OVERHAUL MANUAL

S.62 FORM 3 - INDICATOR RATIOMETER

SANGAMO WESTON LIMITED

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This Manual complies with British Civil Airworthiness Requirements, Chapter A6-2. The technical accuracy of this manual has been verified and is certified correct.

Signed. 

Date. October 1970

A.R.B. Design Approval No. AD/1147/47

MODEL S.62 FORM 3

REVISION RECORD SHEET

Revision No.	Date of Issue	Incorporated by:	Date	Remarks
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The introduction of any amendment or revision not certified in accordance with British Civil Airworthiness Requirements Chapter A6-2 will invalidate the statement of certification on Model S.62 Form 3.
Amendments or revisions embodied in this manual, which have been certified under an approval authorisation other than that applicable to the initial certification must be recorded on separate record sheets.

SANGAMO WESTON LTD.

OVERHAUL MANUAL 31-09-08

MODEL S.62 FORM 3 - INDICATOR, RATIOMETER

LETTER OF TRANSMITTAL

FOR

REVISION No. 3

Issued October 1970

by

Sangamo Weston Ltd., Enfield, Middlesex, England

	ACTION	REASON
1.	Remove and destroy pages 1/2 and 23/24 and substitute pages 1/2 and 23/24 incorporating Revision 3.	Page 2 - Signature changed. Page 24 - Overhaul Period revised.
2.	Record the incorporation of this revision on the Revision Record Sheet on Page 3.	
3.	Retain this Letter of Transmittal.	This certifies compliance with Section A, Chapter A6-2, British Civil Airworthiness Requirements.

This revision complies with British Civil Airworthiness Requirements, Section A, Chapter A6-2 The technical accuracy of this revision has been verified and certified accurate.

Signed: 

Date: 21st October 1970

A.R.B. Design Approval No. AD/1147/47

OVERHAUL MANUAL

MODEL S.62 FORM 3 - INDICATOR RATIOMETER

TABLE OF CONTENTS

ILLUSTRATIONS

OVERHAUL MANUAL

MODEL S.62 FORM 3 - INDICATOR RATIOMETER

The overhaul procedure for the S.62 Form 3 contained in this manual is applicable to all indicators of this Form. The addenda at the end of the manual will give details of particular Variants of this indicator, together with reference to information contained in the main part of the manual applicable to the Variant.

1. Description

A. General

Model S.62 Form 3 is a moving coil ratiometer designed to operate from a 24 volts d.c. supply. It has a scale angle of 90^{o} and can be employed to indicate temperature, pressure or position. The indicator is accommodated in a small S.A.E. case and connections to the circuit are facilitated by three shrouded terminals at the rear of the case. For calibration purposes the indicator shield is marked 'Pt.Law' or 'Ni.Law' in order to differentiate the respective components of the external resistance thermometer element, which may be platinum or nickel, with which the indicator is to be used. If the indicator shield does not carry either of these markings the components of the thermometer element will be nickel.

B. Detail

The moving element (42) comprises two windings of fine copper wire on a common frame, with one end of each winding joined in a common connection; thus, the two windings form a single unit, pivoted in adjustable, jewelled bearings which are inset into the top and bottom bridges (26 and 30). The moving element is free to rotate in the gap between the core (43) and pole piece assembly (44). Three fine ligaments, used to connect the windings in circuit, are soldered to the top bridge (26) and bottom ligament terminals (33 and 34). The pointer and balance cross arm are carried by the upper pivot base. Two grooves in the magnet (23) locate with two 8 B.A. studs on the base. The magnet is held rigidly in position when pole piece assembly (44) and base (47) are assembled. The top and bottom bridges are mounted on 12 B.A. threaded pillars. An appropriately printed scale (13) is fitted over the magnetic shield plate (14) and secured to two pillars integral with the pole piece assembly. The two 10 B.A. screws securing the scale also carry the pointer stops (12). Resistance spools (22) are mounted into the pole piece assembly and the three terminal screws (45) are fitted to the base. When fully assembled, a shield (3) is fitted over the barrel of the indicator.

C. Operation

The indicator registers the ratio between currents fed to the two windings which are pivoted in a permanent and non-uniform magnetic field. As a temperature indicator the current in one winding is relatively constant while that in the other is varied by changes, due to temperature variation in the vicinity of the external resistance thermometer element which is electrically connected to the indicator. Alternatively, the current in both windings may be varied, the temperature range to be covered by a particular variant determining which of the two circuit arrangements will be used. In both applications, however, the indication will be proportional to the ratio of the currents in the two windings which may be interpreted as degrees of temperature on a suitably calibrated scale.

KEY TO FIG.1.

1. 6 B.A. Screw (Shield)
2. 6 B.A. Lockwasher
3. Shield
4. Sealing Screw
5. Sealing Cup
6. 8 B.A. C'sk. Screw (Cover)
7. Cover Assembly
8. Bezel Ring
9. Glass
10. 10 B.A. Screw (Black)
11. Lockwasher (Black)
12. Pointer Stop
13. Scale
14. Magnet Shield Plate
15. 8 B.A. Screw
16. 8 B.A. Lockwasher
17. 8 B.A. Nut
18. 8 B.A. Lockwasher
19. Sleeving
20. 10 B.A. Screw
21. 10 B.A. Lockwasher
22. Spool
23. Magnet
24. 12 B.A. nut
25. 12 B.A. Lockwasher
26. Top Bridge
27. Top Ligament
28. 12 B.A. Nut
29. 12 B.A. Lockwasher
30. Bottom Bridge
31. Insulating Washer
32. Bottom Ligament
33. Ligament Terminal (R.H.)
34. Ligament Terminal (L.H.)
35. Insulating Bush
36. 12 B.A. Nut
37. 12 B.A. Lockwasher
38. 12 B.A. Large Washer
39. Core Clamp
40. 12 B.A. C'sk. Screw
41. Spacer
42. Moving Element Complete
43. Core
44. Pole Piece Assembly
45. Screw and Washer Assembly
46. Resistor
47. Base

2. Disassembly

A. General (Refer to Fig.1.)

(1) Remove screws 1 (3-off) and washer 2 (3-off) from rear of indicator and withdraw shield (3).

(2) Remove sealing screw (4) and sealing cup (5).

(3) Remove screws 6 (2-off) and withdraw cover assembly (7).

(4) Remove screws 10 (2-off), washer 11 (2-off), pointer stops 12 (2-off), scale (13) and magnetic shield plate (14).

