CF-105 SERVICE DATA

ELECTRICAL SYSTEM

AIR CONDITIONING

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LIST OF ILLUSTRATIONS

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SYSTEM DATA SHEET

SYSTEM	SUB-SYSTEM	AIRCRAFT EFF'TY	REF. NO.
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DESCRIPTION

General

1. The electrical circuits of the air conditioning system regulate the temperature of certain areas, initiate emergency operation, or facilitate the calibration and maintenance of the system. Other circuits included under the air conditioning system are the oxygen contents circuit, the rain repellent system control circuit and the pressure safety valve dump control and pressure warning circuits for the cabin.

2. The temperature regulation circuits control the temperature of the cooling turbine outlet air, the cockpits and the equipment areas. The cooling turbine outlet air temperature is automatically prevented from exceeding a lower limit of -30°F. The temperature of the air supply to the cabin is automatically maintained at any manually selected temperature between 40°F and 80°F. The temperature of the air supply to the equipment area is automatically limited to a temperature of 80°F. The equipment area covers the following components:

(a) Electronic equipment in the nose.

(b) Electronic equipment in the fuselage.

(c) Electronic equipment in the dorsal area.

(d) Aircraft battery.

(e) Alternator control and transformer-rectifier units.

(f) Oxygen converter.

(g) Landing Gear emergency air storage bottle.

(h) Windshield de-icing transformer.

System Controls

3. The controls for the air conditioning system are mounted on the air conditioning panel E18 located in the front cockpit in the RH console. The controls and their functions are as follows:

(a) AIR SUPPLY switch. The air supply switch is marked NORMAL-OFF-EMERGENCY. When the switch is set to the OFF position, the engine bleed air supply to the temperature regulated areas is shut off by a main air control valve. When the switch is selected to the NORMAL position, the turbine outlet temperature regulation circuit controls the degree to which the main air control valve is opened. Selecting the EMERGENCY position provides cooling only for equipment which is considered essential for flight safety.

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(b) TEMP selector. The temperature selector permits any desired cabin temperature between the extremes of COOL and WARM to be selected and maintained.

(c) DEFOG switch. The defog switch overrides the cabin temperature regulation circuit and initiates the operation of a defog circuit to prevent fog forming in the cockpit when the air in the cockpit is humid and the inlet air is cool.

(d) RAIN REPELLENT switch. The rain repellent switch permits hot, high pressure air to be directed onto the windscreen.

(e) CABIN PRESS. switch. The cabin pressure switch permits the release to atmosphere of the cabin pressure air.

Turbine Outlet Air Temperature Regulation Circuit

4. The turbine outlet air temperature regulation circuit limits the temperature of the cool air discharge from the turbine to a minimum of -30°F.

5. The circuit consists of a temperature modulator unit and a temperature-sensitive resistor operating in conjunction to control the degree to which the main air control valve is opened. Increase in the airflow through the main control valve, which is fitted in the supply line from the air-to-air heat exchanger to the air-to-water heat exchanger, results in a decrease in the temperature of the turbine outlet air.

6. The regulation circuit is operative when power is on the primary a-c bus bars but it does not assume control over the main air control valve until the air supply switch is selected to NORMAL. This selection provides a d-c supply to the modulator unit for the operation of the main air control valve.

7. The temperature-sensitive resistor is fitted in the cool air outlet and forms part of a resistor network incorporated in the modulator unit. Also incorporated in the modulator unit are a bridge balance sensing circuit and two relays. The bridge balance sensing circuit is connected across the bridge and controls the energizing of the two relays. One relay effects the opening and the other relay the closing of the main air control valve.

8. Initially, the balance point of the network is adjusted to result in a turbine outlet air temperature of -30°F. The resistance of the bridge at this setting becomes the reference point. As the resistance of the temperature sensitive resistor is proportional to the duct air temperature, an increase or decrease in the turbine outlet air temperature unbalances the bridge. The bridge balance circuit detects the unbalanced condition and, via one of the two relays, effects the opening or closing of the main air control valve to a degree necessary to restore the balance of the bridge.

Cabin Temperature Regulation Circuit.

9. The cabin temperature regulation circuit automatically regulates the air supply to the cabin to maintain any temperature selected on the cabin temperature selector rheostat. The rheostat is marked COOL at one end of its travel and WARM at the other end. This represents a temperature range of from 40°F to 80°F. A mark at the centre point of the travel represents a temperature of 60°F. The circuit is operative when power is on the a-c primary bus bars.

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10. The regulation circuit can be overridden by selecting the defog switch to ON. This action unbalances the circuit to permit the cabin temperature to rise to 90°F.

11. The conditioned air supply to the cabin is composed of cool air from the cooling turbine regulated by hot air bled from the RH engine. In the event of the RH engine bleed air failing, hot air is supplied by the LH engine via the hot side of the air-to-air heat exchanger. The supply of hot air is regulated by a cabin temperature control valve. The control valve is spring-loaded to the closed position and is opened by servo air pressure which is controlled by a solenoid. The degree of valve opening is proportional to the current being passed through the solenoid.

