



OVERHAUL MANUAL

COMPENSATING LEAD ADJUSTMENT SPOOL
R.10 SERIES

SANGAMO WESTON LIMITED

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THIS MANUAL HAS BEEN COMPILED AND PRINTED BY THE ENGINEERING DEPARTMENT, SANGAMO WESTON LTD.

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31-09-161
Page 1

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. *N.D. Lopez*

Date. November 1962

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



COMPENSATING LEAD ADJUSTMENT SPOOL

REVISION RECORD SHEET

Revision No.	Date of Issue	Incorporated by:	Date	Remarks
1	June 1965	Sangamo Weston Ltd.	June 1965	Revision pages 1 and 7.
2	OCT 1967	<i>[Signature]</i>	27.2.68	
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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 Compensating Spool
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 31-09-161 AND ADDENDUM 31-09-161/10-11
COMPENSATING LEAD ADJUSTMENT SPOOL AND ADDENDUM**

**LETTER OF TRANSMITTAL
FOR
REVISION No. 2**

Issued October 1967
by
Sangamo Weston Ltd., Enfield, Middlesex, England

ACTION	REASON
1. Remove and destroy pages 1 and 7/8 of Overhaul Manual 31-09-161 and substitute pages 1 and 7/8 incorporating Revision 2.	Part numbers on page 1 deleted. Paragraph 1A revised on page 7.
2. Remove and destroy pages 1 and 3 of Overhaul Manual Addendum 31-09-161/10-11 and substitute pages 1 and 3 incorporating Revision 2.	Part numbers added on page 1. Data revised on page 3.
3. The incorporation of this revision is recorded on the appropriate Revision Record Sheets.	
4. Retain this Letter of Transmittal.	This certifies compliance with Section A, Chapter A6-2, of 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 is certified accurate.

Signed:

Date: 16th November, 1967.

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



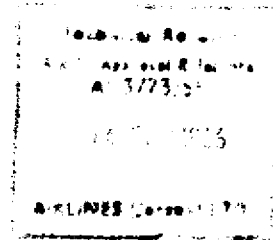
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C.R.

SANGAMO WESTON LTD.

OVERHAUL MANUAL 31-09-161 AND ADDENDUM 31-09-161/10-11
COMPENSATING LEAD ADJUSTMENT SPOOL AND ADDENDUM

LETTER OF TRANSMITTAL
FOR
REVISION No. 1



Issued June 1965
by
Sangamo Weston Ltd., Enfield, Middlesex, England

ACTION

REASON

1. Remove and destroy pages 1-4 and 7/8 of Overhaul Manual 31-09-161 and substitute pages 1-4 and 7/8 incorporating Revision 1. Part number added on page 1 and paragraph 1A revised on page 7.
2. Remove and destroy pages 1 and 3 of Overhaul Manual Addendum 31-09-161/10-11 and substitute pages 1 and 3 incorporating Revision 1. Part number added on page 1 and Data revised on page 3.
- ✓ 3. The incorporation of this revision is recorded on the appropriate Revision Record Sheets.
4. Retain this Letter of Transmittal. This certifies compliance with Section A, Chapter A6-2, of British Civil Airworthiness Requirements.

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

Signed:

Date:

20/7/65

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



OVERHAUL MANUAL

COMPENSATING LEAD ADJUSTMENT SPOOL

TABLE OF CONTENTS

	Para.
Description and operation	1
Disassembly	2
Inspection	4
Repair	5
Assembly	6
Testing	8
Trouble shooting	9
Storage	10
Overhaul period	13
Illustrated parts list	12

