
166·0	67 to 73	220·6	175 to 185
171·1	77 to 83	230·3	195 to 205
176·1	87 to 93	239·9	115 to 225
181·1	97 to 103	249·5	235 to 245
186·1	107 to 113	254·3	245 to 255
191·1	117 to 123		

11. Set the decade resistance box R2 in turn to each value in Table 1. Tap the indicator lightly at each setting and check that, for both increasing and decreasing scale values, that the pointer indicates within the values shown in Table 1.

12. Disconnect the indicator from the test circuit.