



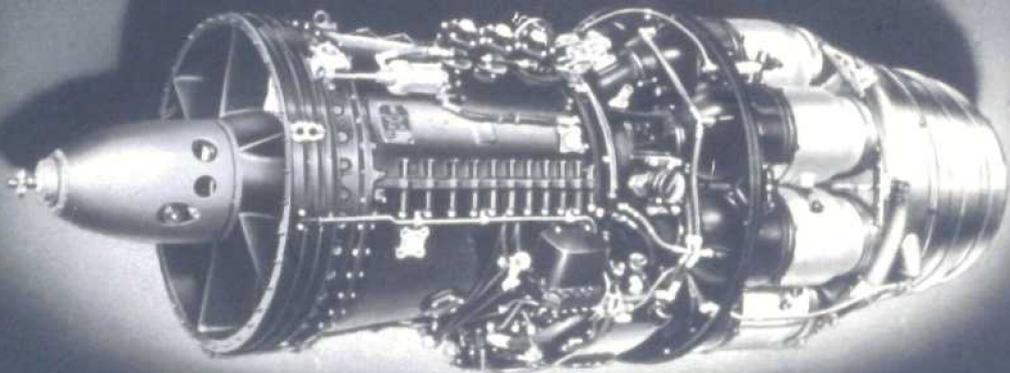
A
ROLLS - ROYCE
Instructional Strip-Film



MAINTENANCE OF THE

AVON 1

TURBO JET AERO-ENGINE



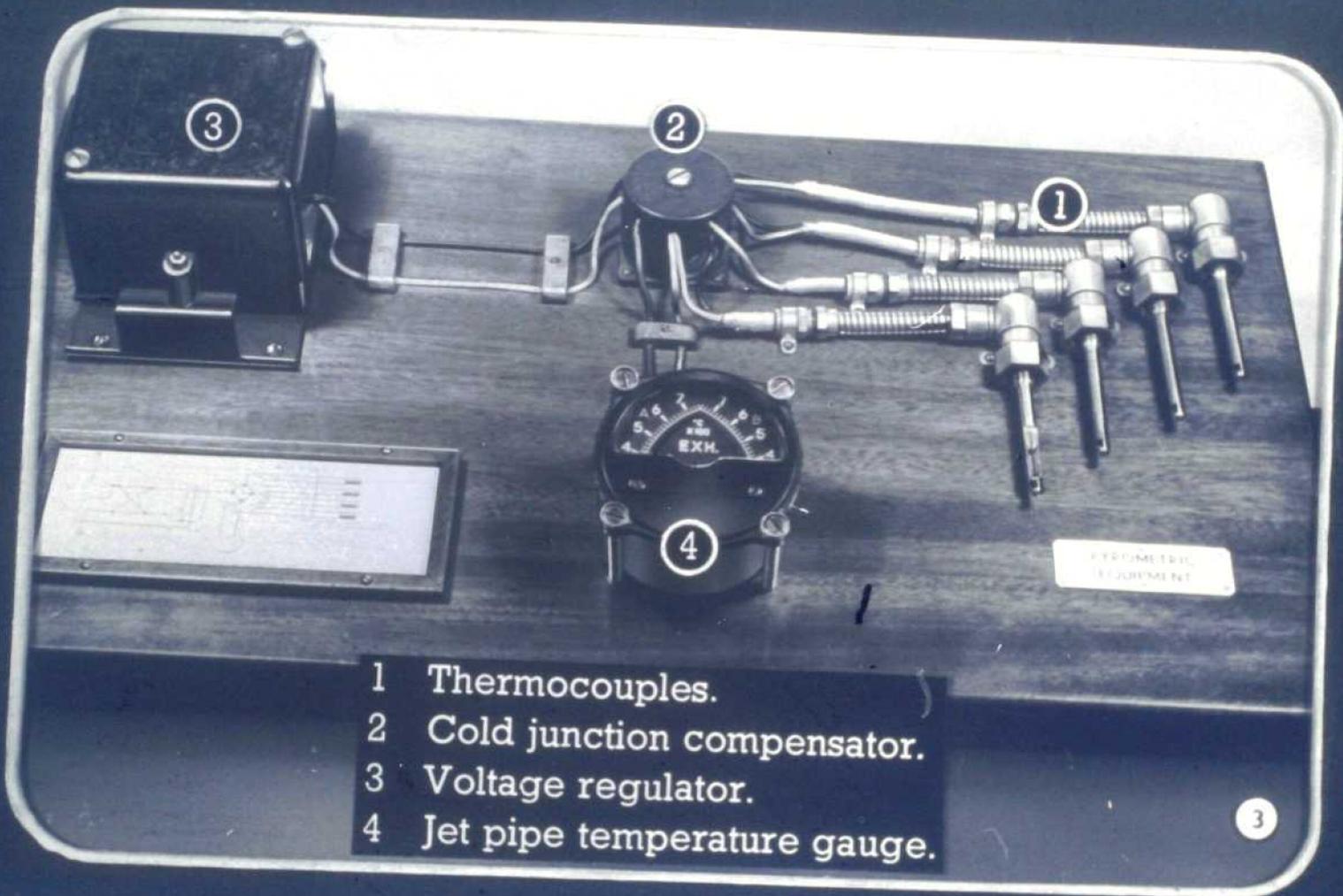
PREPARED UNDER THE TECHNICAL DIRECTION OF THE ROLLS-ROYCE AERO-ENGINE SCHOOL, DERBY, ENGLAND.

Pyrometric System
Servicing

A11

14-J-252

The pyrometric system comprises the
following units.



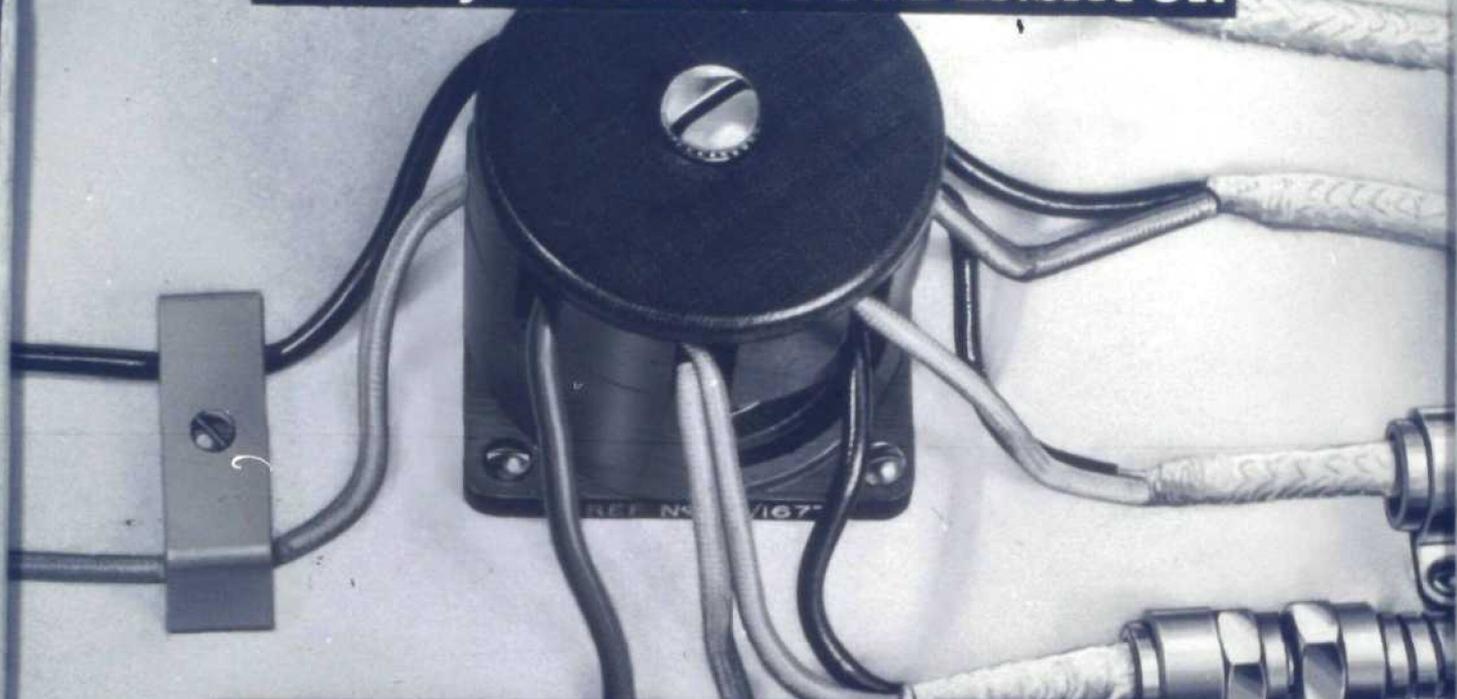
- 1 Thermocouples.
- 2 Cold junction compensator.
- 3 Voltage regulator.
- 4 Jet pipe temperature gauge.

