

**CHAPTER 75 — AIR SYSTEM**  
**CONTENTS — MAINTENANCE PROCEDURES**

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## AIR SYSTEM

### 75-1. ANTI-ICING SYSTEM.

The compressor inlet guide vanes and front bearing support hub are the only engine components with anti-icing provisions. Anti-icing is provided by the use of compressor discharge air from the engine compressor. An air shut off valve, actuator, and bleed air valve are mounted at the 12 o'clock position of the engine compressor to control anti-icing air.

### 75-2. ANTI-ICING ACTUATOR.

The anti-icing actuator is an electrically controlled motor which positions the anti-icing valve through a mechanical linkage. The anti-icing valve is mounted on the top of the engine on a mounting pad.

### 75-3. REMOVAL — 206-061-709-001 ANTI-ICING ACTUATOR. (Helicopters prior to S/N 154)

1. Remove cotter pin (7, figure 75-1), washer (8), and pin (9) from tube (6).
2. Loosen screw (11) and remove lever (10) from actuator (1).
3. Remove three mounting bolts (2 and 4), washers (3 and 5), and spacers (14 and 20) from mounting bracket (21).
4. Remove actuator (1) from engine pad.
5. Remove lockwire, two screws (12), and washers (13) from actuator mounting bracket (21) and remove from actuator.

### 75-4. INSTALLATION — 206-061-709-001 ANTI-ICING ACTUATOR. (Helicopters prior to S/N 154)

1. Install mounting bracket (21, figure 75-1) on actuator (1) with two washers (13) and two screws (12).
2. Secure screws (12) with lockwire.

### NOTE

Ensure bracket (21) is free from making metal to metal contact with bolts (2 and 4).


3. Position actuator (1) on engine and install spacers (14 and 20), washers (3 and 5), and two bolts (2 and 4).
4. Install lever (10) on actuator (1). Tighten screw (11).
5. Secure bolts (2 and 4) with lockwire.