(5) Unscrew and remove 8 B.A. nuts 17 (2-off), lockwashers 18 (2-off), screws 15 (2-off) and lockwashers 16 (2-off).

(6) Carefully separate complete movement (18A) from base (47) and unsolder the leads from the lower ligament terminal tags.

(7) Release screws 20 (2-off) and lockwashers 21 (2-off) and remove spools 22 (2-off).

(8) Remove magnet (23).

NOTE: If it is not intended to re-magnetise the magnet, a series of soft iron keepers should be placed across the poles during the removal operations so that the magnetic circuit is not broken.

(9) Mark the magnet in order to facilitate its replacement in the same position with respect to magnetic polarity.

B. Movement complete (Refer to Fig.1.)

(1) Unsolder ligaments to top bridge (26), right-hand ligament terminal (33) and left-hand ligament terminal (34).

CAUTION: BEFORE UNSOLDERING THE LIGAMENTS MAKE A NOTE OF THEIR SHAPE FOR RE-ASSEMBLY PURPOSES. DO NOT ALLOW THE LIGAMENTS TO OVERHEAT AS THIS WILL CAUSE DEFORMATION.

(2) Unscrew and remove 12 B.A. nuts 24 (2-off) and lockwashers 25 (2-off); remove top bridge (28).

(3) Unscrew and remove 12 B.A. nuts 28 (2-off) and lockwashers 29 (2-off); remove bottom bridge (30).

(4) Withdraw insulating washers 31 (2-off), ligament terminals (33) and (34), and insulating bushes 35 (2-off).

(5) Unscrew 12 B.A. nut (36) and remove lockwasher (37), washer (38) and core clamp (39); withdraw screw (40) and spacer (41).

(6) Extract moving element (42) together with core (43) from pole piece assembly (44).

3. Cleaning

A. Schedule of cleaning materials

(1) Acetone B.P.C.

(2) Camel hair brush, No.12 round.

B. Procedure

(1) Remove all Bostik adhering to screws, nuts and other dismantled components using Acetone as the cleaning agent.

CAUTION: ENSURE THAT ACETONE DOES NOT COME INTO CONTACT WITH VARNISHED SURFACES OR INSULATING MATERIALS.

(2) Clean all dust, etc., from the interior of cover assembly (7) and base (47) with the aid of a camel hair brush.

(3) Particles adhering to core (43) and pole piece (44) must be removed with a fine jet of clean, dry air.

4. Inspection

A. Metal components

Examine for:

(1) Corrosion.

(2) Distortion.

(3) Cracks.

(4) Serviceability of threads.

B. Moving element (42)

Examine for:

(1) Resistance value of moving coil. This must be within the limits quoted in the addendum at the rear of this manual dealing with the indicator being overhauled.

(2) Loose winding turns.

(3) Bent or damaged pointer.

C. Cover assembly (7) and Base (47)

Examine for:

(1) Cracked or broken bakelite mouldings.

(2) Loose or broken glass.

D. Spools (22)

Examine for:

(1) Open circuits.

(2) Damaged insulation.

E. Scale

Examine for discolouration, flaking, etc.

5. **Repair**

Other than replacing a broken glass, no attempt should be made to repair defective components. These must be discarded and replacement components fitted.

A. **Broken glass**

(1) Prise out bezel ring (8) and glass (9) from cover assembly (7).

NOTE: It may be necessary to break both the glass and the bezel ring during this operation.

(2) Use Genklene (if available). Inhibisol or acetone as a solvent to remove all Bostik adhering to cover assembly.

NOTE: On some earlier indicators Bostik cement No.1261 may have been used for glass/cover adhesion; this cement is best removed with Toluene.

(3) Apply Bostik cement No.1261 evenly around the inside lip of the cover assembly. Press the new glass down firmly into the cement, eliminating all air bubbles and ensuring that the Bostik covers the edge of the glass and fills all gaps.

(4) Apply Bostik around internal surface of the cover assembly just above the glass.

(5) Insert the bezel ring and press down firmly into Bostik so that a bed is formed on the glass.

(6) Allow to air dry for a minimum of 48 hours.

(7) Support glass to prevent it loosening and trim off excess Bostik with a sharp wet knife.

B. **Schedule of materials**

(1)	Bostik cement No.772	B.B. Chemical Co. Ltd.
(2)	Inhibisol	Penetrone Paripan Ltd.
(3)	Genklene	I.C.I. Ltd.
(4)	Acetone	B.P.C.

6. Assembly

During assembly the threads of all 6 B.A. and 8 B.A. screws and nuts must be coated with Bostik to SANGAMO WESTON Specification B.S.104. Jewel screws, 10 B.A. and 12 B.A. screws and nuts, and all soldered connections must be coated with Red Thermolene Lacquer. These materials may be obtained either from SANGAMO WESTON LIMITED, ENFIELD, MIDDLESEX, ENGLAND, or from the suppliers listed in paragraph A. (Schedule of materials).

A. Schedule of materials

B.S.104	BOSTIK No.772 thinned with acetone to a brushable consistency.
Thermolene lacquer	CANNING'S Red Thermolene Lacquer No.185
B.S.43	GULFCROWN No.3 grease. GULF OIL CO.

B.. Movement

(1) Place moving element (42) together with core (43) in pole piece assembly (44).

NOTE: The cut-out section of the core must be to the left-hand side when the indicator is viewed from the front.

(2) Replace spacer (41), screw (49), core clamp (39) and secure with washer (38), lockwasher (37) and 12 B.A. nut (36).

(3) Assemble insulating bushes 35 (2-off), ligament terminals (33) and (34), and insulating washers 31 (2-off) onto pillars of pole piece assembly (44).

(4) Place bottom bridge (30) in position and secure with lockwasher 29 (2-off) and 12 B.A. nuts 29 (2-off).

(5) Locate the bottom pivot of the moving element in the bottom bridge jewel bearing.

(6) Place top bridge (26) in position on pole piece assembly (44), ensuring that the top pivot of the moving element is correctly located in the jewel bearing.

(7) Secure the top bridge with lockwashers 25 (2-off) and 12 B.A. nuts 24 (2-off).

CAUTION: THE JEWEL SCREWS MUST BE SLACKENED IF THERE IS TENDENCY FOR THE MOVING ELEMENT TO BIND WHEN NUTS (24) ARE TIGHTENED.