12. The solenoid current is controlled by a temperature control unit, the pilot's temperature selector rheostat and two temperature sensitive resistors, one in the cabin inlet duct and the other in the cabin outlet duct.

13. The temperature control unit incorporates a number of fixed and variable resistors for calibrating the circuit, an amplifying vacuum tube circuit, and a regulating triode.

14. A resistor network, consisting of the temperature selector rheostat, the two temperature sensitive resistors and the fixed and variable resistors in the temperature control unit, controls the input to the amplifying tube circuit. The output of the amplifying tube is fed to the grid of the regulating triode to control the plate current of this tube. The plate current of the regulating triode controls the current in the solenoid of the cabin temperature control valve.

15. The cabin temperature selected on the selector rheostat is maintained by the temperature sensitive resistors. If the temperature increases or decreases above that which was selected, the resistor network becomes unbalanced. This action results in a decrease or increase in the current flow in the solenoid of the cabin temperature control valve, thus opening or closing the control valve to a degree necessary to regain the balance of the network.

16. Selecting the defog switch ON isolates the outlet duct temperature sensitive resistor and the cabin temperature selector rheostat. This raises the cockpit inlet air temperature to 90°F and it is maintained at this temperature by the inlet duct temperature sensitive resistor.

17. If at any time the cabin inlet air temperature reaches 140°F, a thermostat, fitted in the inlet duct, interrupts the power supply to the cabin temperature control valve solenoid, and the control valve automatically cuts off the hot air supply. The thermostat re-establishes the power supply when the temperature drops to 100°F.

18. A shut-off valve fitted in the cabin inlet duct is open when the landing gear is locked up. When the landing gear is in any other position the valve is partially closed in order to ensure that sufficient cooling air pressure is available for the equipment area, as the system pressure is reduced during low engine rpm. A limit switch, incorporated in the valve, interrupts the close field circuit before the valve is fully closed.

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19. The supply to the close field of the shut-off valve is completed when an airflow shut-off relay is energized. This action transfers a supply circuit from the open field to the close field of the valve. The airflow shut-off relay is energized when the landing gear is unlocked and the nose gear door-up relay is de-energized, the supply circuits being completed through the relay-open contacts.

20. An additional function of the airflow shut-off relay, when energized, is to operate the solenoid override circuit of the flow augmentor valve, see Flow Augmentor Valve Control Circuit, para 31. The supply circuit to the airflow shut-off relay coil is routed via an air conditioning ground-test switch. This switch is normally closed and its primary function is to override, for testing purposes, the solenoid circuit of the flow augmentor valve. The cabin shut-off valve is provided with a separate override circuit.

21. The cabin shut-off valve override circuit is connected to the open field of the valve. The circuit is completed when the external air control relay is energized by the act of connecting an external air supply line to the system. See Calibration and Maintenance Circuits, para 39.

Equipment Area Temperature Regulation Circuit

22. The temperature of the air in the equipment area is limited to 80°F. Due to the impracticability of controlling the temperature of the air supply to each component, control is exercised on only one portion of the supply line. This control point is at the entry to the nose air inlet line.

23. The circuit is operative automatically when power is on the a-c primary bus bars.

24. With the exception that only one temperature-sensitive resistor is used for control purposes, the regulation circuit is identical to the cabin temperature regulation circuit.

25. The circuit is calibrated to produce a peak temperature of 80°F at a point near the equipment area main air supply line entry into the air distribution line. At the calibrated temperature the resistance of the temperature-sensitive resistor causes a certain voltage to be supplied to the amplifier in the temperature control unit. This in turn, results in the equipment area temperature control valve being opened to a certain degree.

26. If the temperature at the nose inlet line increases above the calibrated temperature, the resulting change in voltage drop across the temperature-sensitive resistor effects the closing of the control valve to a degree necessary to restore the balance of the network.

27. If the air temperature increases to 100°F, two thermostats fitted near the temperature-sensitive resistor are actuated. One thermostat, fitted in the equipment temperature control valve supply circuit, opens and causes the control valve to close. The other thermostat closes to complete an indicator circuit in an annunciator unit which provides an indication to ground personnel that an overheat condition has occurred. When the temperature drops to 60°F, the thermostats revert to normal but the annunciator indicator circuit remains locked until it is manually reset.

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Emergency Operation Control Circuits.

28. Emergency cooling is initiated by selecting the air supply switch to EMERGENCY. This action energizes a control relay which opens the ram air gate valves and closes the radar nose inlet line gate valve and main air control valvea. When the ram air gate valves are open, ram air is permitted to enter the equipment area air distribution line.

29. The control relay, in the unenergized condition, completes a supply circuit from the main d-c bus to the close field of the ram air gate valves and the open field of the radar nose inlet line gate valve.

Flow Augmentor Valve Control Circuit.