ILLUSTRATIONS

	Fig
Compensating Lead Adjustment Spool	1
Compensating Lead Adjustment Spool	2

OVERHAUL MANUAL

COMPENSATING LEAD ADJUSTMENT SPOOL

R.10 SERIES

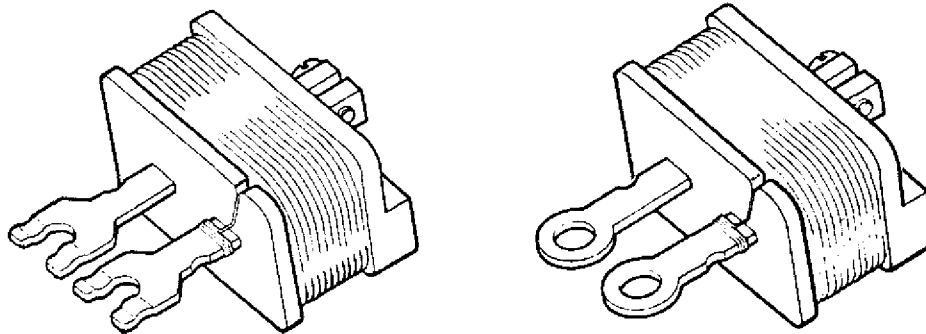


Fig.1. Compensating Lead Adjustment Spool

1. Description and operation

A. General

This spool is designed for use in circuits having a thermocouple operating in conjunction with an indicating instrument, and where the circuit is required to have a definite resistance value.

Connection to the circuit is by means of two terminal tags which may be of either the eyelet type or the fork type, as shown in Fig.1. Terminal types are identified by the part numbers as given in the addendum.

B. Detail (Refer to Fig.1.)

The resistance wire is wound on a BAKELITE former and the ends of the wire are secured to integral terminal tags. For ease of adjustment one of these tags is provided with a rectangular nut and screw which is used for clamping the outer end of the wire. The inner end of the wire is soldered to the other tag.

C. Operation

The spool is connected in series with the positive side of the thermocouple which, for a nickel-chromium/nickel-aluminium couple is the nickel-chromium lead, and the copper lead for a copper/copper-nickel couple.

OVERHAUL MANUAL



2. Disassembly

A. Checks before dismantling

Removal of the wire from the former is only necessary if its value is below that required, or if shorted turns are suspected.

B. Preparation

Obtain a soldering iron and a pair of tweezers.

C. Procedure

- (1) Loosen the screw clamping the outer end of the resistance wire and withdraw wire.
- (2) Cut inner end of wire soldered to the other terminal tag and remove resistance wire from the Bakelite former.
- (3) Unsolder securing turns from tag and remove.

4. Inspection

Check that the Bakelite former is free from cracks. Check that the terminal tags are unbroken.

5. Repair

If either terminal tag is broken, or the Bakelite former cracked, renew spool.

6. Assembly

A. Preparation

Obtain the appropriate length of Minalpha wire as specified in the addendum at the rear of the manual.

NOTE: The Minalpha wire can be obtained from Sangamo Weston Ltd., or the manufacturers - Johnson Matthey, 78/83 Hatton Garden, London.

B. Procedure

During the process of winding the resistance wire on the former, paint each layer with a thin coat of varnish to SANGAMO WESTON specification B.S.42.

- (1) Tin the terminal tag around the soldering area which will be used for securing the inner end of the wire.



OVERHAUL MANUAL

- (2) Thread approximately 2 in. of the resistance wire through the hole in the cheek of the former.
- (3) Pass the wire through the hole in the tag, wind two or three turns around it and solder in position.
- (4) Carefully wind the resistance wire on the former.
- (5) Feed the outer end of the wire through the appropriate hole in either of the two ears projecting from the former.
- (6) Place the wire in the slot of the split boss and tighten the screw.

8. Testing

Connect the spool in the positive line of the thermocouple circuit and adjust the spool value to give the external circuit resistance marked on the associated indicator.

Spool adjustment

Loosen the screw clamping the outer end of the resistance wire and by use of a resistance bridge or ohmmeter of known accuracy adjust the length of the wire to give the correct circuit resistance value. Secure the wire in the split boss so that it rests in position above the screw, i.e., at the open end of the slot; now tighten the screw.

Recheck the resistance value and if satisfactory coat the outer layer with B.S.42 varnish and secure the screw against vibration by applying a coat of Bostik prepared to SANGAMO WESTON specification B.S.104.

9. Trouble shooting

The main troubles experienced are:

- (1) Low resistance value due to shorting turns.
- (2) High value due to faulty solder connections.

Correct (1) by rewinding as instructed in paragraph 6.

Correct (2) by resoldering the wire to the terminal.

10. Storage

Store in conditions where the temperature range is within -20°C . to $+50^{\circ}\text{C}$. and where humidity does not exceed 50%.