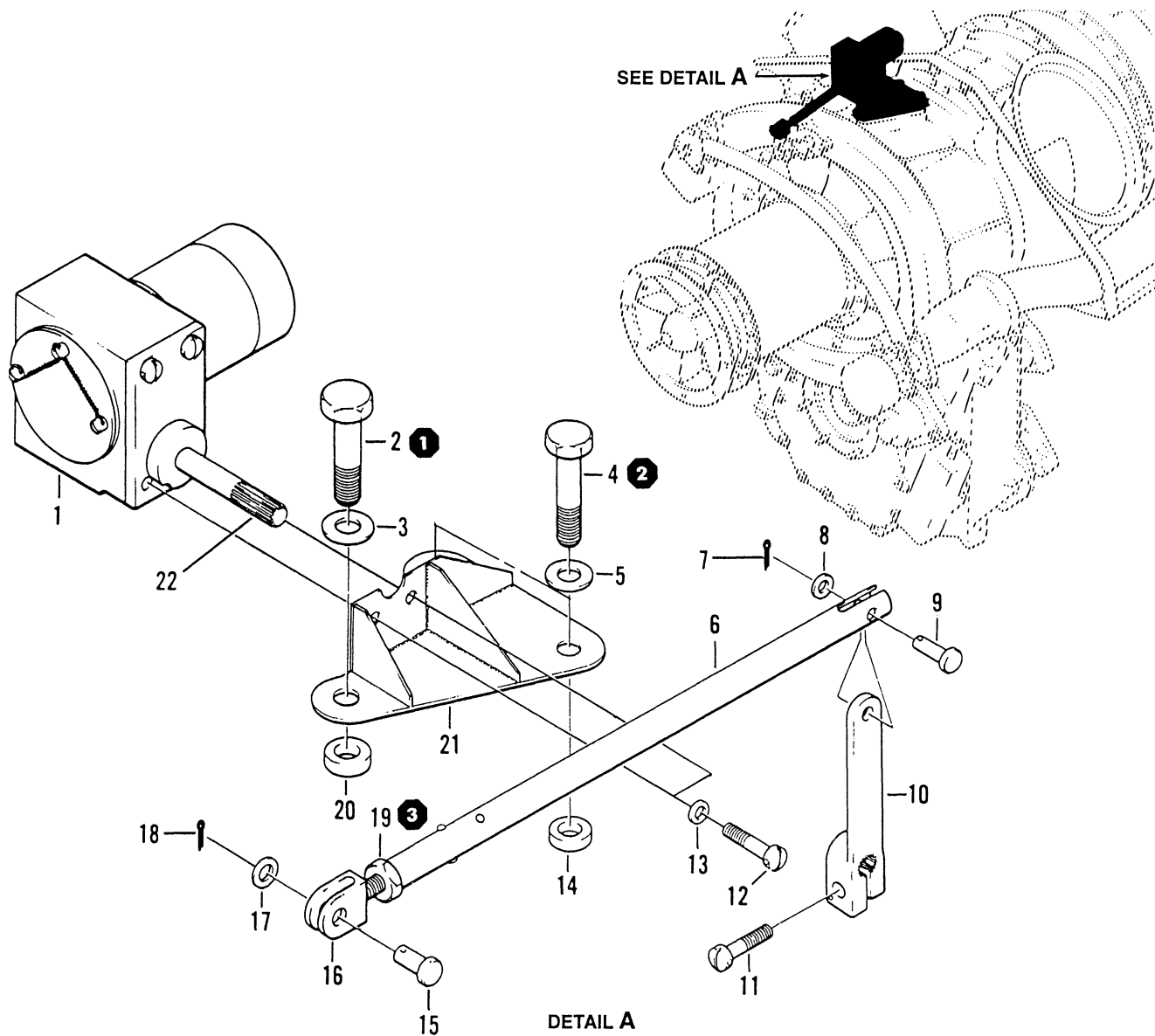
### NOTE

Anti-icing valve control arm shall align with tube (6) and lever (10) to function properly. Refer to Allison Publication 5W2 or 10W2 for repositioning anti-icing control valve, if required.

6. Install tube (6) to lever (10) with pin (9), washer (8), and cotter pin (7).

### 75-5. RIGGING — 206-061-709-001 ANTI-ICING ACTUATOR. (Helicopters prior to S/N 154)

1. Energize actuator (1) to OFF position. Observe that shaft (22) of actuator turns counterclockwise until limit switch stops motor.
2. Move anti-icing valve lever on engine to full forward position (closed position).
3. Insert pin (15) through clevis (16) and valve lever on engine, with clevis at midpoint extension of threads.
4. If not already installed, install tube (6) to lever (10) with pin (9), washer (8), and cotter pin (7).
5. Install splined end of lever (10) to actuator shaft. It may be necessary to adjust clevis (16) so lever will line up with serrations on actuator and maintain closed position of valve on engine.
6. Remove pin (15) from clevis (16), lengthen tube (6) by turning clevis one-half turn to preload valve closed. Install pin (15) in clevis (16) . Install cotter pin (18) in pin (15).
7. Energize actuator to full open position and ensure actuator is stopped by limit switch and not by mechanical travel limit.



HELICOPTERS PRIOR TO S/N 154

- 1. Actuator
- 2. Bolt
- 3. Washer
- 4. Bolt
- 5. Washer
- 6. Tube
- 7. Cotter pin
- 8. Washer

- 9. Pin
- 10. Lever
- 11. Screw
- 12. Screw
- 13. Washer
- 14. Spacer
- 15. Pin
- 16. Clevis

- 17. Washer
- 18. Cotter pin
- 19. Nut
- 20. Spacer
- 21. Bracket
- 22. Shaft

- ① 75 TO 100 IN-LBS  
(8.47 TO 12.43 Nm)
- ② 40 TO 65 IN-LBS  
(4.52 TO 7.34 Nm)
- ③ 15 TO 25 IN-LBS  
(1.69 TO 2.82 Nm)