THERMOCOUPLES



The thermocouples are the chromel/alumel type, wired in series. They are covered by a primary tube of porcelain, and an outer tube of nickel chrome. The open end of the tube faces the jet stream.

COLD JUNCTION COMPENSATOR



This compensates for variations in air temperature so that the indicator reads the true temperature of the hot junction.

VOLTAGE REGULATOR



Gives a constant output of 100 milli amps, to provide electrical suppression of zero reading on gauge, despite changes in aircraft battery voltage.

JET PIPE TEMPERATURE GAUGE



This instrument is a moving coil voltmeter. The scale is graduated from 400°C to 750°C .

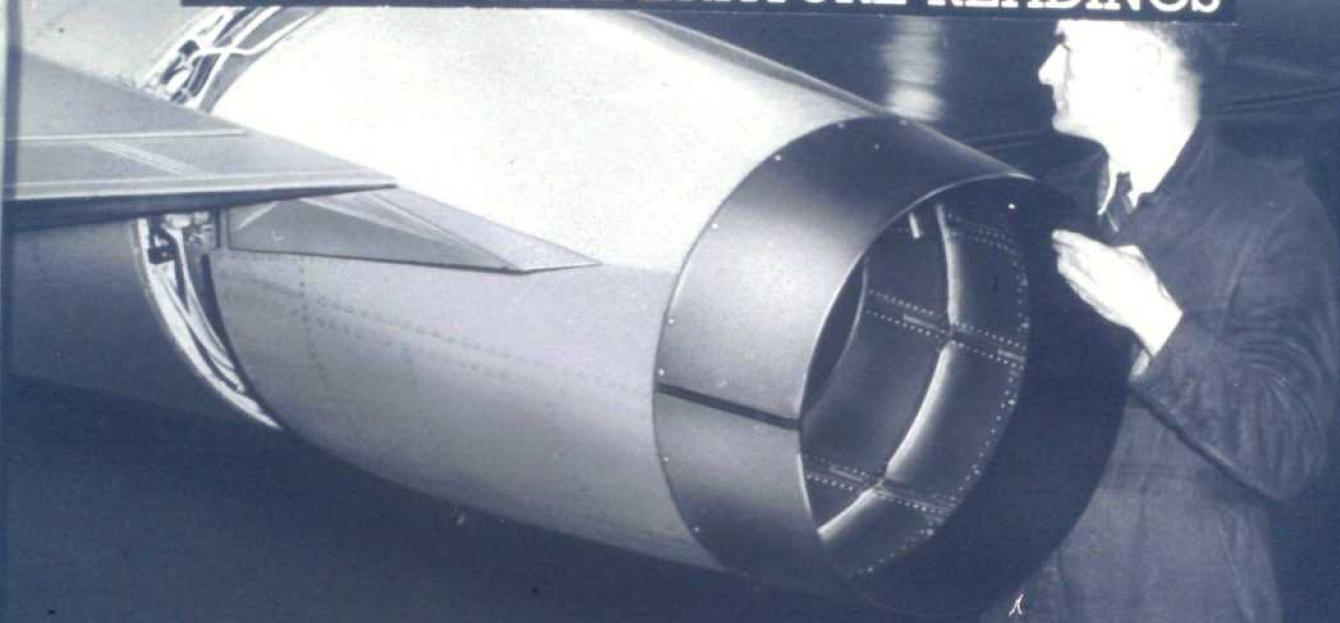
**A fault in the system will be indicated
by one of the following :-**

Erratic Temperature Readings.

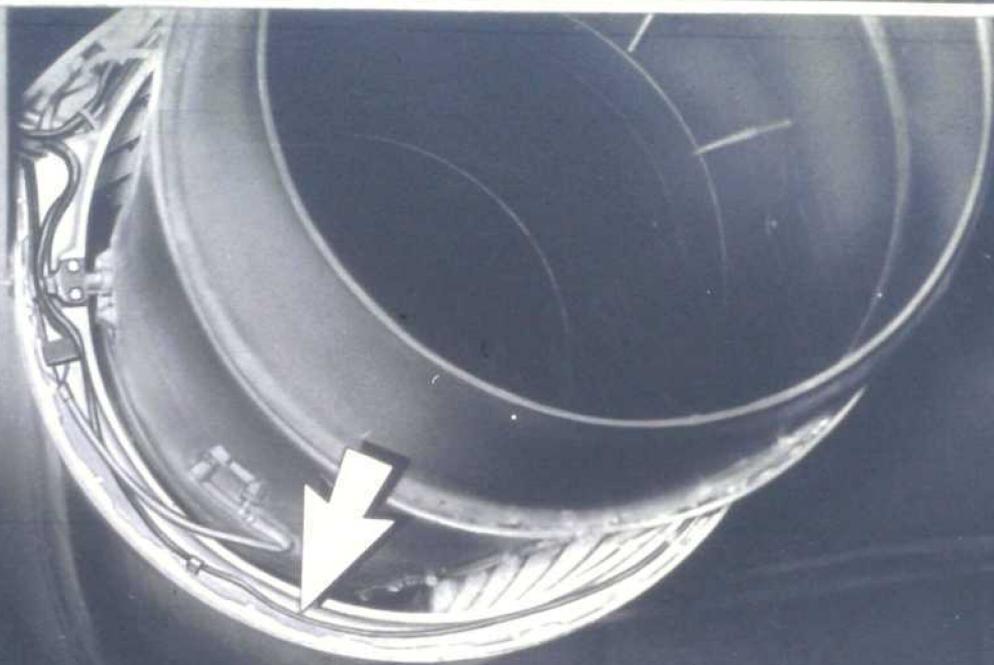
Low Temperature Readings.

High Temperature Readings.

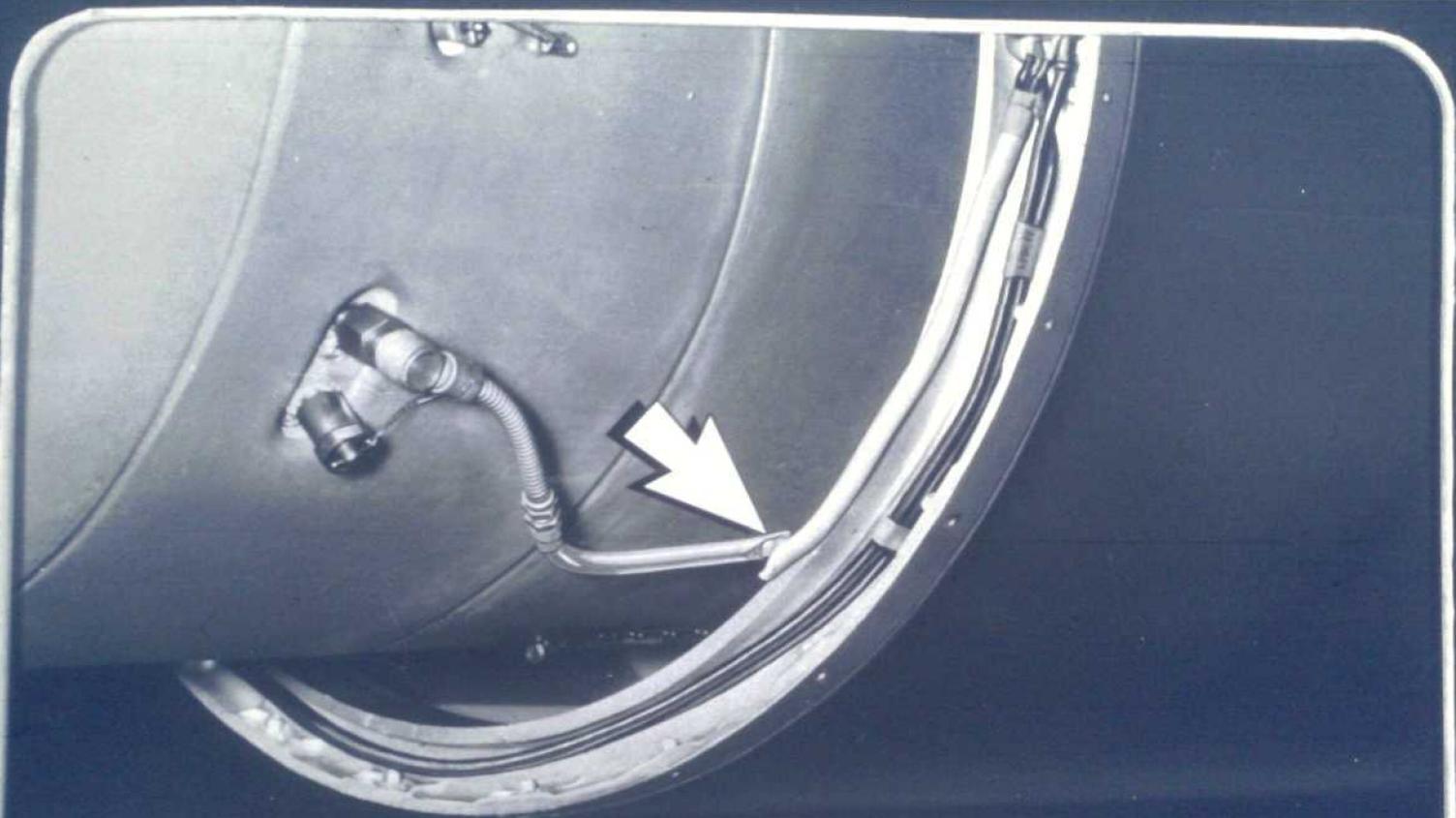
ERRATIC TEMPERATURE READINGS



Check connections and wiring as follows :—
Remove cone cowling.