Shelf life of the spool, if stored under conditions specified, is 5 years.

13. Overhaul period

The compensating lead must be overhauled whenever the associated indicator is overhauled.

OVERHAUL MANUAL

12. Illustrated parts list

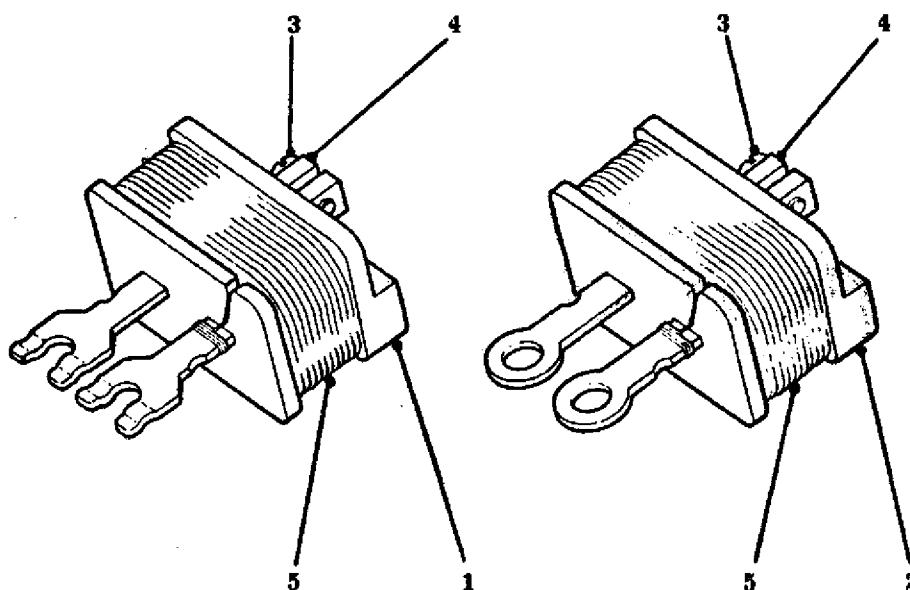


Fig.2. Compensating Lead Adjustment Spool

Fig. and Ref. No.	Description	Part No.	No. Off
Fig. 2.	Compensating Lead Adjustment Spool		
1.	Spool with integral open terminal tags to fit terminal block type 5X/3276	168579	1
2.	Spool with integral eylet terminal tags	177167	1
3.	Screw 8.B.A. x 1/4"	95391	1
4.	Square Washer 8.B.A.	176806	1
5.	Resistance Wire	See Addendum	



OVERHAUL MANUAL

ADDENDUM

COMPENSATING LEAD ADJUSTMENT SPOOL

168578 (R. 10. 32 and R. 10. 33), 176805 (R. 10. 97), 176804 (R. 10. 98), 177257 (R. 10. 99),
177213 (R. 10. 100), 177165 (R. 10. 101), 179605 (R. 10. 120) and 182047 (R. 10. 225)

This addendum gives details of the resistance wire required to rewind spools that are defective or are low in ohmic value.

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OVERHAUL MANUAL

ADDENDUM

COMPENSATING LEAD ADJUSTMENT SPOOL

Data

When rewinding spools, fill the spool with the gauge of Minalpha wire given in the table below and adjust as detailed in paragraph 8 (Testing) of the main section of the Overhaul manual.

Part Number	Spool Order	Min. Resistance Ohms	Wire Gauge	Terminal Type
168578	R. 10. 32	7	26 S. W. G.	Fork
168578	R. 10. 33	7	26 S. W. G.	Fork
176805	R. 10. 97	10	27 S. W. G.	Fork
176804	R. 10. 98	20	30 S. W. G.	Fork
177257	R. 10. 99	7	26 S. W. G.	Eyelet
177213	R. 10. 100	10	27 S. W. G.	Eyelet
177165	R. 10. 101	20	30 S. W. G.	Eyelet
179605	R. 10. 120	25	31 S. W. G.	Fork
182047	R. 10. 225	5	24 S. W. G.	Eyelet

NOTE: The Minalpha wire can be obtained from Sangamo Weston Ltd., or the manufacturer - Johnson Matthey, 78/83 Hatton Garden, London.

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