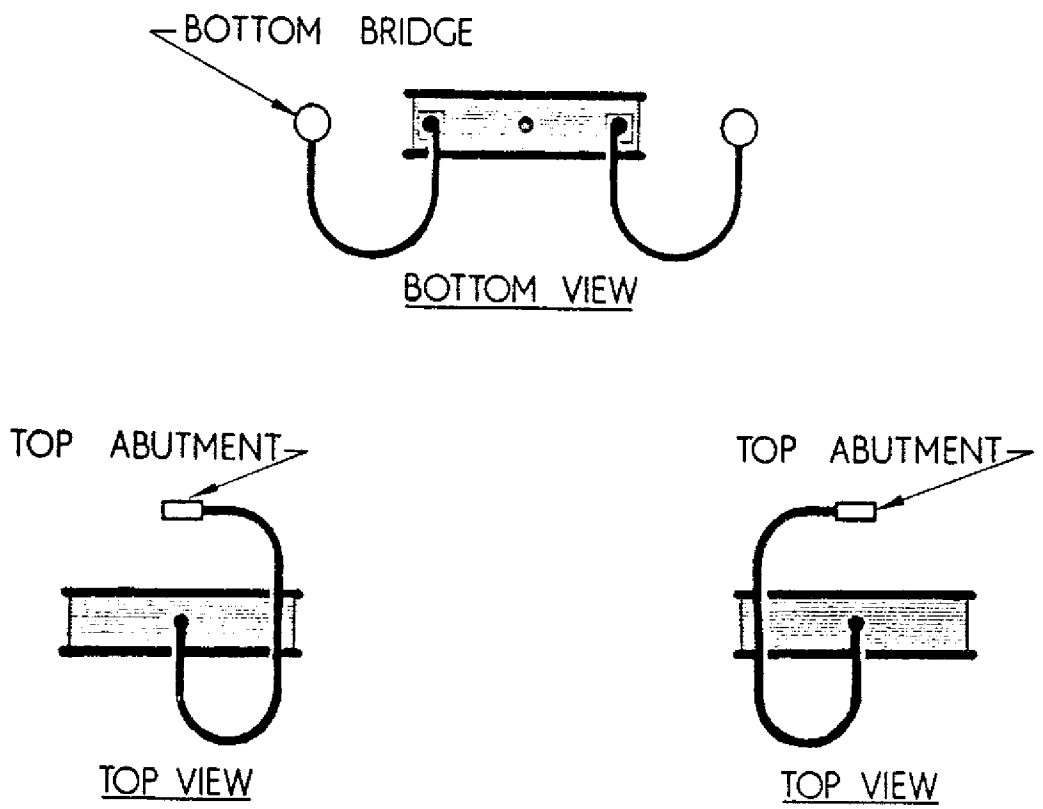

Fig. 2. Ligament details

(8) Solder the ligaments to their respective terminals. Fig. 2. shows the shape of the ligaments after soldering and the configuration of the ligaments for indicators with pointer pull off to the right or left. Information concerning the direction of pull off for a particular version of the indicator will be found in the appropriate addendum at the rear of this manual.

CAUTION: DEFORMATION WILL OCCUR IF LIGAMENTS ARE OVERHEATED DURING THE SOLDERING PROCESS.

(9) Adjust the jewel screws so that the moving element is centred longitudinally in the pole piece.

(10) When the moving element is centred, turn the jewel screws clockwise in increments of approximately 1/10th of a turn until 'pointer flop' just disappears. Back off the jewel screw by 1/10th to 1/8th of a turn until a slight 'pointer flop' is apparent.

NOTE: 'Pointer flop' is the movement of the pointer due to the pivots being able to move laterally in jewels.

C. General

(1) Replace magnet (23).

NOTE: Ensure that the magnet keepers are in place until the indicator's magnetic circuit is complete. If the circuit has been broken the magnet must be re-magnetised by a magnetising force of not less than 20,000 ampere turns. Viewed from the front of the indicator, the north pole of the magnet is on the left-hand side.

(2) Slide the assembled movement onto the pillars of base (47) and secure with lockwashers 16 (2-off), screws 15 (2-off), lockwashers 18 (2-off) and 8 B.A. nuts 17 (2-off).

NOTE: Spools 22 (2-off) must not be assembled at this stage.

(3) Place magnet shield (14) and scale (13) in position.

(4) Assemble pointer stops 12 (2-off) and replace lockwashers 11 (2-off) and screws 10 (2-off).

NOTE: Pointer stops must be adjusted so that the pointer deflects approximately 5 angular degrees beyond each end of the scale markings.

(5) Connect the indicator as shown in Fig.3. for a bridge circuit or Fig.4. for a straight circuit, the two decade resistance boxes replace the spools which are adjusted to obtain the correct scale length. Another decade resistance box is used to simulate the resistance of the external resistance bulb. Adjust the two spool boxes to the nominal value of the spools. Apply 26 volts d.c. and adjust the external resistance box to bring the pointer to approximately the mid-scale position. Then balance the movement thus.

(a) Hold the indicator with the scale horizontal and pointer tip pointing to the left. Allow the pointer to come to rest and then raise the indicator slowly until its scale is vertical. Note the amount the pointer deflects as the indicator is raised.

(b) Adjust balance weights to bring the pointer movement to a minimum using balance weight wrench No.221157.

(c) Repeat (a) and (b) with the pointer tip to the right.

(d) Repeat (a) and (b) with the pointer tip away from the operator.

(e) Repeat (a) and (b) with the pointer tip towards the operator.

(f) Disconnect the indicator.

(6) If the magnet has been remagnetised, the movement must now be fitted in its case and baked at a temperature of 70°C. for a period of not less than 8 hours.

(7) Adjust the spools to the correct value as described in Paragraph 8 (**Testing**). When this operation has been satisfactorily completed, assembly can be continued as follows:

(8) Assemble the adjusted spools to pole piece assembly (44) and secure with lockwashers 21 (2-off) and screws 20 (2-off).

(9) Solder the internal leads to their respective terminals. A diagram of the internal wiring will be found in the addendum at the rear of this manual concerning the indicator being overhauled.

(10) Calibrate the indicator as detailed in the appropriate addendum for the particular variant of the indicator being overhauled.

(11) Apply a thin coat of non-fluid grease SANGAMO WESTON Specification B.S.43 to the portion of base (47) where it meets the cover assembly; also apply a thin coat to the internal side of the cover assembly.

(12) Fit the cover assembly (7).

(13) Insert sealing cup (5), sealing screw (4) and screws 6 (2-off).

(14) Replace shield (3) and secure with lockwashers 2 (3-off) and screws 1 (3-off).