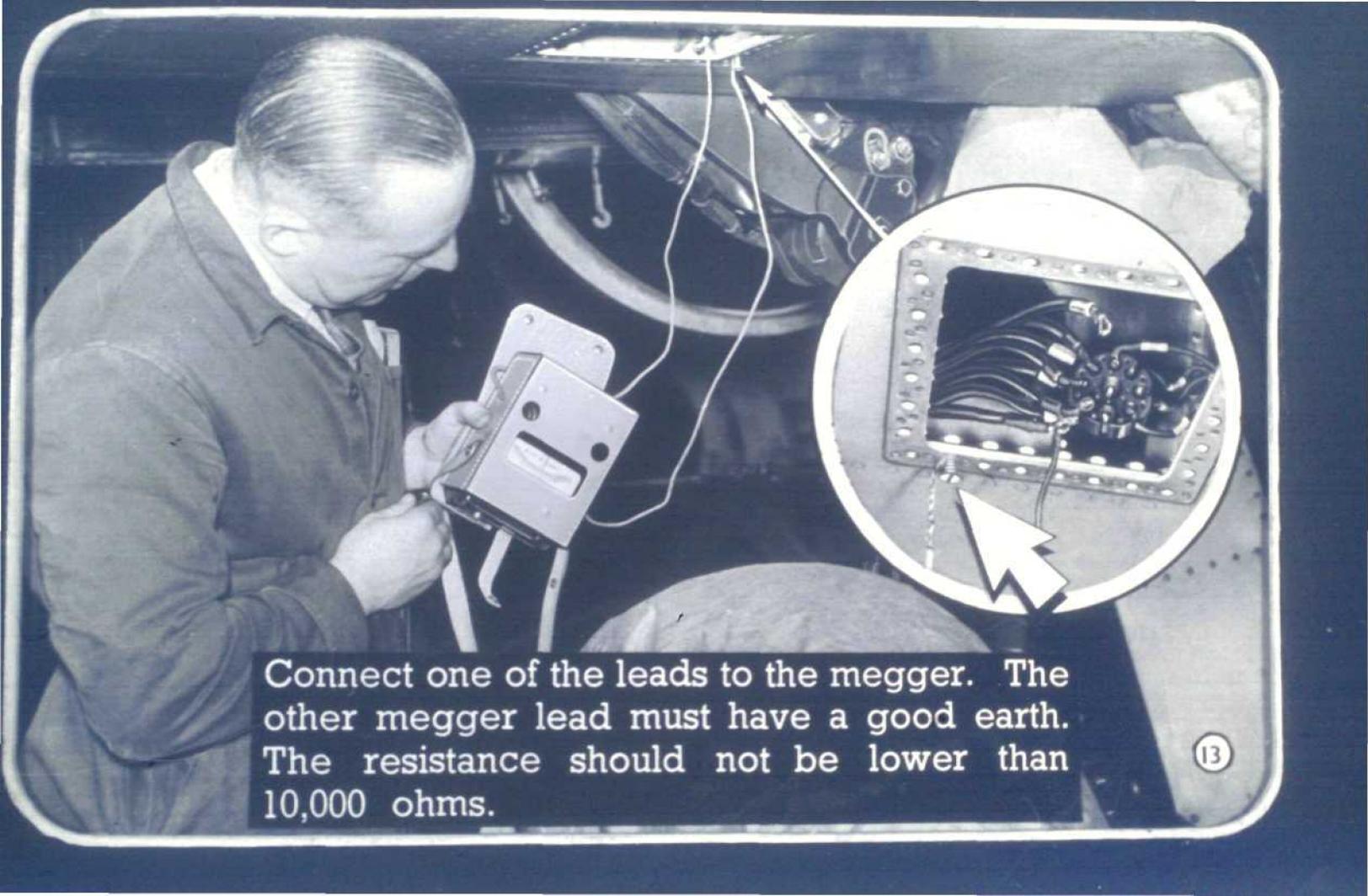


Check that the wires from the couples on the "Canberra" installation run in this channel to prevent over-heating.



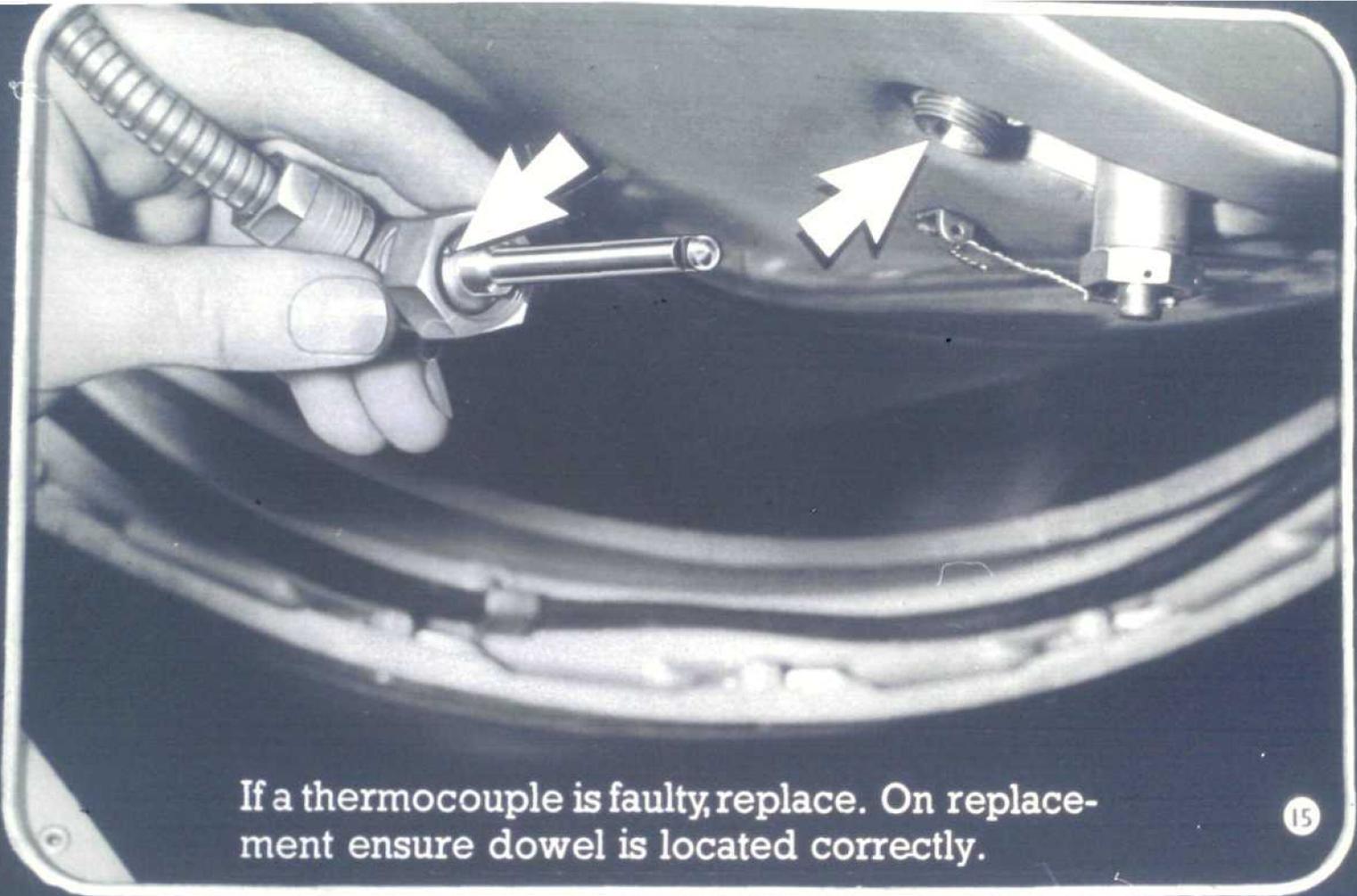
Check the thermocouple leads for traps, and all connections for tightness.

The thermocouple insulation is checked with a megger. Isolate the couples from the cold junction compensator by removing leads from terminals 1 and 5.



Connect one of the leads to the megger. The other megger lead must have a good earth. The resistance should not be lower than 10,000 ohms.

If the resistance is lower than 10,000 ohms, disconnect each couple in turn at the cold junction compensator, and measure resistance of each couple to earth (min. 10,000 ohms).

