



COMPONENT MAINTENANCE MANUAL
B7170

DESCRIPTION AND OPERATION

1. DESCRIPTION

The Temperature Control Sensor, Model B7170, consists of two calibrated platinum resistance temperature detectors (RTDs), which are enclosed within a stainless steel housing. These detectors are terminated in a 5-pin hermetically sealed receptacle, which connects to an external temperature control system. Mounting of the unit in the aircraft is accomplished via an external 7/8 – 14 threaded section and hex head configuration, as illustrated in Figure 1.

2. OPERATION

The RTDs detect air temperature in a high temperature duct and furnish outputs, which are directly proportional to this temperature. The associated temperature controller utilizes the RTD outputs to regulate the air temperature in the duct.

The RTD-to-receptacle connections are as illustrated in Figure 1.

3. SPECIFICATIONS

Receptacle: HP04-16S-8P-F5SR
(or equivalent per MIL-C-5015)

*Mating Connector: MS3106E16S8S
(or equivalent)

Weight: 9 oz (0.26 kg)

Size:

Probe Diameter: 0.730 in. (18.54 mm) maximum

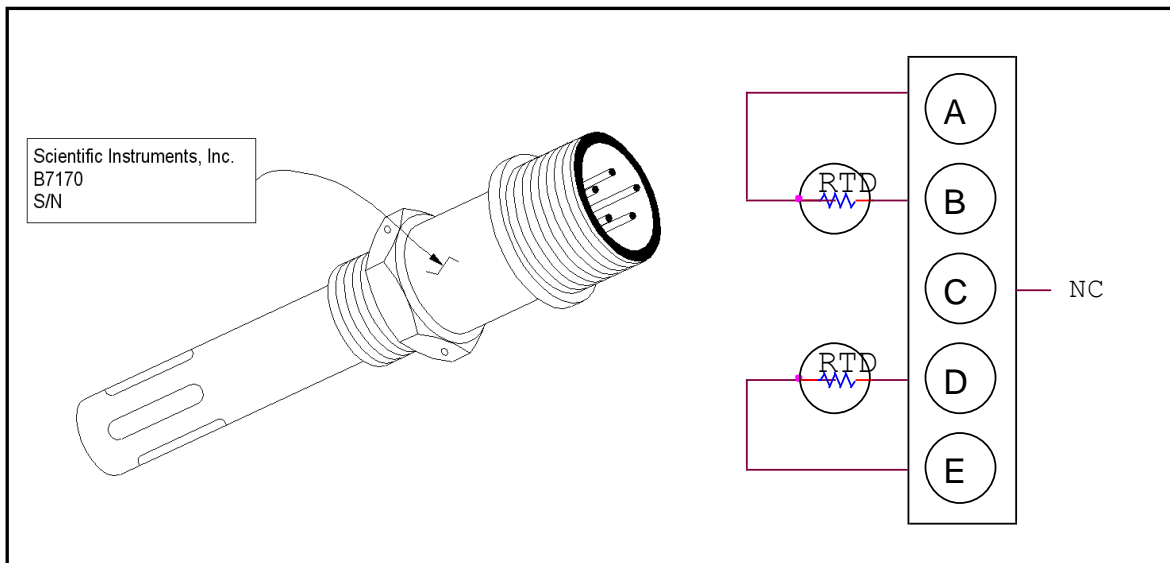
Probe Length: 3.250 in. (82.55 mm)

Overall Length: 5.43 in. (137.9 mm) maximum

Mounting Thread: 7/8 – 14 UNF – 3A

Mounting Hexagon: 1.125 in. (28.58 mm)

- * This plug is listed for test purposes only, and is not necessarily used on the aircraft.



Outline and Schematic Drawing
Figure 1

TESTING AND FAULT ISOLATION

4. TESTING AND FAULT ISOLATION

A. The data that follows permits the testing of the sensor to insure correct operation.

B. Special Tools and Test Equipment

- (1) A megohmmeter capable of reading 10 megohms and greater at 50 VDC (AEMC Model 1000, or equivalent)
- (2) Temperature-controlled environmental test chamber. Accuracy 1%.
- (3) Thermometer with temperature accuracy $\pm 0.2^{\circ}\text{F}$ ($\pm 0.11^{\circ}\text{C}$)
- (4) Ohmmeter with:



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Current: <0.1 mA

Accuracy: 0.05%

Range: 0-100 k Ω

C. Visual Check

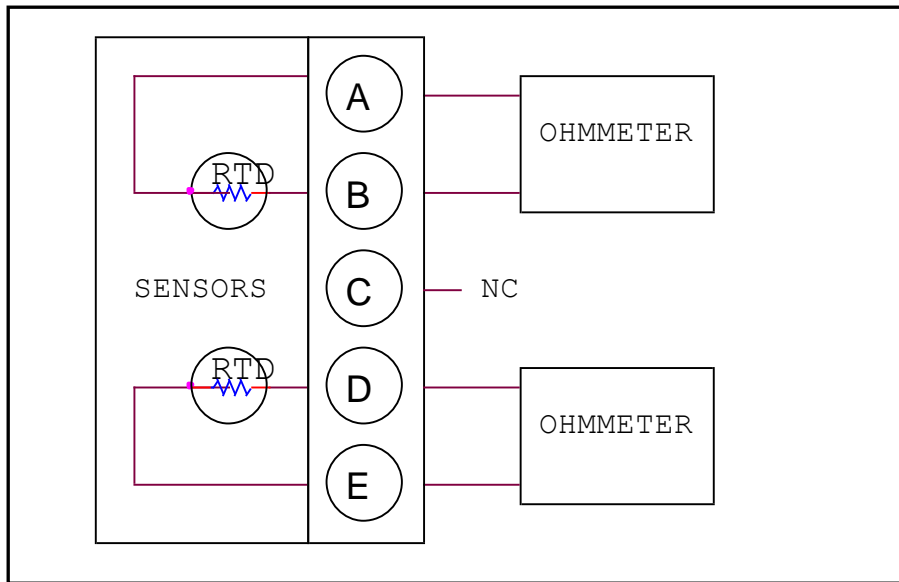
- (1) Visually check the sensor for obvious damage.

D. Insulation Resistance

- (1) Using the megohmmeter, measure the resistance between all ungrounded pins connected in parallel and the housing. The reading should exceed 10 megohms @ 50 VDC.

E. Electrical Test (refer to Figure 2)

- (1) Connect the Ohmmeter to pins A & B of the temperature sensor. Hold the sensor at a temperature of $450^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ($232.2^{\circ}\text{C} \pm 2.7^{\circ}\text{C}$), within the environmental test chamber. With the thermometer at a stable temperature and located within approximately 1/2 in. (12.7 mm) of the tip of the sensor, measure the temperature. The unit is acceptable if the resistance value is 943 ± 2 ohms at the required temperature.
- (2) Connect the Ohmmeter to pins D & E of the temperature sensor. Hold the sensor at a temperature of $450^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ($232.2^{\circ}\text{C} \pm 2.7^{\circ}\text{C}$), within the environmental test chamber. With the thermometer at a stable temperature and located within approximately 1/2 in. (12.7 mm) of the tip of the sensor, measure the temperature. The unit is acceptable if the resistance value is 943 ± 2 ohms at the required temperature.



Schematic for Electrical Test
Figure 2

5. DISASSEMBLY

Not Applicable

6. CLEANING

A. Remove dirt, stains, moisture, etc. with a clean, dry, lint-free cloth.

B. Use a soft bristle brush moistened in isopropyl alcohol to remove any foreign matter from between the receptacle pins.

7. CHECK

A. Visually inspect the sensor probe for obvious wear or damage.

B. Check for bent, broken or missing receptacle pins.

C. Check probe housing for scratches or cracks.



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8. REPAIR

The temperature sensor is considered non-repairable. Bent receptacle pins may be carefully straightened. For other defects or incorrect operation, the temperature sensor should be discarded.

9. ASSEMBLY INCLUDING STORAGE

A. Assembly

Not Applicable

B. Storage

- (1) Install a protective cap on the electrical connector.
- (2) The sensor must be stored in a clean and dry room open to the air. The temperature must be between 64°F and 82°F (18°C and 28°C) and the relative humidity between 25% and 65%.
- (3) Keep the sensor in its initial packaging. If other containers are put on the sensor container, be careful to prevent damage caused by too much weight.
- (4) Do not keep the sensor near heat, fluids or other sources that can cause corrosion.

10. FITS AND CLEARANCES

No dimensional check of the sensor is necessary.

11. SPECIAL TOOLS, FIXTURES AND EQUIPMENT

No other special tools are necessary.

12. ILLUSTRATED PARTS LIST

Since the unit is non-repairable, no parts list is provided.