8. Testing

A. Spool adjustment (Bridge circuit)

To determine the correct scale length for the required temperature range two spools (R3 and R4) need adjustment, these spools are identified in the circuit diagram in the appropriate addendum for the variant under test.

(1) Connect three decade resistance boxes as shown in Fig.3.

(2) Adjust resistance box R3 to the nominal value of the spool.

(3) Set external resistance box R1 to the equivalent resistance of the bulb's mid-scale value given in the addendum for the appropriate variant.

(4) Apply 26 volts d.c. to V and RV-.

(5) Adjust resistance box R4 to give a pointer indication of approximately mid-scale.

(6) Adjust the resistance box R1, first to the lowest and then to the highest value of resistance for which the indicator is designed. These values are contained in the indicator's calibration table in the addendum at the rear of this manual.

(7) If the pointer deflects over too wide an angle reduce the value of resistance box R4, if the deflection is over too narrow an angle increase the value of resistance box R4.

(8) Changing the value of R4 shifts the whole scale arc either to the right or to the left, this can be remedied by re-adjusting resistance box R3.

(9) Repeat operations (6), (7) and (8) until the correct scale angle is obtained.

(10) When these adjustments have been satisfactorily completed, adjust the resistance of the spools to correspond to within 0.25% of the values of resistance boxes R3 and R4; connect the spools into the indicator circuit.

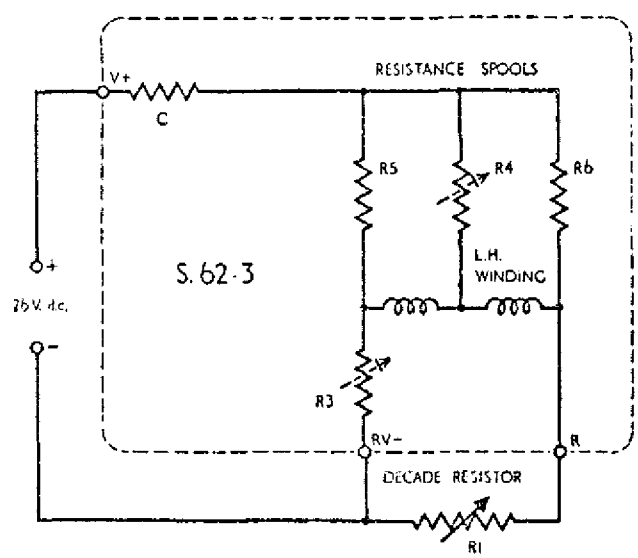

Fig.3.

B. **Spool adjustment** (Straight circuit)

To determine the correct scale length for the required temperature range two spools (R3 and R4) need adjustment, these spools are identified in the circuit diagram in the appropriate addendum for the variant under test.

(1) Connect three decade resistance boxes in place of the spools to be adjusted, and the external resistance bulb as shown in Fig. 4.

(2) Adjust resistance box R3 to the nominal value of the spool.

(3) Set resistance box R1 to the equivalent resistance of the bulb's mid-scale value given in the addendum for the appropriate variant.

(4) Apply 26V d.c. to V and RV–.

(5) Adjust resistance box R4 to give a pointer indication of approximately mid-scale.

(6) Adjust the external resistance box first to the lowest, and then to the highest value of resistance for which the indicator is designed. These values are given in the indicators calibration table in the addendum at the rear of this manual.

(7) If the pointer deflects over too wide an angle increase the value of resistance box R4, and if the deflection is over too narrow an angle decrease the value of resistance box R4.

(8) Changing the value of R4 shifts the whole scale arc to the right or to the left, this can be remedied by re-adjusting resistance box R3.

(9) Repeat operations (6), (7) and (8) until the correct scale angle is obtained.

(10) When these adjustments have been satisfactorily completed, adjust the resistance of the spools to within 0.25% of the values of the resistance boxes R3 and R4; connect the spools into the indicator circuit.

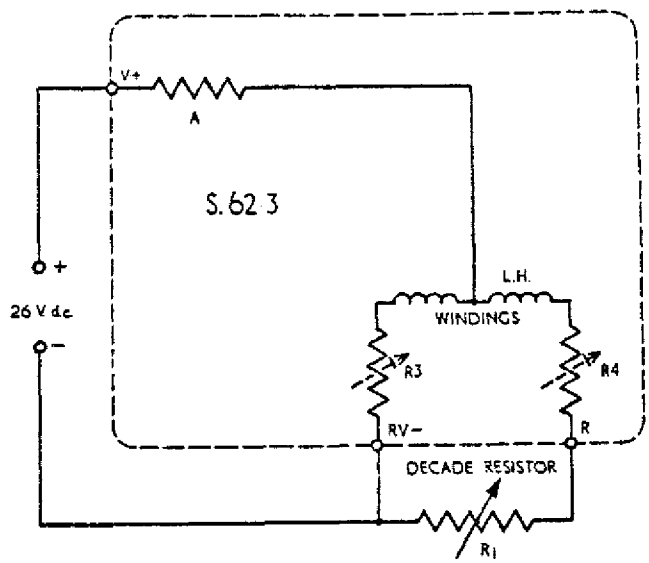

Fig. 4.

C. Insulation resistance

(1) Apply 500 volts d.c. between each terminal in turn and the magnetic shield.

(2) The insulation resistance must not be less than 20 megohms.

D. Calibration

Connect the indicator as shown in Fig.3. for a 'Bridge circuit' or Fig.4. for a 'Straight circuit'. Check the calibration against the table in the addendum for the appropriate variant and if necessary recalibrate to obtain the correct indication.

9. Trouble shooting (Refer to Fig.5.)

A. Causes

(1) The main troubles experienced after overhaul are:

(a) Incorrect pointer indication.

(b) Failure of pointer to leave rest position.

(c) Erratic movement of pointer.

B. Correction

(1) Check faults against trouble shooting chart (Fig.5.) and adopt the procedure suggested.

(2) After correction of fault retest the indicator.

NOTE: When using the trouble shooting chart, for bridge circuit indicators refer to Fig.3 and for straight circuit indicators refer to Fig.4.