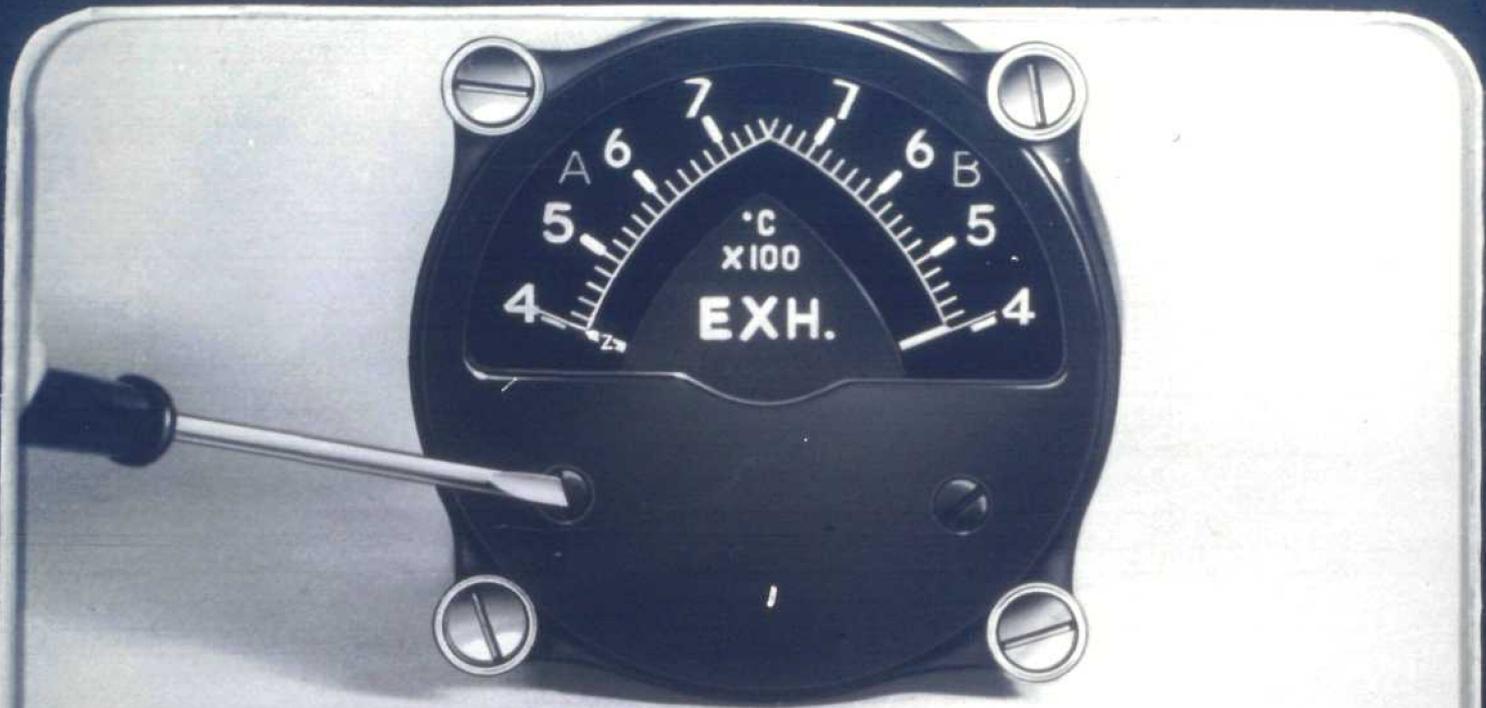


If a thermocouple is faulty, replace. On replacement ensure dowel is located correctly.

LOW TEMPERATURE READINGS



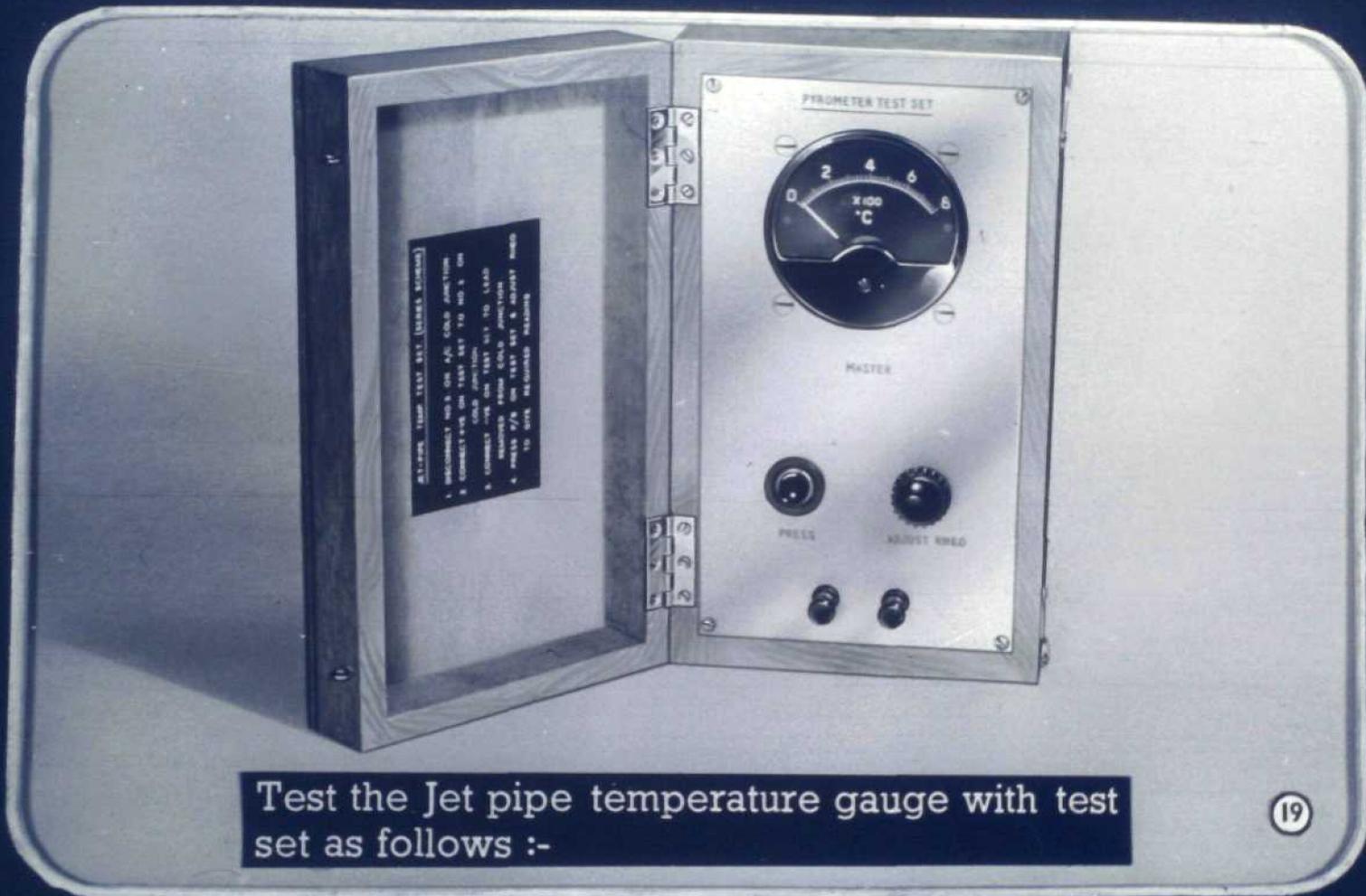
Check for moisture on the insulation around the thermocouple leads. The asbestos should be neoprene rubber covered. Carry out an insulation check as for erratic temperature readings.



