

**CHAPTER 99 — AUXILIARY EQUIPMENT KIT  
BLEED AIR HEATER  
206-706-149-101  
206-706-149-103**

**CONTENTS — MAINTENANCE PROCEDURES**

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**BLEED AIR HEATER**  
**206-706-149-101**  
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**1. DESCRIPTION.**

The bleed air heater provides heated air to crew and passengers through use of the air distribution system. The bleed air heater consists of a mixing valve, used to blend heated air with ambient air, the bleed air tubing assembly, which provides heated air from engine to mixing valve, and solenoid-actuated remote sensor that keeps the system from overheating. The system also contains two noise suppressors used to quiet operation of the system.

**2. MAINTENANCE.****3. TROUBLESHOOTING.**

For troubleshooting procedures, refer to table 1.

**4. REMOVAL.****NOTE**

Retain all associated hardware removed for reinstallation unless otherwise instructed.

**a.** Open engine compartment, baggage doors and overhead compartment. Remove overhead liner in passenger compartment. Disconnect battery (Chapter 52).

**b.** Disconnect bleed air tube assembly (2, figure 1) from mixing valve (14).

**c.** Disconnect clamps (7 and 10) attaching bleed air tube assembly (2) to noise suppressor (8). Remove tube assembly.

**d.** Disconnect clamps (18 and 19) from hose assembly (22). Remove bleed air tube assembly (2) from hose assembly and detach hoses and bleed air tube from both sides of remote sensor (3).

**e.** Disconnect control tube assembly (16) from mixing valve (14) and doubler (1).

**f.** Disconnect electrical connector to remote sensor (3).

**g.** Disconnect noise suppressor (4) from screen assembly (6) at coupling (5).

**h.** Disconnect coupling (9) between mixing valve (14) and noise suppressor (4). Remove noise suppressor.

**i.** Disconnect clamp (12) and coupling (11) at union of noise suppressor (8) and hose assembly (13).

**j.** Disconnect mixing valve (14) from support bracket assembly (15) and remove mixing valve.

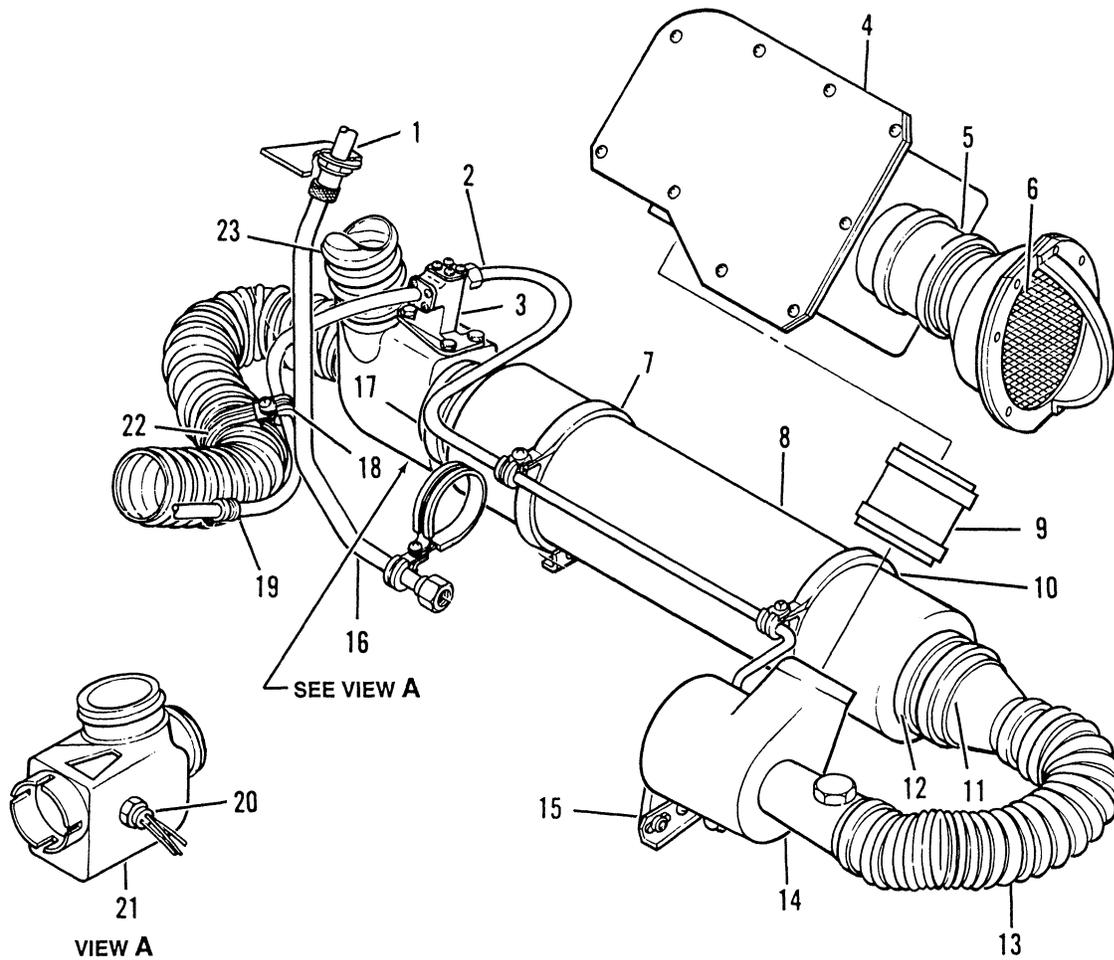
**k.** Disconnect coupling (17) at union of duct assembly (21) and noise suppressor (8).