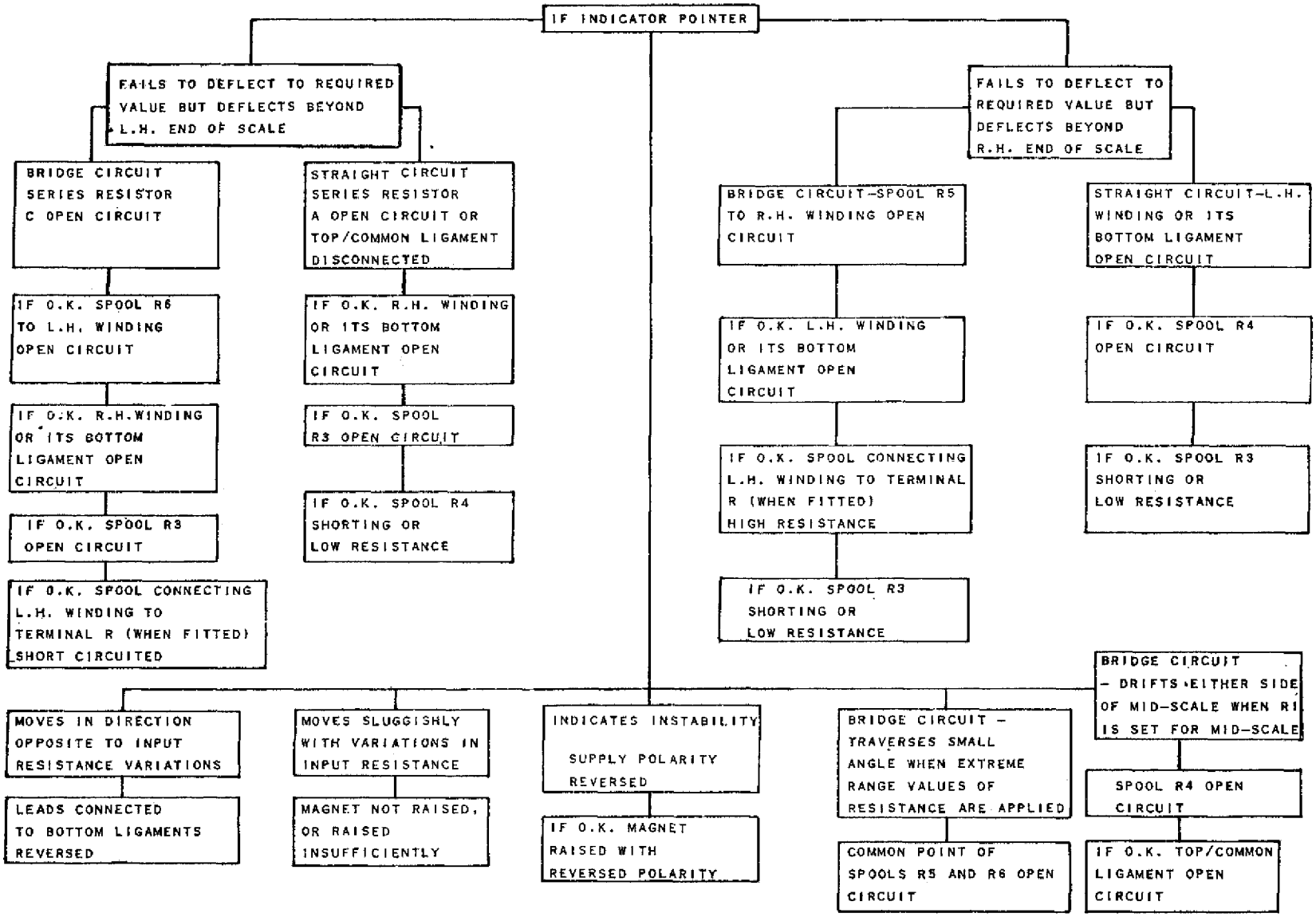

Fig.5. Trouble shooting chart

10. Storage

A. Preparation

(1) If the original packing is not available prepare the following:

(a) A strong cardboard box whose internal dimensions are approximately 3½ in. x 3¼ in. x 2¾ in. deep.

(b) Two squares of corrugated cardboard, approximately 3¼ in. x 3¼ in.

(c) Two strips of corrugated cardboard, one measuring approximately 2¾ in. x 36 in. and the other measuring approximately 2 in. x 36 in.

(d) A polythene bag.

(e) 1oz oven dried silica gel.

(f) A wooden container (tropical zones only).

B. Packing in temperate zones

(1) Place the indicator, together with the silica gel into the polythene bag and heat seal the opening.

(2) Wrap the two strips of corrugated cardboard around the indicator; the narrow strip around the barrel and the wider strip so that it covers the flange.

(e) Place this assembly into the cardboard box with one square of corrugated cardboard at the base and the other on the top.

(4) Attach a label to the box giving the following details.

(a) Identification, e.g. S.62.3.000.
(b) Modification state.
(c) Date of overhaul.
(d) Note of any component change.
(e) Date of component change.

C. Packing in tropical zones

(1) Pack the indicator as described in paragraph B above.

(2) Encase this assembly in a wooden container.

D. Storage limiting period

(1) The storage limiting period of the indicator is 5 years.

(2) Indicators in store for 5 years must be subjected to the calibration check and the insulation check detailed in para. 8 (Testing) and if found satisfactory may be returned to store for a further period.

11. Special tools, fixtures and equipment

Item	Description	Part Number
1.	Balance weight wrench/wrenches	271157
2.	Ohmmeter	-
3.	Decade resistance boxes	-
4.	Magnetising Equipment (20,000 ampere turns minimum)	-
5.	Insulation test equipment. Sangamo Weston S.75 or a 500V Megger Test Set.	

13. Overhaul period 'ON CONDITION'

NOTE: The term 'On Condition' is applicable to systems/components on which airworthiness is determined by inspections, measurements and tests, or by other means specified, without extensive disassembly or renewal.

Inspections or checks of the aircraft indicator are scheduled at intervals shown in the aircraft maintenance schedule which will determine the repairs, replacements and refinishment.