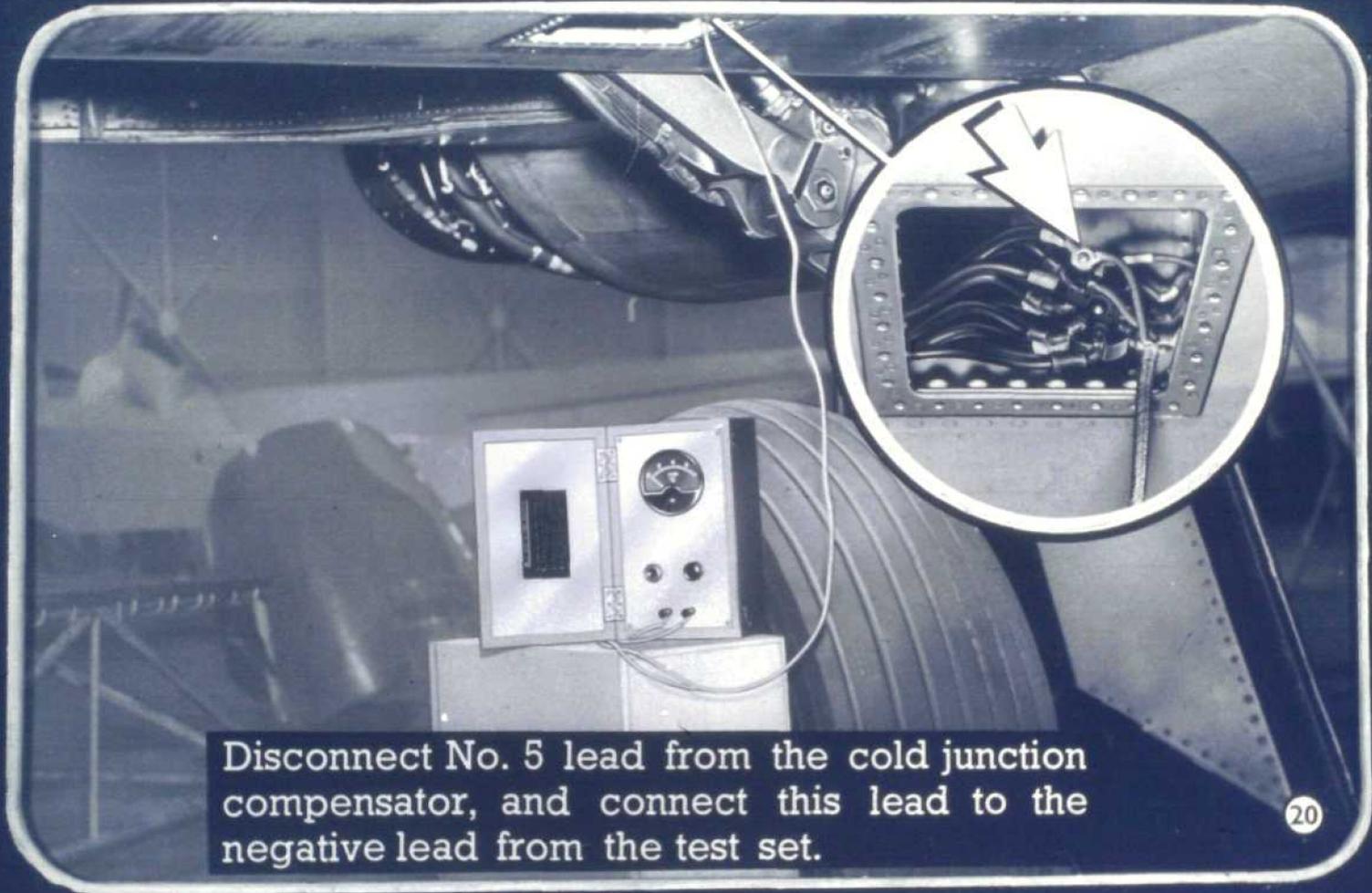
Check the gauge zero position. Adjust as shown so that the needle lines up with the Z on the scale.



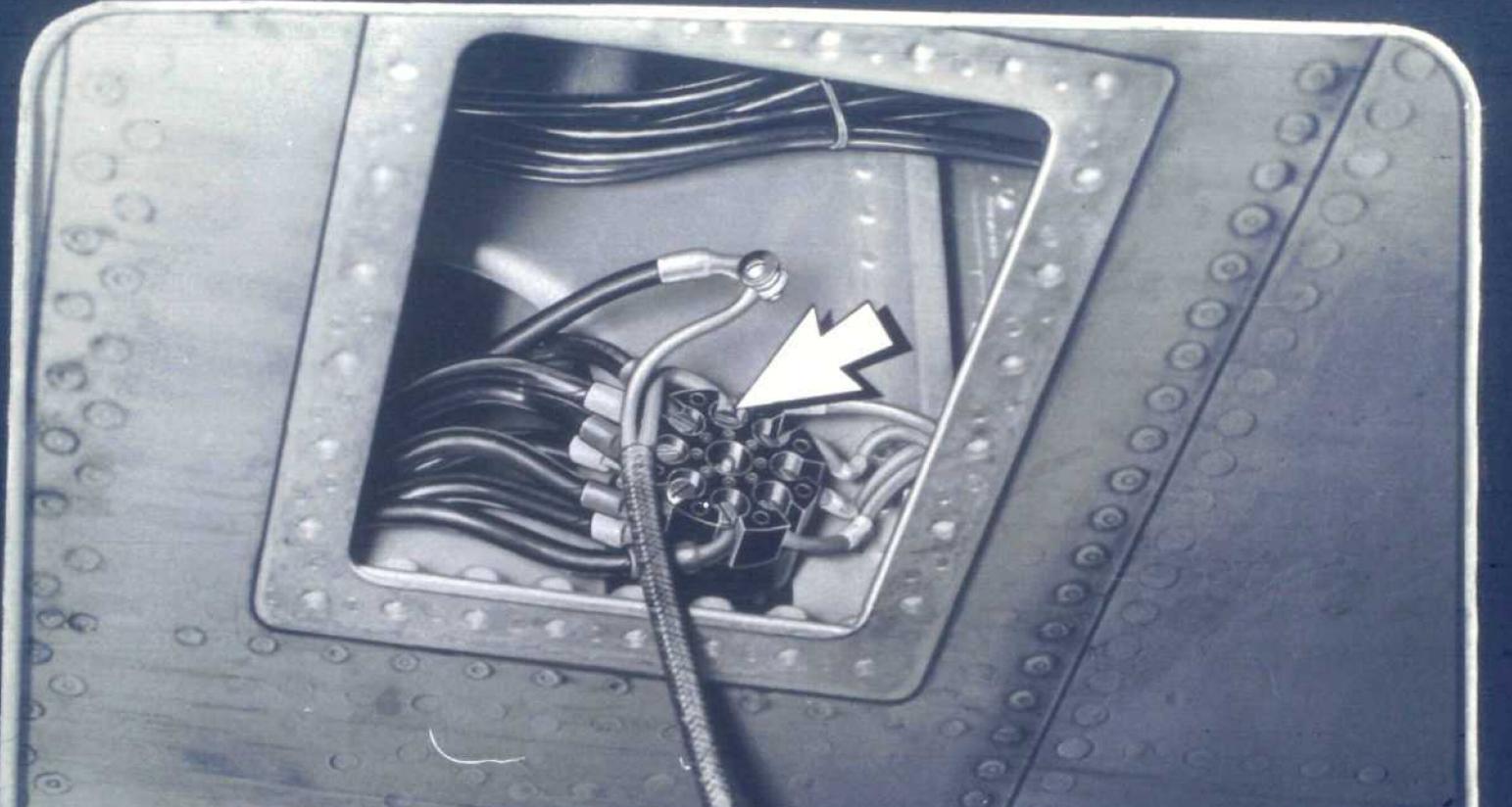
Re-tape after setting.



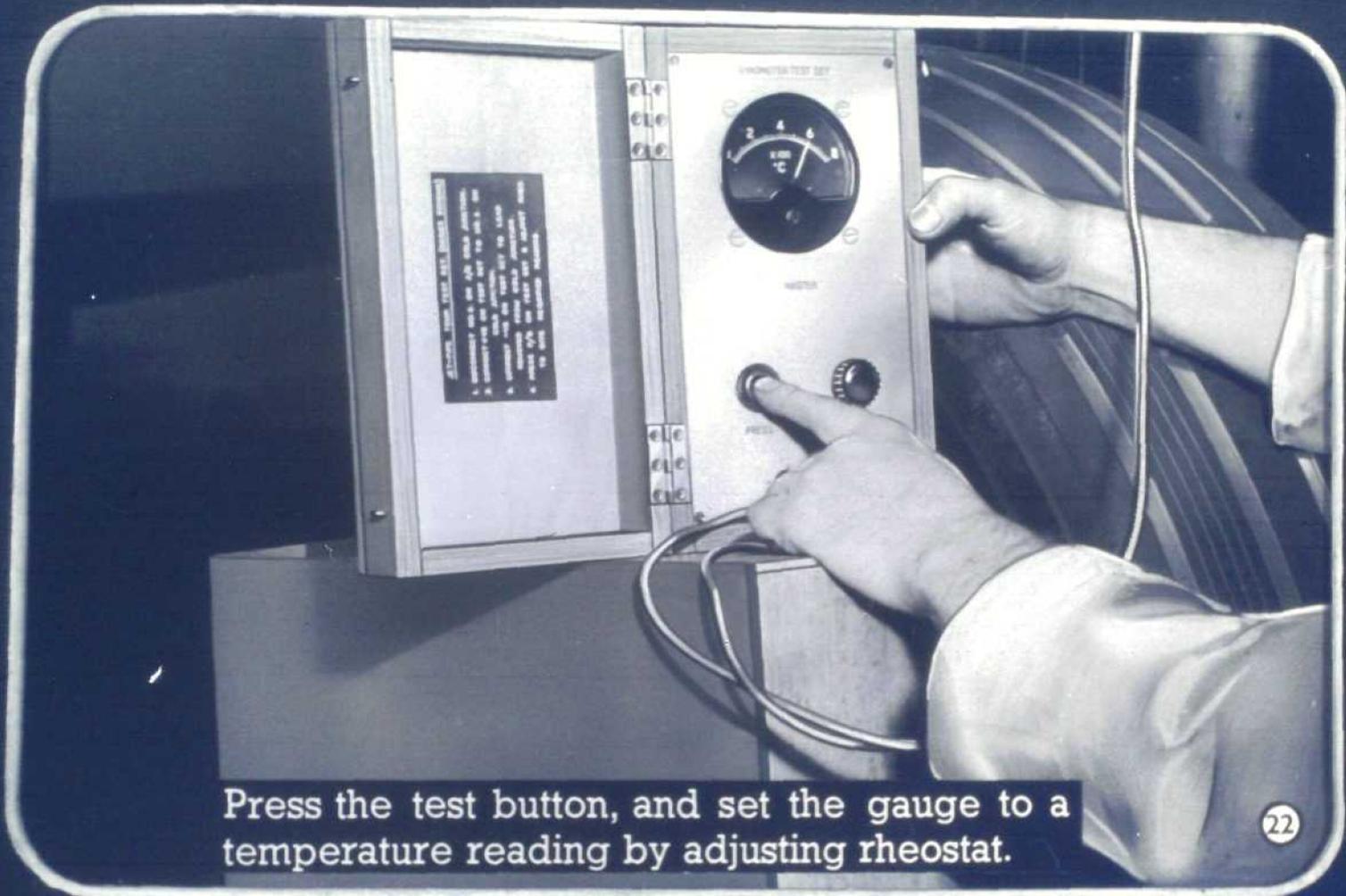
Test the Jet pipe temperature gauge with test set as follows :-