206A/BS-M-75-1

Figure 75-1. 206-061-709-001 Anti-icing actuator

**75-6. REMOVAL — 206-061-709-003, -007, -009, AND -013 ANTI-ICING ACTUATOR. (Helicopters S/N 154 and subsequent)**

1. Remove cotter pin (9, figure 75-2), washer (8), and pin (7) from tube (10).
2. Remove lever (6) from actuator (1) by loosening screw (5).
3. Remove three mounting bolts (2 and 20), washers (3, 18 and 19), and spacers (4 and 17) from actuator mounting bracket (21) and lift actuator (1) from engine pad.
4. Remove lockwire, four screws (15), and washers (16) from actuator mounting bracket (21) and remove bracket from actuator.

**75-7. INSTALLATION — 206-061-709-003, -007, -009, AND -013 ANTI-ICING ACTUATOR. (Helicopters S/N 154 and subsequent)****NOTE**

When replacement 206-062-625-003 anti-icing actuator is installed, rework tube assembly 206-061-714-005 in accordance with Service Letter 206-106 if not previously accomplished.

1. Install mounting bracket (21, figure 75-2) on actuator (1) with four washers (16) and four screws (15). Secure with lockwire.

**NOTE**

Ensure bracket (21) is free from making metal to metal contact with bolts (2 and 20).

2. Position actuator 206-061-709-013 (1) on engine mount pad and install washers (3 and 18), rubber washers (19), spacers (4 and 17), and three bolts (2 and 20) **T**. Secure with lockwire.
3. Position actuator (1) on engine mount pad and install washers (3 and 18), rubber washers (19), spacers (4 and 17), and three bolts (2 and 20) **T**. Secure with lockwire.
4. Install tube (10) to lever (6) with pin (7), washer (8), and cotter pin (9).