12. **Illustrated parts list - Indicator Ratiometer**

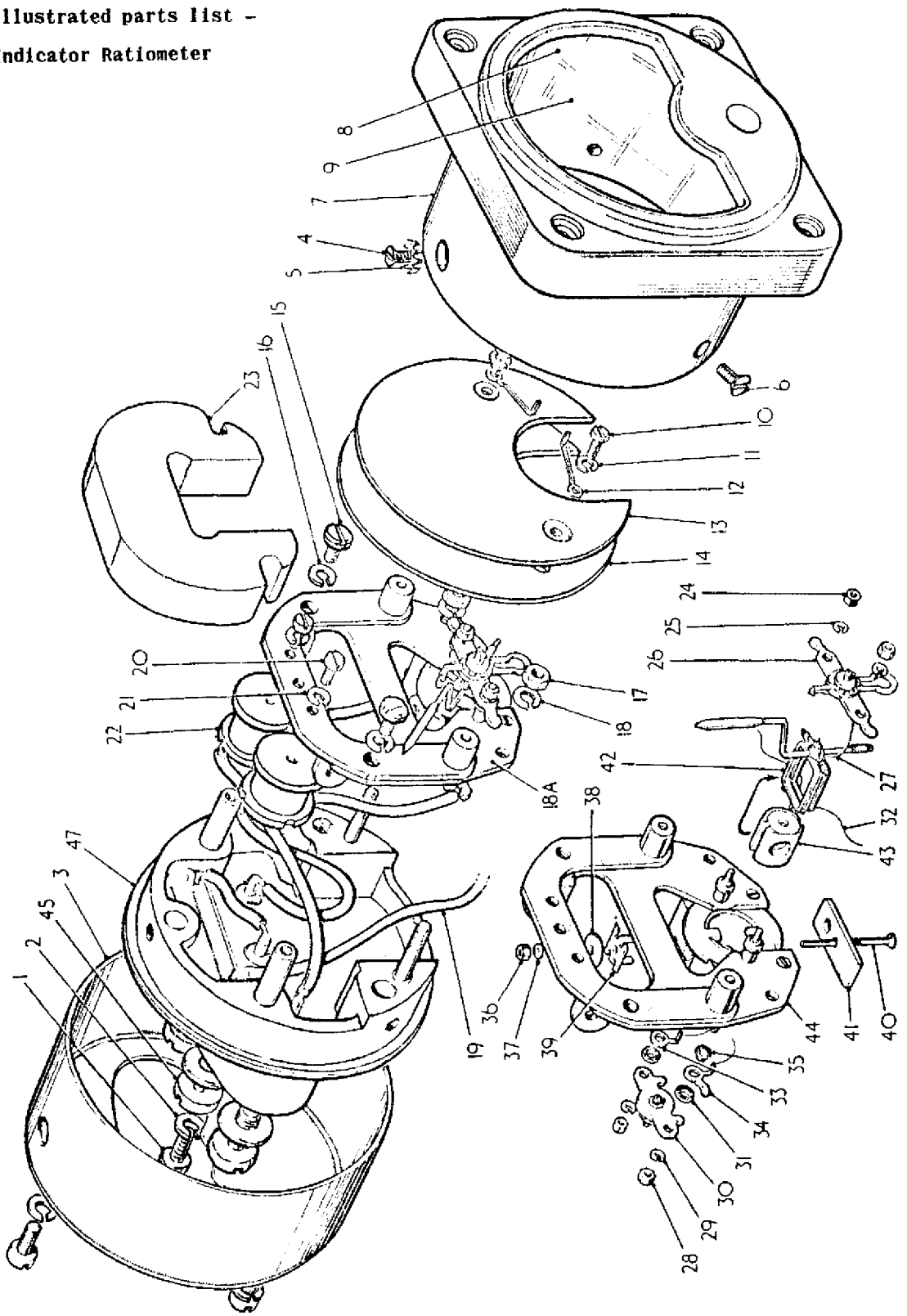

Fig.6. Model S.62 Form 3

This list to be used with Variants Parts List for Model S.62 Form 3

COMMON PARTS LIST

MODEL S.62 FORM 3

Fig. and Index No.	Nomenclature	Part No.	Units per Assy.
Fig. 6	Indicator Ratiometer	S.62 Form 3	
1	Screw, 6 B.A.	157072	3
2	Lockwasher, 6 B.A.	156976	3
3		See Variant Parts	
4	Screw, Sealing	168861	1
5	Cup, Sealing	168012	1
6	Screw	156400	2
7		See Variant Parts	
8	Ring, Bezel	160244	1
R 9	Glass	159082	
10-13		See Variant Parts	
14	Plate, Magnet Shield	160626	1
15	Screw, 8 B.A. x 3/16 in.	91377	2
16	Lockwasher, 8 B.A.	103854	2
17	Nut	150178	2
18	Lockwasher, 8 B.A.	See Index No. 16	2
18A		See Variant Parts	
19	Sleeving	160981	4
20	Screw, 10 B.A. x 3/16 in.	150330	2
21	Lockwasher, 10 B.A.	153367	2
22		See Variant Parts	
23	Magnet	160701	1
24	Nut, 12 B.A.	155125	2
25	Lockwasher, 12 B.A.	155830	2
26	Bridge, Top	160884	1
27		See Variant Parts	
28	Nut, 12 B.A.	See Index No. 24	2
29	Lockwasher, 12 B.A.	See Index No. 25	2
30	Bridge, Bottom	160885	1
31	Washer, Insulating	154398	2
32		See Variant Parts	
33	Ligament Terminal, R.H.	160607	1
34	Ligament Terminal, L.H.	160608	1
35	Bush, Insulating	154397	2
36	Nut, 12 B.A.	See Index No. 24	1
37	Lockwasher, 12 B.A.	See Index No. 25	1
38	Washer	159596	1
39	Clamp, Core	157522	1
40	Screw, Core	150123	1
41	Spacer	160624	1
42		See Variant Parts	
43	Core	160604	1
44	Pole Piece Assembly	173458	1
45-47		See Variant Parts	

NOTE: Sangamo Weston Code appears on front of Scale

The term 'variant' defines a particular application of the Model. The last figure group of the Sangamo Weston Code number identifies the variant and enables the user to select the correct variant parts list.

OVERHAUL MANUAL

ADDENDUM

MODEL S.62.3.126 - CABIN AIR TEMPERATURE INDICATOR

In addition to the information contained in the main section of this manual, the following details apply to Model S.62.3.126.