Disconnect No. 5 lead from the cold junction compensator, and connect this lead to the negative lead from the test set.

A black and white photograph showing a close-up of a terminal block or connector panel. The panel is rectangular and has a grid of circular terminals. A white arrow points to the fifth terminal from the left. A thick, braided metal lead is connected to this terminal. Other leads of various thicknesses and materials are connected to the other terminals. The panel is mounted on a surface with a grid of small circular holes.

Connect the positive lead from the test set to the No. 5 terminal on the cold junction compensator.



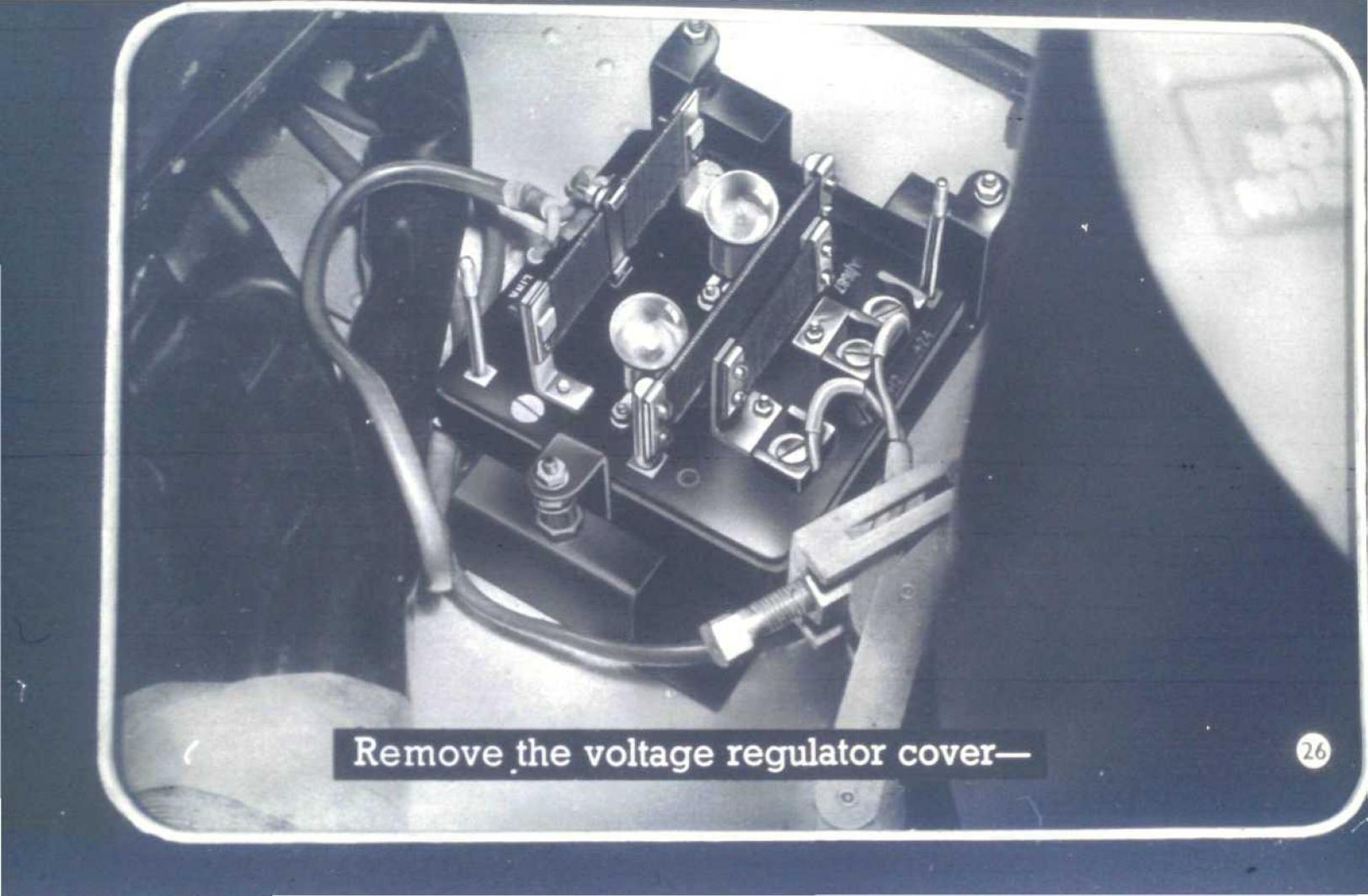
Press the test button, and set the gauge to a temperature reading by adjusting rheostat.



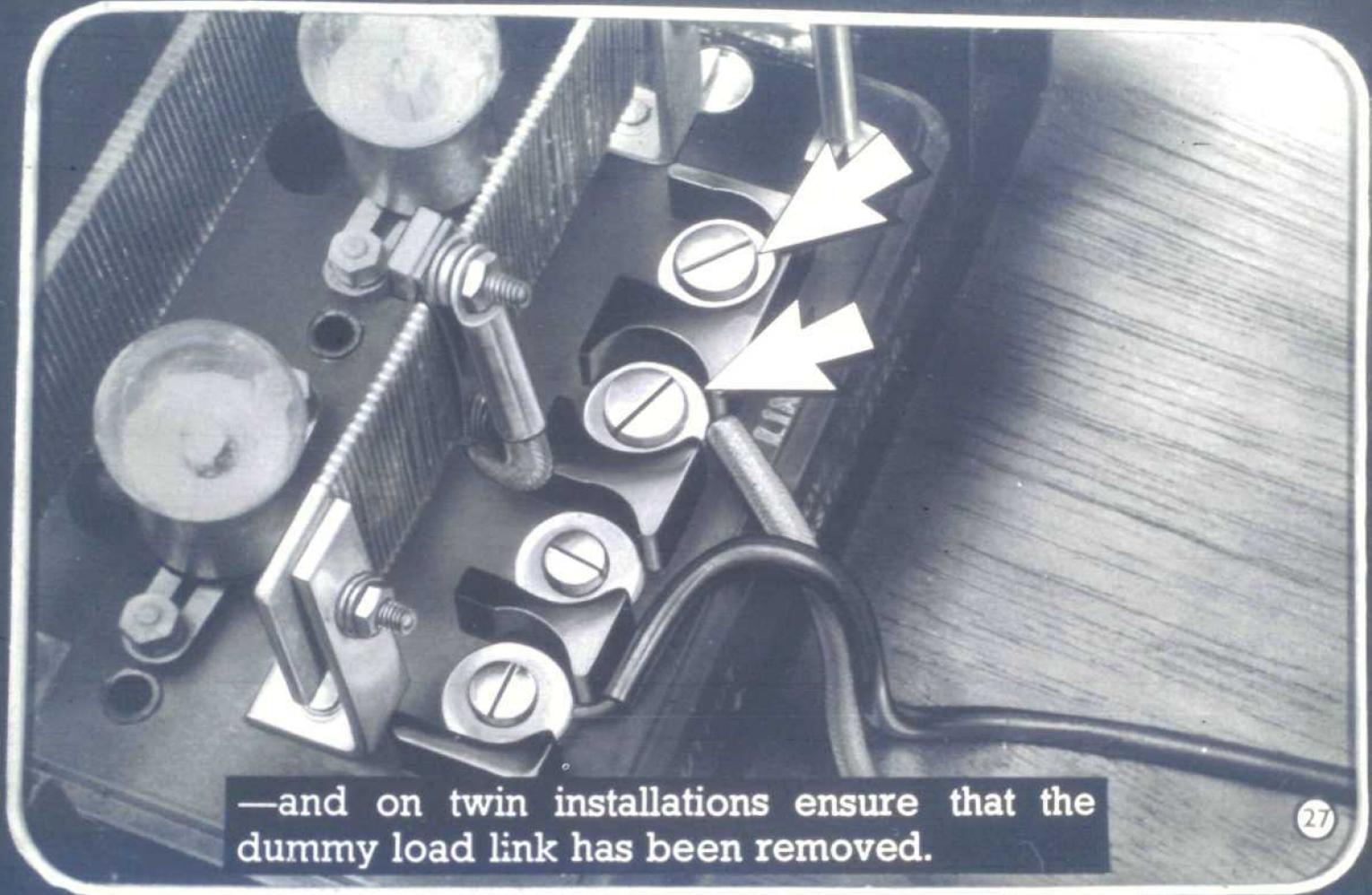
4 The reading on the cockpit instrument should be the same.