30. When the aircraft is flying at high altitudes or when the engine rpm are low, the bleed air delivery pressure decreases to a point where the efficiency of the system is reduced. When this occurs, a pneumatically operated flow augmentor valve opens to permit air from the air-to-water heat exchanger to by-pass the cooling turbine and enter the equipment area supply line.

31. A solenoid operated circuit is incorporated in the flow augmentor valve which effects the closing of the valve when the landing gear is in any poaition other than locked up. Thia action prevents excessively hot air from entering the equipment area supply line. The circuit is operative when the air flow shut-off relay (see Cabin Temperature Regulation Circuit) is energized by a circuit completed through the relay-open contacts of the nose door-up relay of the landing gear circuita.

32. A normally-closed ground-test switch is fitted in the supply circuit of the air-flow shut-off relay. This switch permits the solenoid circuit to be overridden to facilitate checking the operation of the flow augmentor valve.

Inlet Pressure and Temperature Sensing Circuit.

33. A pressure-temperature sensing circuit is incorporated in the bleed line from each engine. If the bleed air pressure exceeds 120 psi or, due to leakage, the temperature within the bleed line insulation rises to 350°F - 400°F the circuit effects the closing of a bleed air shut-off valve. The circuits are interconnected by a LH and a RH interlock relay which prevents both circuits operating at the same time.

34. Each pressure and temperature sensing circuit consists of a pressure switch, three parallel-connected thermostats and a shut-off valve.

35. The pressure switch is fitted in the bleed line downstream of the pressure reducing valve. This valve restricts the bleed air pressure to 85 psi. If the pressure increases to 120 psi, the pressure switch operates and closes the shut-off valve.

36. The thermostats are positioned close to cut-outs in the insulation of the bleed air line. If, due to leakage of the bleed line, the ambient temperature rises to 350°F - 400°F, one or more of the thermostats close. This action completes a supply circuit

to close the shut-off valve.

37. When an interlock relay is energized, it completes a lock-on indication circuit in the annunciator unit. This provides an indication of the failure to ground personnel.

Calibration and Maintenance Circuits.

38. Each of the three regulated areas incorporates a thermocouple fitted at a critical point of the relevant supply line. The circuit of each thermocouple terminates at a connector on the air conditioning ground test panel. This facilitates the connection of temperature gauges for temperature calibration purposes.

39. Cooling air from an external source can be connected to the system by means of a ground-test connection. Incorporated in the connection is a micro-switch which is closed by the act of connecting the external supply line. This micro-switch, when closed, completes a supply circuit from the main d-c bus to energize an external supply control relay. This relay effects the following operations:

(a) Opens the cabin shut-off valve.

(b) Closes the main air control valve.

(c) Isolates the air supply switch to prevent the main air control valve from being selected open while the ground supply is connected.

40. The external supply control relay acts as an override and the affected circuits will automatically revert to the normal position when the external supply is disconnected.

Rain Repellent System Control Circuit.

41. Hot, high pressure air ducted from the air-to-air heat exchanger is directed onto the windscreens to act as a rain repellent. The air supply is controlled by a shut-off valve operated by the rain repellent switch. Selecting the switch to ON opens the shut-off valve.

42. A thermostat is fitted in the supply line and acts as an override circuit to close the shut-off valve when the air temperature exceeds 250°F.

Cabin Pressure Warning Circuit.

43. If the cabin altitude exceeds 31,000 feet ± 1,800 feet, an amber coloured CABIN PRESS indicator located on the master warning system indicator panel and an amber coloured master indicator on the main instrument panel are illuminated. The circuit is completed by the closing of an aneroid switch which derives a power supply from the main d-c bus.

Cabin Pressure Relief Circuit.

44. When required, the cabin pressure can be released by selecting the cabin pressure switch to DUMP. This energizes a solenoid which opens the cabin pressure safety valve and releases the air pressure to atmosphere.

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Oxygen Contents Circuit.

45. The volume of liquid oxygen contained in the oxygen converter is indicated, as a percentage of the maximum, on a gauge located in the front cockpit on the RH console. The circuit is operative when power is on the main d-c and primary a-c bus bars. A flag marked OFF is visible in the indicator when the circuit is inoperative. The indicator is controlled by a transmitter and a capacitance sensing device which is fitted to the oxygen converter.