REVISION RECORD SHEET

Revision No.	Date of Issue	Incorporated by	Date	Remarks
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MODEL S.62.3.126 - CABIN AIR TEMPERATURE INDICATOR

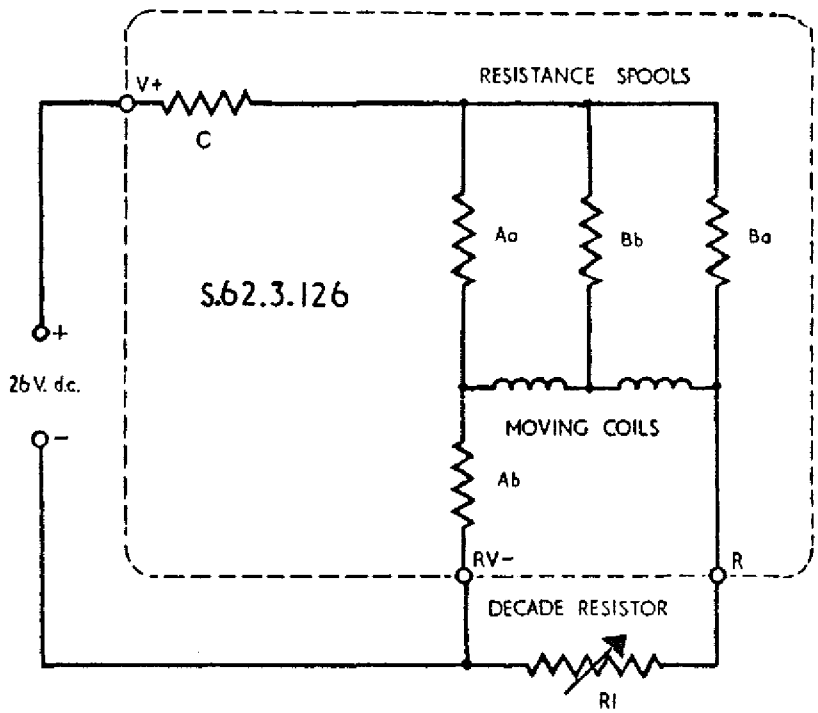

Fig.7. Test circuit and internal wiring diagram.

Testing

Connect the indicator as shown in Fig.7. The resistance RI is adjusted to simulate the changes in resistance of the associated temperature bulb, the values being given in the accompanying table.

(1) If scale indications are incorrect after overhaul adjust spools Ab and Bb as detailed in paragraph 8 (Testing).

(2) If required recalibrate using values given in the following table.

Resistance (ohms)	Indicator deflection
130 approx.	LOW end scale mark.
137	LOW end of main band.
142.7	HIGH end of main band.
150 approx.	HIGH end of scale mark.

Accuracy

The accuracy of the indicator must be within ±2% of full scale deflection.

OVERHAUL MANUAL

ADDENDUM

MODEL S.62.3.126 - CABIN AIR TEMPERATURE INDICATOR

In addition to the information contained in the main section of this manual, the following details apply to Model S.62.3.126.

REVISION RECORD SHEET

Revision No.	Date of Issue	Incorporated by	Date	Remarks
1				
2				
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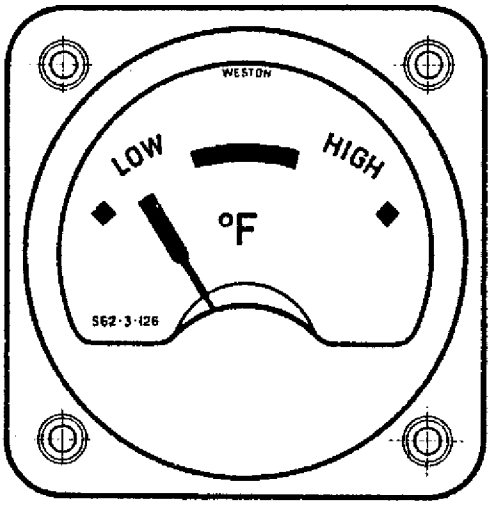
MODEL S.62.3.126 - CABIN AIR TEMPERATURE INDICATOR.



Scale presentation

Description

This Indicator is a moving coil ratiometer designed to indicate cabin air temperature and operates from a 24V d.c. supply. The scale is marked LOW and HIGH either side of a centre band extending from 55°F. to 75°F. The scale markings are finished black on a white background; the square end pointer is also finished in black.

Data

Resistance of moving coils	52 + 52 ohms.
Resistance of spools	
Aa	1000 ohms ± 1%.
Ab	150 ohms +5% - 0.
Ba	1000 ohms ± 1%.
Bb	650 ohms +5% - 0.
Resistance of resistor C	300 ohms.

MODEL S.62.3.126 - CABIN AIR TEMPERATURE INDICATOR

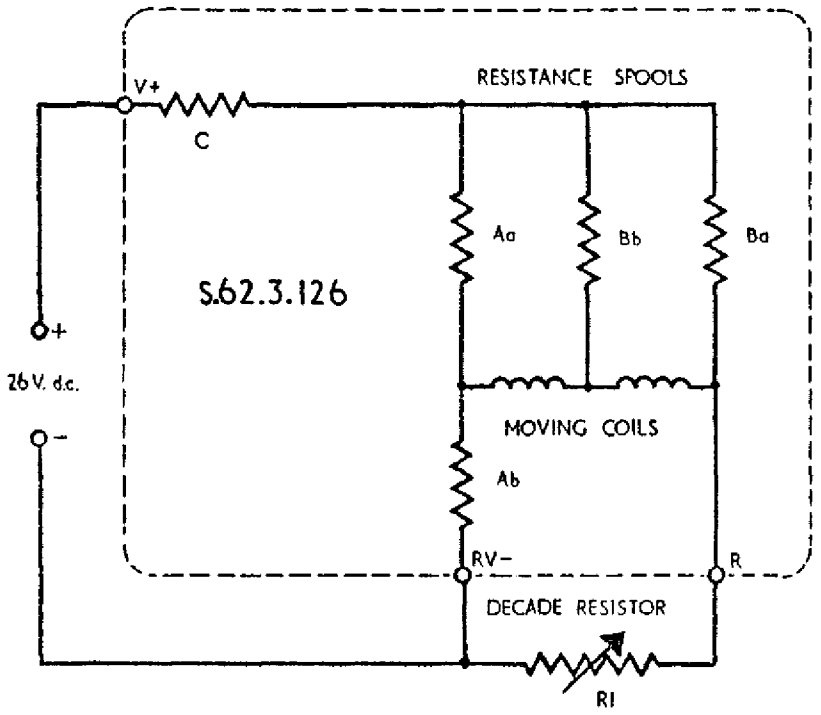


Fig.7. Test circuit and internal wiring diagram.

Testing

Connect the indicator as shown in Fig.7. The resistance R1 is adjusted to simulate the changes in resistance of the associated temperature bulb, the values being given in the accompanying table.

(1) If scale indications are incorrect after overhaul adjust spools Ab and Bb as detailed in paragraph 8 (Testing).

(2) If required recalibrate using values given in the following table.

Resistance (ohms)	Indicator deflection
130 approx.	LOW end scale mark.
137	LOW end of main band.
142.7	HIGH end of main band.
150 approx.	HIGH end of scale mark.

Accuracy

The accuracy of the indicator must be within ±2% of full scale deflection.