**l.** Loosen clamps (7 and 10) as necessary and slide noise suppressor (8) through clamps. Remove noise suppressor.

**m.** Disconnect electrical connector to overheat switch (20) located on duct assembly (21). Remove hose (22 and 23) to duct assembly.

**NOTE**

Refer to Chapter 96 for pin and plug locations for electrical checks in the following table.



- |                            |                              |
|----------------------------|------------------------------|
| 1. Doublor                 | 13. Hose assembly            |
| 2. Bleed air tube assembly | 14. Mixing valve             |
| 3. Remote sensor           | 15. Support bracket assembly |
| 4. Noise suppressor        | 16. Control tube assembly    |
| 5. Coupling                | 17. Coupling                 |
| 6. Screen assembly         | 18. Clamp                    |
| 7. Clamp                   | 19. Clamp                    |
| 8. Noise suppressor        | 20. Overheat switch          |
| 9. Coupling                | 21. Duct assembly            |
| 10. Clamp                  | 22. Hose assembly            |
| 11. Coupling               | 23. Hose assembly            |
| 12. Clamp                  |                              |

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Figure 1. Bleed air heater system

**Table 1. Bleed air heater system troubleshooting**

INDICATION OF TROUBLE	PROBABLE CAUSE	CORRECTIVE ACTION
No bleed air flow to mixing valve	Loose or ruptured bleed air line	Check for loose fittings. Replace if needed
No bleed air through mixing valve	No voltage to mixing valve	Check for voltage to valve. If no voltage exists, check wiring and repair as needed. If wiring is good, check circuit breaker and replace if necessary
	Inadequate actuator pressure	Check for leakage in bleed air tube from mixing valve to sensor and repair as necessary
	Inoperative mixing valve	If bleed air and voltage is supplied and valve does not operate, replace mixing valve
Temperature will not modulate	Faulty temperature control tube or knob	Replace temperature control tube or knob
	Faulty remote sensor	Replace remote sensor
All hot air	Plugged bleed air line from mixing valve to remote sensor	Clear obstruction
All cool air	Faulty temperature control tube or knob	Replace control tube or knob. Check for leaking or disconnected bleed air line from mixing valve to remote sensor. Repair as needed.
	Faulty remote sensor	Replace remote sensor
	Faulty overheat switch	Replace switch
	Inoperative mixing valve	If voltage and bleed air is supplied and mixing valve does not operate, replace mixing valve

## 5. INSPECTION AND REPAIR.

**a.** Inspect fittings and clamps for corrosion, cleanliness, and broken, crossed, or cracked threads.

**b.** Inspect mixing valve and noise suppressor assembly surfaces for nicks, dents, cracks, and evidence of air leakage.

**c.** Inspect mixing valve for leaks at seams and end caps. If any leaks are found, thoroughly clean any area that shows such evidence with fine sandpaper. (DO NOT use solvent.) Mix adhesive (C-303) according to manufacturer instructions. Apply adhesive to area as required and allow to cure for three days at 70 to 80 °F (21 to 27 °C) or three hours at 150 °F (66 °C).

**d.** Replace components with wear or damage that would interfere with continuous flow of heated air to air distribution system.

**e.** Inspect all associated wiring and electrical connectors for damage to insulation, cuts, and unnecessary crimping. Repair or replace as necessary in accordance with procedures in BHT-ELECTRICAL-SPM.

## 6. INSTALLATION.

**a.** Install duct assembly (21) and attach electrical connector to overheat switch (20). Attach hoses (22 and 23) to duct assembly.

**b.** Slide noise suppressor (8) into position through clamps (7 and 10) and tighten clamps.

**c.** Install coupling (17) and tighten clamp at union of duct assembly (21) and noise suppressor (8).

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- d.** Position mixing valve (14) in support bracket assembly (15) and install attaching hardware.
- e.** Connect hose assembly (13) to noise suppressor (8) using clamp (12) and coupling (11).
- f.** Install noise suppressor (4) to mixing valve (14) using coupling (9).
- g.** Attach noise suppressor (4) and screen assembly (6) using coupling (5).
- h.** Attach electrical connectors to remote sensor (3).
- i.** Install control tube assembly (16) between mixing valve (14) and doubler (1).
- j.** Install bleed air tube assembly (2) to hose assembly (22) using clamps (18 and 19) and attach bleed air tube assembly (2) to both sides of remote sensor (3).
- k.** Attach bleed air tube assembly (2) to noise suppressor (8).
- l.** Attach bleed air tube assembly (2) to mixing valve (14).
- m.** Install overhead liner in passenger compartment. Close overhead compartment and baggage doors. Connect battery and close engine compartment (Chapter 52).

## **7. BLEED AIR TUBE ASSEMBLY.**

The bleed air tube assembly is a series of tubes that carry heated air from the engine to the mixing valve. The sections of tubes are connected with sealed unions and are secured to the airframe with standard clamps.

### **NOTE**

If bleed air tubing is damaged and removal is necessary, remove only the sections that require repair or replacement. Refer to Service Instruction 206-114 for removal and installation procedures.

## **8. AIR DISTRIBUTION SYSTEM.**

The air distribution system provides heated air from the bleed air heater to the cabin. The air distribution system consists of a multi-section duct assembly, plenums, and attaching hardware.

### **NOTE**

If air distribution ducts or plenums are damaged and removal is necessary, remove only the sections that require repair or replacement. Refer to Service Instruction 206-114 for removal and installation procedures.