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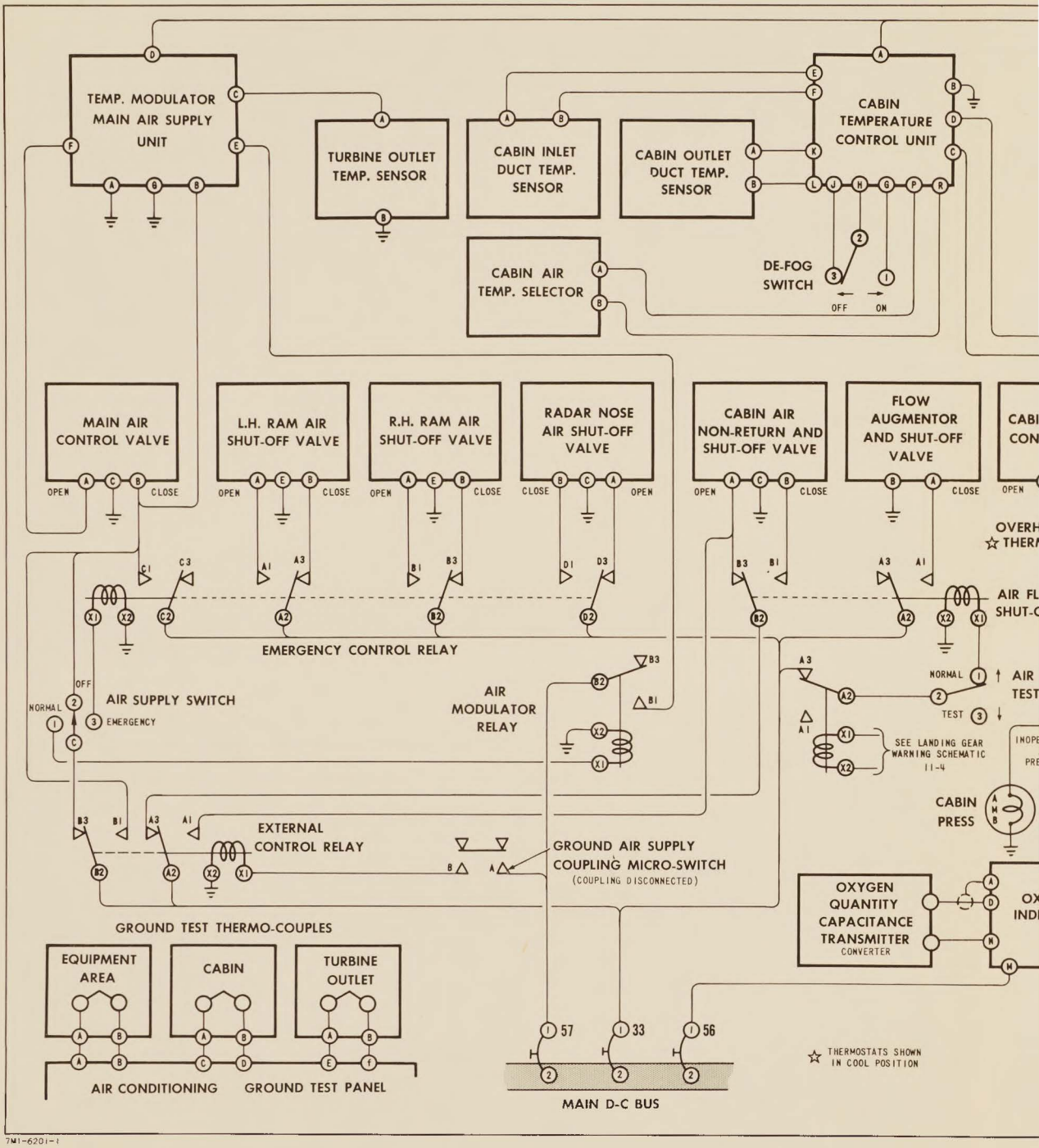
TEMP. MODULATOR MAIN AIR SUPPLY UNIT
TURBINE OUTLET TEMP. SENSOR
CABIN INLET DUCT TEMP. SENSOR
CABIN OUTLET DUCT TEMP. SENSOR
CABIN TEMPERATURE CONTROL UNIT
CABIN AIR TEMP. SELECTOR
DE-FOG SWITCH
OFF
ON
MAIN AIR CONTROL VALVE
L.H. RAM AIR SHUT-OFF VALVE
R.H. RAM AIR SHUT-OFF VALVE
RADAR NOSE AIR SHUT-OFF VALVE
CABIN AIR NON-RETURN AND SHUT-OFF VALVE
FLOW AUGMENTOR AND SHUT-OFF VALVE
OPEN
CLOSE
EMERGENCY CONTROL RELAY
AIR SUPPLY SWITCH
NORMAL
EMERGENCY
AIR MODULATOR RELAY
EXTERNAL CONTROL RELAY
GROUND AIR SUPPLY COUPLING MICRO-SWITCH
(COUPLING DISCONNECTED)
SEE LANDING GEAR WARNING SCHEMATIC 11-4
CABIN PRESS
OXYGEN QUANTITY CAPACITANCE TRANSMITTER
CONVERTER
GROUND TEST THERMO-COUPLES
EQUIPMENT AREA
CABIN
TURBINE OUTLET
AIR CONDITIONING
GROUND TEST PANEL
57
33
56
MAIN D-C BUS
THERMOSTATS SHOWN IN COOL POSITION