This List to be used with Common Parts List for Model S.62 Form 3

VARIANT PARTS LIST

S.62.3.126.

Fig. and Ref. No.	Description	Part No.	No. Off
Fig.6	Cabin air temperature indicator	S.62.3.126	
3	Shield	161032	1
7	Cover Assembly	166883	1
10	Screw, 10 B.A. x .19" (Black)	156396	2
11	Lockwasher (Black)	159306	2
22	Spool	22/A.S.62.3.126	1
		22/B.S.62.3.126	1
27	Ligament, Top, Phos.Bronze, .0001 in. x .002 in. x .75 in.	M.P.S.53 Sub.1	1
32	Ligament, Bottom, Phos.Bronze, .0001 in. x .002 in. x .75 in.	M.P.S.53 Sub.1	2
42	Element Moving c/w Pivots, Pivot Bases, Pivot Nuts, Pointer, Ligament Terminals and Balance Weights	42/S.63.3.126	1
46	Resistor	167123/300 ohms	1
47	Base	160587	1

Sangamo Weston Code appears on front of Scale

OVERHAUL MANUAL

ADDENDUM

MODEL S.62.3.222 - INDICATOR, TEMPERATURE $-40^{o}/+60^{o}$C.

In addition to the information contained in the main section of the Overhaul manual 31-09-08, the following details apply to Model S.62.3.222.

REVISION RECORD SHEET

Revision No.	Date of Issue	Incorporated by	Date	Remarks
1		-		
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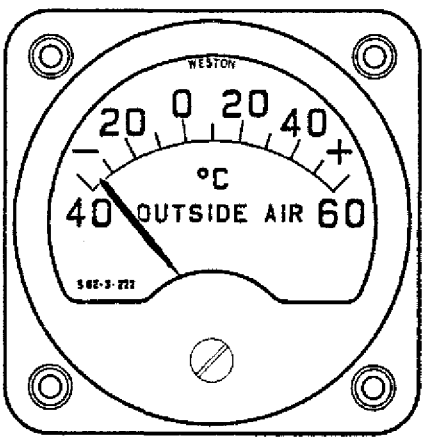
MODEL S.62.3.222 - INDICATOR, TEMPERATURE $-40^{o}/+60^{o}$C.



Scale presentation.

Description

This indicator is a moving coil ratiometer designed for use in conjunction with a SANGAMO WESTON S.110G Platinum law resistance bulb, to indicate outside air temperature over the range -40^{o}C. to $+60^{o}$C. The indicator operates from a nominal 24V d.c. supply. The scale markings are finished in white on a black background for photographic purposes and the lance type pointer is also finished in white.

Connections to the indicator are via three 4 B.A. shrouded terminals on the back of the indicator.

Data

Resistance of moving coils	12-17 ohms each.
Resistance of ligaments	13 ohms (approx.)
Resistance of resistor A	480 ohms
Resistance of spool B	210 ohms + 5% -0 or 175 ohms + 5% -0 (unadjusted)
Resistance of spool C	56 ohms + 5% -0 or 40 ohms + 5% -0 (unadjusted)
Pointer 'pull-off' to the right.	

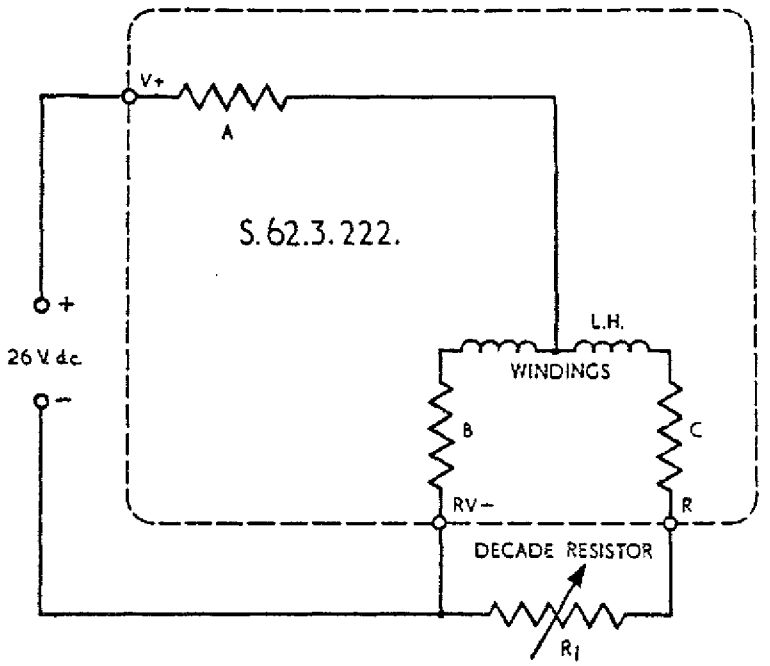


Fig.7. Test circuit diagram.

Testing

Connect the indicator as shown in Fig.7. The resistor R1 is adjusted to simulate the changes in resistance of the temperature bulb. The values are given in the table below.

(1) If scale end indications are incorrect after overhaul, adjust spools B and C as instructed in paragraph 8 (Testing).

(2) If required, recalibrate using values given in the following table:

°C.	R ohms	°C.	R ohms
−40	109.7	20	140.7
−20	120.1	40	150.9
0	130.4	60	161.0

NOTE: The resistance values given include an additional amount to simulate actual conditions under which the indicator will operate, they are not merely the standard platinum law values.

Accuracy

The accuracy of the indicator must be ±2% (i.e. 2°C.) of full scale deflection.

This list to be used with Common Parts List for Model S.62 Form 3.

VARIANT PARTS LIST

MODEL S.62.3.222

Fig. and Ref. No.	Description	Part No.	No. Off
Fig.6	Temp. Indicator $-40^{o}/60^{o}$C.	S.62.3.222	
3	Shield	161032	1
7	Cover, assembly	166883	1
10	Screw, 10 B.A. x .19 in. (Black)	156396	2
11	Lockwasher, 10 B.A. (Black)	159306	2
22	Spool	22B/S.62.3.222	1
		22C/S.62.3.222	1
27	Top Ligament	M.P.S.53 Sub.2	1
32	Bottom Ligament	M.P.S.53 Sub.1	2
42	Element, Moving c/w Pivots, Pivot Nuts, Pivot Bases, Pointer & Ligament Terminals	42/S.62.3.222	1
46	Resistor 'A'	167123/180 ohms	1
47	Bases	160587	1

Sangamo Weston Code appears on front of Scale