5. Install lever (6) on actuator (1). Tighten screw (5).

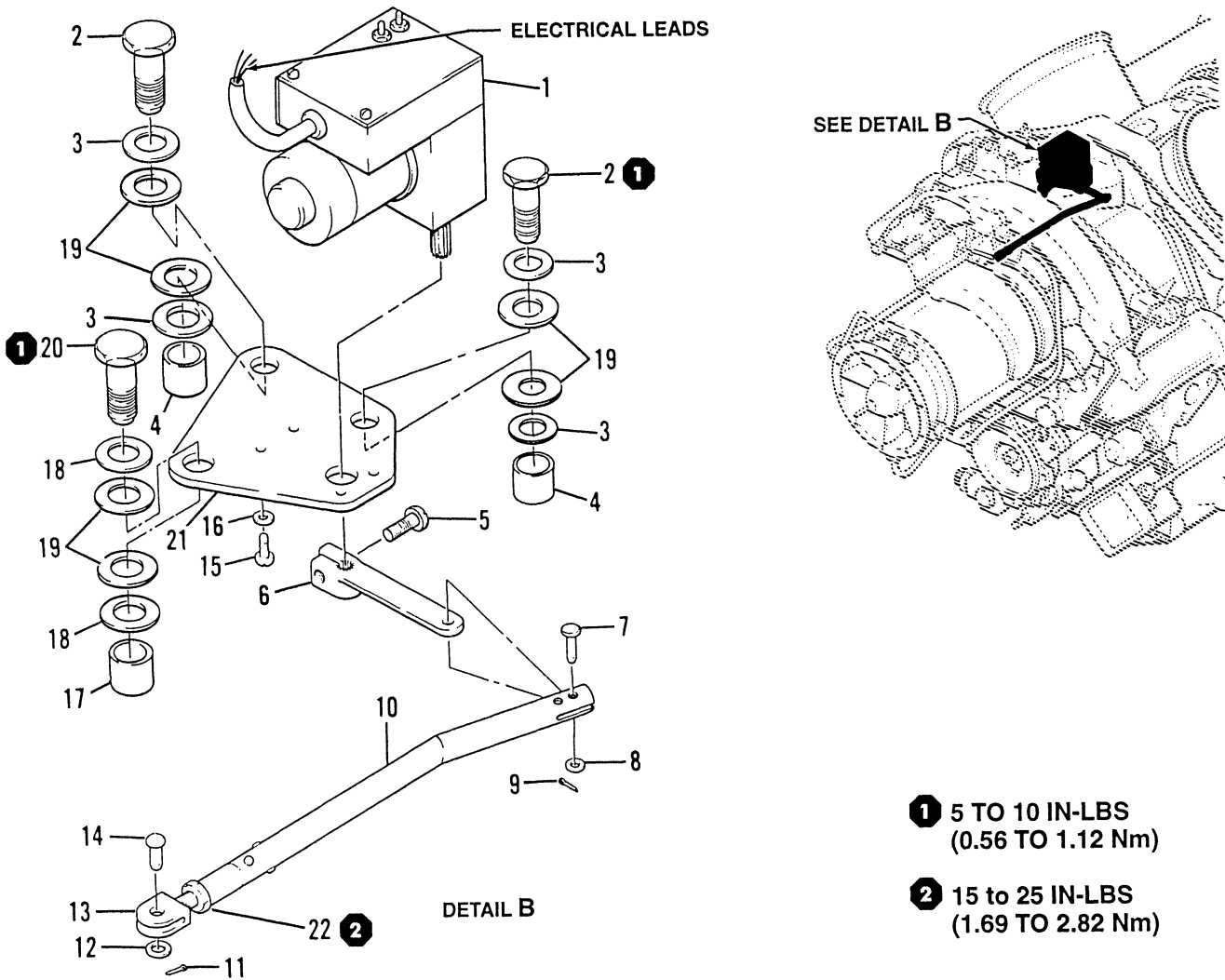
**NOTE**

Anti-icing valve control arm must align with tube assembly (10) and lever (6) to function properly. Refer to Allison Publication 5W2 or 10W2 for repositioning anti-icing valve.

6. Install tube (10) and lever (6) with pin (7), washer (8), and cotter pin (9).

**75-8. RIGGING — 206-061-709-003, -007, -009, AND -013 ANTI-ICING ACTUATOR. (Helicopters S/N 154 and subsequent)**

1. Energize actuator (1, figure 75-2) to OFF position. Observe that shaft of actuator turns counterclockwise until limit switch stops motor.
2. Move anti-icing valve lever on engine to full forward position (valve closed).
3. Insert pin (14) through clevis (13) and lever on engine, with clevis at midpoint extension on threads.
4. If not already installed, install tube (10) to lever (6) with pin (7), washer (8), and cotter pin (9).
5. Install splined end of lever (6) to actuator shaft. It may be necessary to adjust clevis (13) so lever will line up with serrations on actuator and maintain closed position of valve on engine.
6. Remove cotter pin (11) from clevis (13). Lengthen tube (10) by turning clevis one-half turn to preload valve closed. Install pin (14) in clevis (13) and tighten jamnut (22) **T**. Install washer (12) and cotter pin (11) in pin (14).
7. Energize actuator to full open position and ensure actuator is stopped by limit switch and not by mechanical travel limit.
8. During first engine operation following installation and rigging, check the anti-icing actuator for proper function and check the valve for leakage. For engine anti-ice valve maintenance, refer to Allison Engine Company 250-C18 or 250-C20 Series Operation and Maintenance Manual, Publication No. 5W2 or No. 10W2.



HELICOPTERS S/N 154 AND SUBSEQUENT

- |             |                |                   |
|-------------|----------------|-------------------|
| 1. Actuator | 9. Cotter pin  | 17. Spacer        |
| 2. Bolt     | 10. Tube       | 18. Washer        |
| 3. Washer   | 11. Cotter pin | 19. Rubber washer |
| 4. Spacer   | 12. Washer     | 20. Bolt          |
| 5. Screw    | 13. Clevis     | 21. Bracket       |
| 6. Lever    | 14. Pin        | 22. Jamnut        |
| 7. Pin      | 15. Screw      |                   |
| 8. Washer   | 16. Washer     |                   |

Figure 75-2. 206-061-709-003, -007, -009, and -013 Anti-icing actuator