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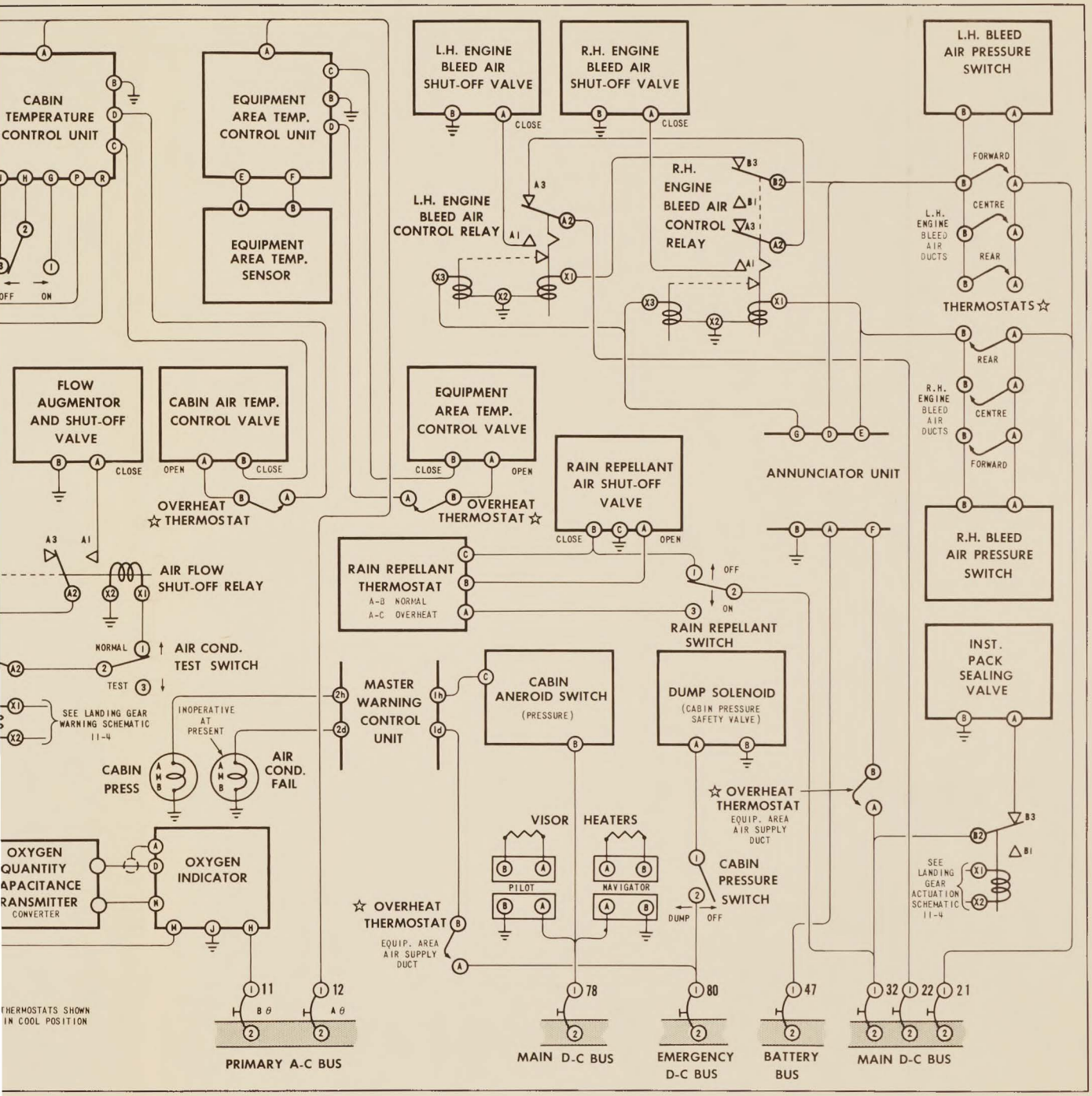

FIG. 1 AIR CONDITIONING SYSTEM - SCHEMATIC

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COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Panel E18	11-14-1

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-1252-82	Avro Aircraft		25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To mount the following switches:
(a) Temperature Selector Rheostat
(b) Air Supply Switch
(c) Defog Switch
(d) Dump Switch
(e) Rain Repellent Switch

LOCATION

Front Cockpit, RH console.

ACCESS | MEN X MINUTES

Unobstructed.

REPLACEMENT PROCEDURE | MEN X MINUTES

Fit and secure circuit wiring.
Fit and secure the panel to the console - five screws.

INSPECTION	MEN X MINUTES	
Operate the switches and check that their action is neither rought nor sluggish. Operate the temperature selector rheostat and check that the action is not rough and that the knob is securely pinned. Check that the circuit wiring is connected correctly and securely.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

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COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Turbine Outlet Temperature Control Unit	11-14-2

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2254-348	AiResearch	45958	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To limit the cooling turbine outlet temperature to a minimum of -30°F by altering the degree to which the main air control valve is opened or closed, thus increasing or decreasing the airflow to the turbine inlet.