**If cockpit reading is incorrect, change
the gauge. No reading indicates
broken continuity.**

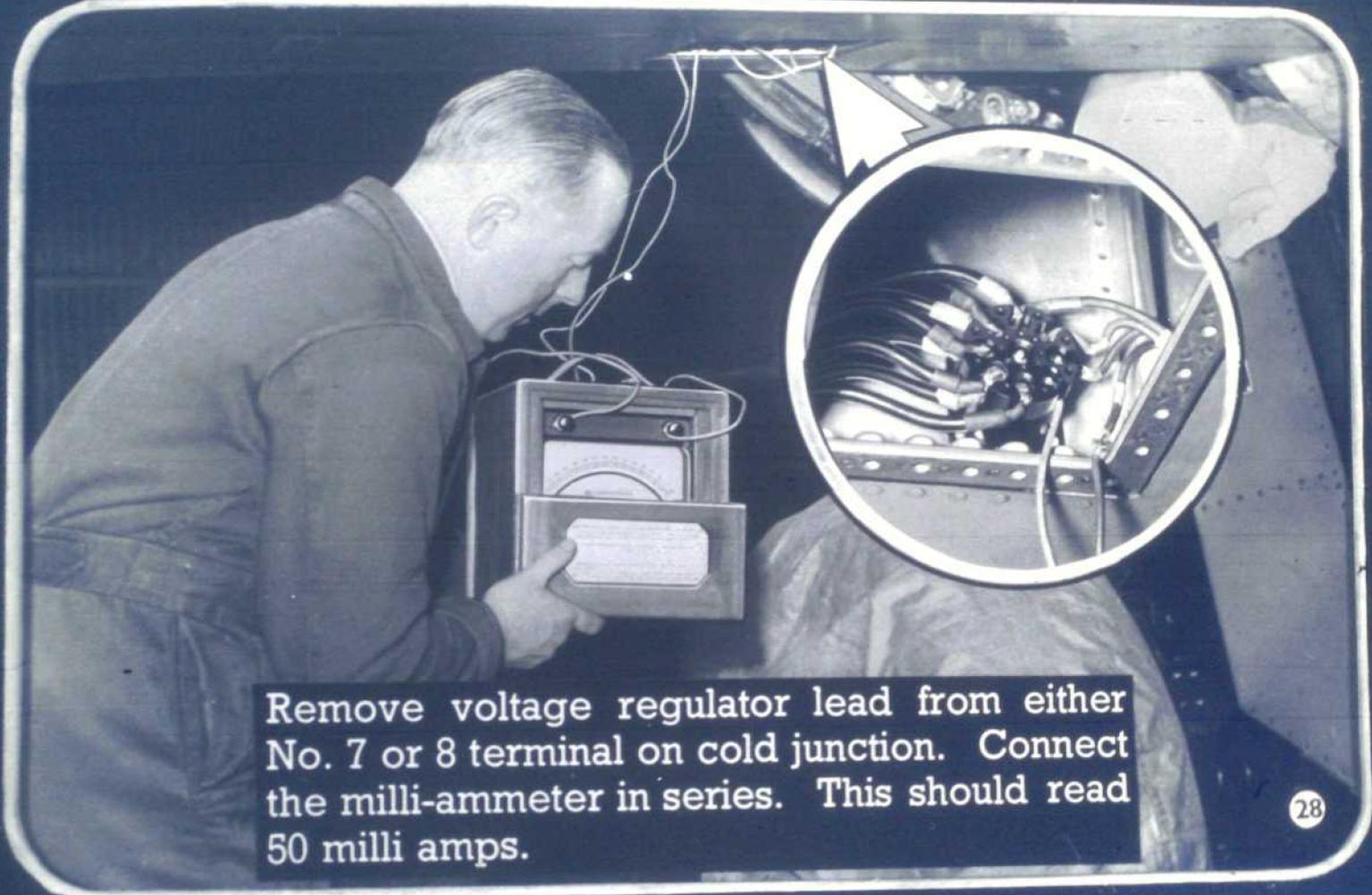
**Low readings can also be caused by
incorrect output of the voltage regulator.**



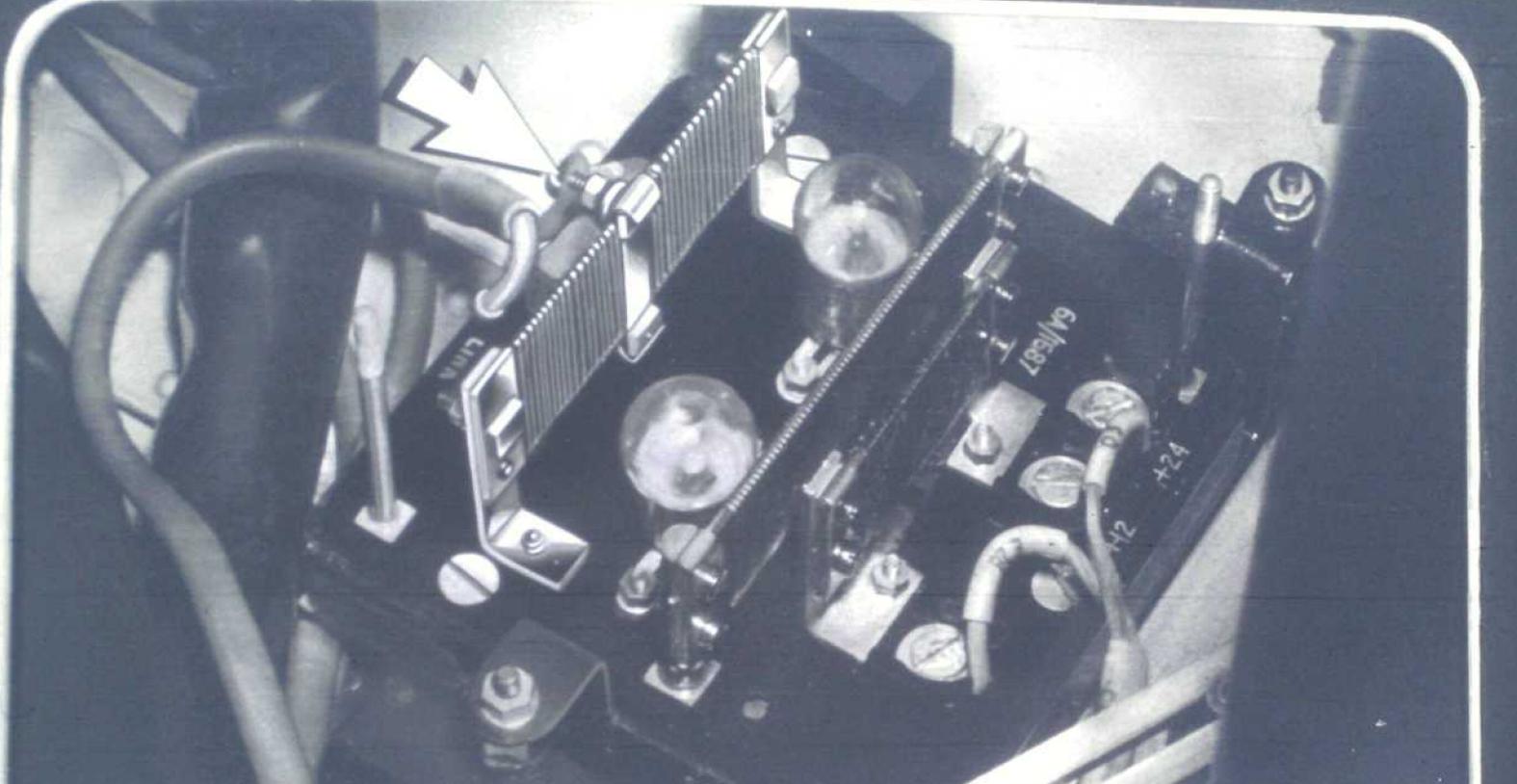
Remove the voltage regulator cover—



—and on twin installations ensure that the dummy load link has been removed.