LOCATION

Compartment aft of rear cockpit bulkhead and forward of station 292.

ACCESS — MEN X MINUTES

Unobstructed, when the dorsal fairing aft of the rear cockpit is removed - six latches.

REPLACEMENT PROCEDURE — MEN X MINUTES

Position the controller in its mounting tray and turn the quick fastener in a clockwise direction until the unit is secured.
Fit and secure one electrical connector.
Connect and secure one bonding lead.

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INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly mounted. Check that the electrical connector and the bonding lead are securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

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COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
EIECTRICAL	AIR CONDITIONING	Turbine Outlet Temperature Sensor	11-14-3

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2254-349	AiResearch	30050-10	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

The sensor, which has an inverse temperature/resistance characteristic, forms a variable resistance leg of a resistor network incorporated in the turbine outlet control unit.

LOCATION

Air conditioning bay - fitted in the duct at the cooling turbine outlet.

ACCESS

MEN X MINUTES

Unobstructed, when an access panel secured by 76 screwa is removed from the bottom fuselage aft of the rear cockpit bulkhead and an attached antenna is disconnected.

REPLACEMENT PROCEDURE

MEN X MINUTES

Screw the sensor into the duct boss until secure.
Fit and secure one electrical connector.
Reconnect antenna and refit access panel - 76 screwa.

TM1-3413-2-5

INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly fitted. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

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COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Cabin Temperature Control Unit	11-14-4

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2252-14	Hamilton Standard	503704	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours.

FUNCTION

To maintain the cabin temperature constant, at a selected temperature between 40°F and 80°F, by altering the degree to which the cabin temperature control valve is opened or closed. Aleo incorporates a defog circuit which permits the cabin temperature to rise to 90°F.

LOCATION

Compartment aft of rear cockpit bulkhead and forward of station 292.

ACCESS

MEN X MINUTES

Unobstructed when the dorsal fairing aft of the rear cockpit is removed - six latches.

REPLACEMENT PROCEDURE

MEN X MINUTES

Position the controller in its mounting and secure - four 3/16 inch bolts.
Fit and secure one electrical connector.

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INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly mounted. Check that the connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

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SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Cabin Inlet Duct Temperature Sensor	11-14-5

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2252-12	Hamilton Standard	HS 98071	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

The sensor, which has an inverse temperature/resistance characteristic, forms a variable resistance leg of a resistor network incorporated in the cabin temperature control unit.

LOCATION

Air conditioning bay at station 230 - fitted in the cabin air inlet duct.

ACCESS

Remove an access panel secured by 76 screws from the bottom fuselage aft of the rear cockpit bulkhead, and disconnect an attached antenna.

MEN X MINUTES

REPLACEMENT PROCEDURE

Screw the sensor into the duct boss until secure.
Fit and secure one electrical connector.
Reconnect antenna and refit access panel - 76 screws.

MEN X MINUTES

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INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly fitted. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

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SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Cabin Outlet Duct Temperature Sensor	11-14-6

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2252-12	Hamilton Standard	HS 98071	25201

OVERHAUL LIFE: KNOWN– ESTIMATED– 1500 hours

FUNCTION

The sensor, which has an inverse temperature/resistance characteristic forms a variable resistance leg of a resistor network incorporated in the cabin temperature control unit.

LOCATION

Air conditioning bay, fitted in the cabin exhaust duct.

ACCESS — MEN X MINUTES

Remove an acess panel secured by 76 screws from the bottom fuselage aft of the rear cockpit bulkhead, and disconnect an attached antenna.

REPLACEMENT PROCEDURE — MEN X MINUTES

Screw the sensor into the duct boss until secure.
Fit and secure one electrical connector.
Reconnect antenna and refit access panel - 76 screws.

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INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly fitted. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

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SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Cabin Temperature Selector	11-14-7

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2252-151	Hamilton Standard	HS 506400	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To enable the cabin temperature to be selected manually within a temperature range of from 40°F to 80°F.

LOCATION

Front Cockpit, RH console, air conditioning panel E18.

ACCESS

MEN X MINUTES

Remove panel E18 from the console - five screws.

REPLACEMENT PROCEDURE

MEN X MINUTES

Position the selector unit in panel E18 and secure with lock washer and nut supplied.
Fit and secure the knob pointer to the selector spindle - two 6/32 inch Allen screws.
Fit and secure one electrical connector.
Fit and secure panel E18 to the console - five screws.

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INSPECTION	MEN X MINUTES	
Check that the selector unit is securely and properly fitted. Operate the rheostat, check that the action is smooth throughout the travel, and that the knob is securely pinned.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

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SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Equipment Area Temperature Control Unit	11-14-8

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2252-16	Hamilton Standard	503703	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 500 hours

FUNCTION

To limit the equipment area temperature to 80°F by altering the degree to which the equipment area temperature control valve is opened or closed.

LOCATION

Compartment aft of rear cockpit bulkhead.

ACCESS

Unobstructed when the dorsal fairing aft of the rear cockpit is removed - six latches.

MEN X MINUTES

REPLACEMENT PROCEDURE

MEN X MINUTES

Position the controller in its mounting and secure - four 3/16 inch bolts.
Fit and secure one electrical connector.

INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly mounted. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

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SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Equipment Area Temperature Sensor	11-14-9

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2252-12	Hamilton Standard	HS 98071	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

The sensor, which has an inverse temperature/resistance characteristic, forms the variable resistance leg of a resistor network incorporated in the equipment area temperature control unit.

LOCATION

Air conditioning bay at station 185, fitted in the nose air inlet supply line.

ACCESS

MEN X MINUTES

Unobstructed, fitted on the LH side of the nose wheel well.

REPLACEMENT PROCEDURE

MEN X MINUTES

Screw the sensor into the duct boss until secure.
Fit and secure one electrical connector.

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INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly fitted. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

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COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Thermostet - Equipment Area Overtempereture	11-14-10

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2250-128	United Controle	G-337-1B	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 houre

FUNCTION

To open et e temperature of 100°F end interrupt the supply circuit to the equipment area tempereture control valve which will be spring-returned to the cloeed position. The thermoetat closes when the tempereture drops to 60°F.

LOCATION

Nose air inlet line in nose wheel well et stetion 185.

ACCESS

Unobetructed.

MEN X MINUTES

REPLACEMENT PROCEDURE

MEN X MINUTES

Screw the thermoetat into the duct boes until secure.
Fit and secure one electricel connector.

INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly fitted in the boss. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

REMARKS

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Thermostat - Equipment Ares Overtemperature	11-14-11

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2250-129	United Controls	G 337-1C	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To cloae and complete a supply circuit to an overtemperature indicator in the annunciator unit if the air tempersture in the noae inlet line exceeds 100°F. The thermoatat opens when the temperature drops to 60°F. The annunciator indicator must be reset manually.

LOCATION

Noae air inlet line in nose wheel well at atation 185.

ACCESS

MEN X MINUTES

Unobstructed.

REPLACEMENT PROCEDURE

MEN X MINUTES

Screw the thermostat into the duct boaa until secure.
Fit and secure one electrical connector.

TM1-5413-2-5

INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly fitted in the duct boss. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

REMARKS

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Pressure Switch, Engine Bleed - LH snd RH	11-14-12

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2256-189	Parmatic Engineering Ltd.		25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To close and complete s supply to the bleed line air shut-off vslve snd the snnuncistor unit, if subjected to pressure in excess of 120 psi ± 5 psi.

LOCATION

Station 524, near the engine bleed pressure reducing vslve - LH snd RH.

ACCESS

MEN X MINUTES

Disconnect the main lsnding gear door jack snd secure the door in the closed position, then remove an sccess panel on the outside skin of the sircraft - 36 3/16 inch screws.

REPLACEMENT PROCEDURE

MEN X MINUTES

Fit and secure the unit to a mounting clamp bracket - two bolts.
Connect sns aecure one pipeline.
Fit and secure one electricsl connector.
Refit the access psnel - 36 3/16 inch screws.
Re-secure the msin lsnding gear door jack.

TM1-3N13-2-5

INSPECTION	MEN X MINUTES	
Check that the unit is securely clamped. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

REMARKS

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Thermostst, Engine Bleed Line Leaksge - LH and RH	11-14-13

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2250-126	United Controls	G-337-1	25201

OVERHAUL LIFE: KNOWN– ESTIMATED– 1500 hours

FUNCTION

To close and complete s supply circuit to the bleed line air shut-off valve snd the annunciator unit if the temperature within the bleed line insulation rises to 350°F - 400°F.

LOCATION

Mounted adjscent to the engine bleed line st station 635 - LH and RH.

ACCESS — MEN X MINUTES

Remove a panel marked Air Conditioning Manifold Access st station 634 - 27 screws.

REPLACEMENT PROCEDURE — MEN X MINUTES

Fit the thermostst in its mounting and secure with retaining nut supplied.
Fit and secure one electrical connector.
Refit the access panel - 27 screws.

TMI-3413-2-5

INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly mounted. Check that the electrical connector is fitted securely and properly.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

REMARKS

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Thermostat, Engine Bleed Line Leakage - LH and RH	11-14-14

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2250-126	United Controls	G-337-1	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To close and complete a supply circuit to the bleed line air shut-off valve and the annunciator unit if the temperature within the bleed line insulation rises to 350°F - 400°F.

LOCATION

Mounted adjacent to the engine bleed line at station 536 - LH and RH.

ACCESS

MEN X MINUTES

Disconnect the main landing gear door jack and secure the door in the closed position, then remove an access panel on the outside skin of the aircraft - 36 3/16 inch screws.