Remove voltage regulator lead from either No. 7 or 8 terminal on cold junction. Connect the milli-ammeter in series. This should read 50 milli amps.



If necessary slacken two 6 B.A. screws and adjust, calibrating resistance to give 50 milli amps.

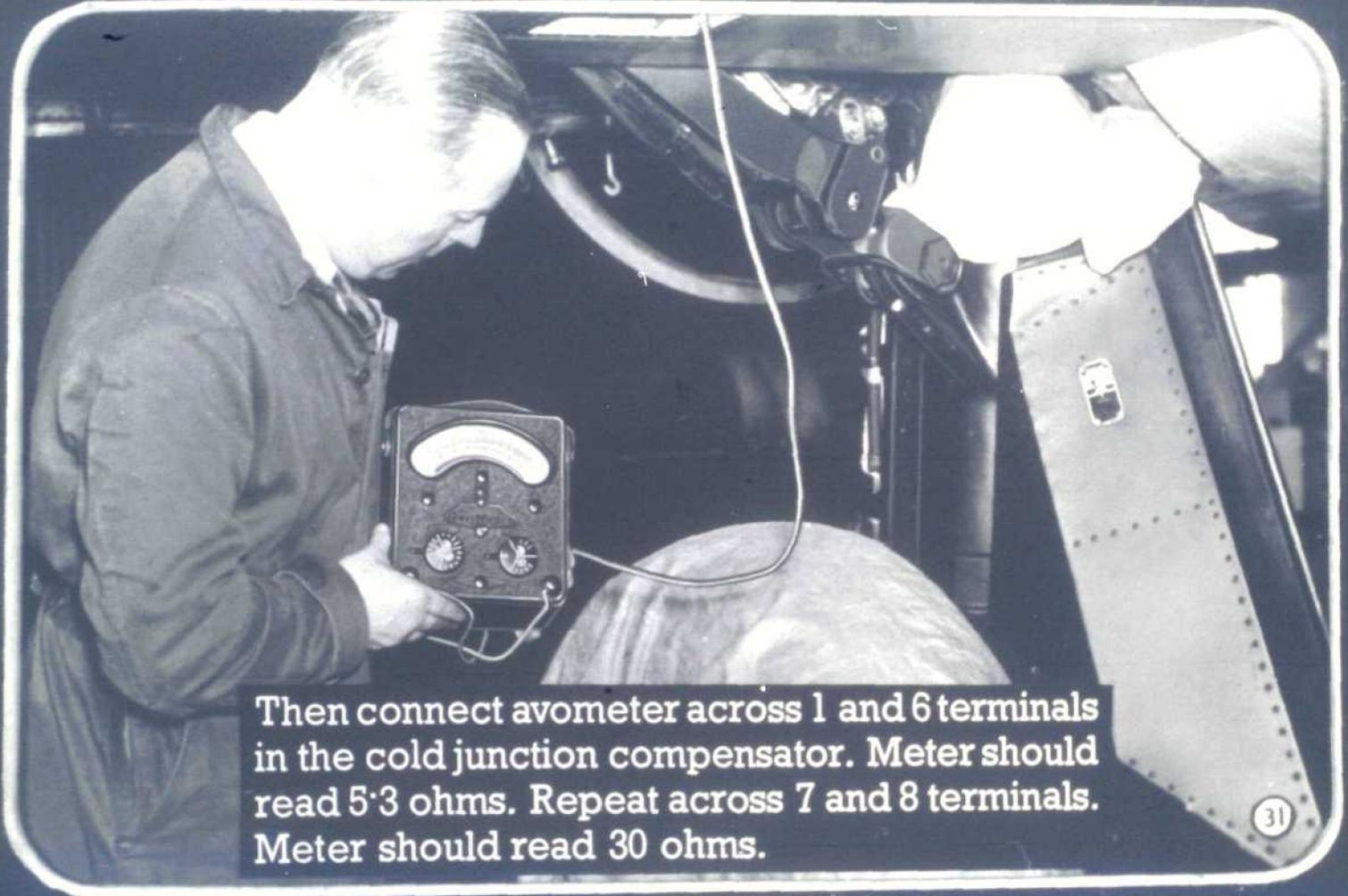
65A 24V 5C/2565

65A 24V 5C/2565

GROUND

FLIGHT

If J.P.T. readings still low, check resistance values in cold junction compensator. First put ground flight switch to GROUND.



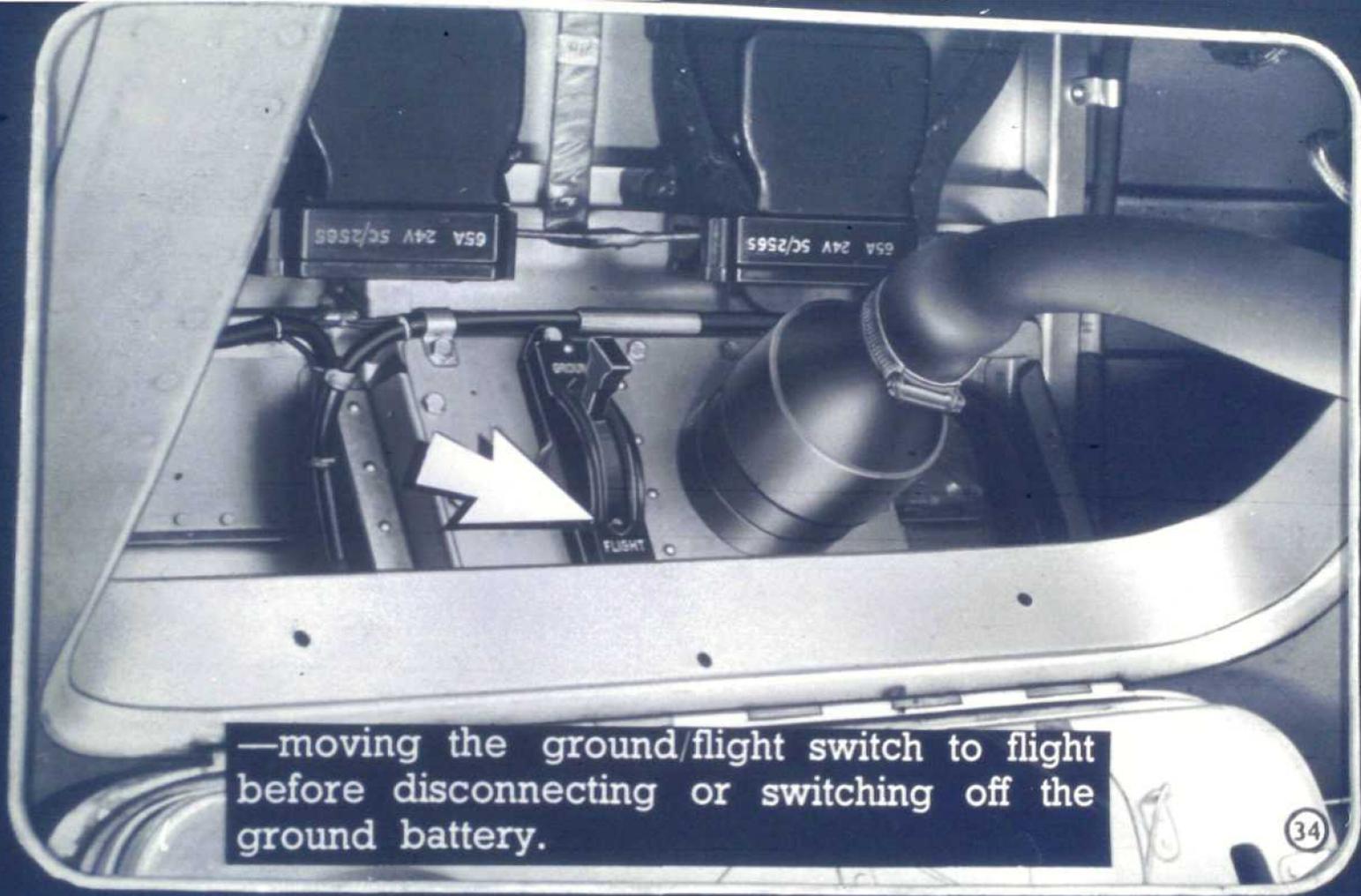
Then connect avometer across 1 and 6 terminals in the cold junction compensator. Meter should read 5.3 ohms. Repeat across 7 and 8 terminals. Meter should read 30 ohms.

HIGH TEMPERATURE READINGS

Can be caused by :-

- 1 Undercharged battery. (Check battery).
- 2 Low output from voltage regulator.
(Check output as described).
- 3 Incorrect cold junction resistance values.
(Check resistances as described.)

**During engine starting, ensure correct operation
of pyrometric equipment by—**



—moving the ground/flight switch to flight before disconnecting or switching off the ground battery.

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