REPLACEMENT PROCEDURE

MEN X MINUTES

Fit the thermostat in its mounting and secure with retaining nut supplied.
Fit and secure one electrical connector.
Refit access panel - 36 3/16 inch screws.
Re-secure main landing gear door jack.

INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly mounted. Check that the electrical connector is fitted securely and properly.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

REMARKS

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Thermostst, Engine Bleed Line Leakage - LH snd RH	11-14-15

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2250-126	United Controls	G-337-1	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To close and complete a supply circuit to the bleed line sir shut-off valve and the annunciator unit if the temperature within the bleed line insulation rises to 350°F - 400°F.

LOCATION

Mounted adjacent to the engine bleed line at station 303 - LH and RH.

ACCESS

	MEN X MINUTES
Remove dorsal fairing aft of rear cockpit bulkhead by unlatching six latches. Remove fan exhaust duct. Remove an access panel in air conditioning bay roof - 57 3/16 inch screws. Remove non-return valve access panel on side of air conditioning bay - 12 screws.	

REPLACEMENT PROCEDURE

	MEN X MINUTES
Fit the thermostat in its mounting and secure with retaining nut supplied. Fit and secure one electrical connector. Reverse sccess procedure.	

TM1-3413-2-5

INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly mounted. Check that the electrical connector is fitted securely and properly.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

REMARKS

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Air Conditioning Test Switch	11-14-16

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
	Cutler - Hammer	8804 K12	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To open the cabin air shut-off valve and close the flow augmentor valve for ground-test purposes.

LOCATION

Mounted on E3, forward accessory panel, which is located on the RH side of the nose wheel well at station 130, approximately.

ACCESS | MEN X MINUTES

Unobstructed.

REPLACEMENT PROCEDURE | MEN X MINUTES

Mount the switch on the panel and secure using the lock ring, shakeproof washer and nuts provided. Connect and secure the electrical wiring to the switch terminals.

TM1-3413-2-5

INSPECTION	MEN X MINUTES	
Check that the switch is securely and properly mounted. Check the toggle operation making sure that the action is smooth and positive.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Thermostat - Rain Repellent System	11-14-17

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-2254-2141			25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To transfer the supply from the open field to the close field of the rain repellent system shut-off valve if the temperature of the air in the system supply duct exceeds 250°F. After operation, the thermostat closes when the temperature drops to 200°F, thus re-opening the shut-off valve.

LOCATION

In the duct tapped into the line between the main air control valve and the air-to-water heat exchanger.

ACCESS

	MEN X MINUTES
Remove dorsal fairing aft of rear cockpit bulkhead by unlatching six latches. Remove fan exhaust duct. Remove an access panel in air conditioning bay roof - 57 3/16 inch screws.	

REPLACEMENT PROCEDURE

	MEN X MINUTES
Position the thermostat in the duct and secure by locking the clamp. Fit and secure one electrical connector. Reverse access procedure.	

TM1-3413-2-5

INSPECTION	MEN X MINUTES	
Check that the unit is securely clamped. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Cabin Aneroid Switch	11-14-18

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
	Miltron Corp.	415-10-19	25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To close and complete a warning indication circuit when the cabin pressure altitude is at 31,000 feet ± 1,800 feet.

LOCATION

Rear cockpit at station 210, under instrument panel.

ACCESS

Unobstructed.

MEN X MINUTES

REPLACEMENT PROCEDURE

Position the unit in its mounting and secure - two screws, washers and nuts.
Fit and secure one electrical connector.

MEN X MINUTES

TWI-3913-2-5

INSPECTION	MEN X MINUTES	
Check that the unit is securely and properly mounted. Check that the electrical connector is securely and properly connected.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

REMARKS

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CF-105 SERVICE DATA

COMPONENT DATA SHEET

SYSTEM	SUB-SYSTEM	COMPONENT	REF. NO.
ELECTRICAL	AIR CONDITIONING	Oxygen Quantity Gauge	11-14-19

AVRO PART NO.	MANUFACTURER	MAN'F'R'S PART NO.	AIRCRAFT EFFECTIVITY
7-1252-12			25201

OVERHAUL LIFE: KNOWN- ESTIMATED- 1500 hours

FUNCTION

To provide an indication, as a percentage of the maximum, of the volume of liquid oxygen in the oxygen converter.

LOCATION

Front Cockpit, RH oonsole, oxygen panel E22.

ACCESS | MEN X MINUTES

Unobstructed.

REPLACEMENT PROCEDURE | MEN X MINUTES

Fit and aecure circuit wiring to gauge.
Fit and aecure one pipeline.
Fit and secure panel to the consale - aix screwa.

TM1-3413-2-5

INSPECTION	MEN X MINUTES	
Check that the gauge is securely mounted. Check that the electrical wiring and the pipeline are securely and properly fitted.		

FUNCTIONAL CHECKS	MEN X MINUTES	

GROUND HANDLING AND GROUND TEST EQUIPMENT

SPECIAL TOOLS TO REMOVE OR SERVICE

REMARKS

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