

SUPPLEMENT S07

TO THE AIRPLANE FLIGHT MANUAL

DA 40 NG

Recirculating Air - Cabin Cooling

Doc. No. : 6.01.15-E

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Design Change Advisories : OÄM 40-314 & OÄM 40-316

This Supplement to the Airplane Flight Manual is EASA approved under Approval No. 10031965.

- This Supplement is approved in accordance with 14 CFR 21.29 for U.S. registered
- aircraft, and is approved by the Federal Aviation Administration. This document is
- applicable to the following Airplane Model: DA 40 NG.

0.2 RECORD OF REVISIONS

| Rev. No. | Reason | Chapter | Page(s) | Date of Revision | Approval Note | Date of Approval | Date Inserted | Signature |
|----------|---|-------------|--|------------------|---|------------------|---------------|-----------|
| 1 | Use of ADF and Wx 500 | 0,2 | 9-307-1, 9-S07-2, 9-S07-3, 9-S07-6 | 11 Feb 2011 | Revision No. 1 of the Supplement Doc. No. 6.01.15-E-S07 is approved under the authority of DOA No. EASA.21J.052 | | | |
| 2 | MAM 40-447: Reorganization of Chapters according to AFM, Revision 1 | all | all | 15 Mar 2011 | Revision No. 2 of the Supplement Doc. No. 6.01.15-E-S07 is approved under the authority of DOA No. EASA.21J.052 | | | |
| 3 | OAM 40-316/i | all | all except Cover Page | 06 Jun 2012 | Revision No. 3 of the Supplement Doc. No. 6.01.15-E-S07 is approved under the authority of DOA No. EASA.21J.052 | | | |
| 4 | OAM 40-316/k | 0, 4A | 9-S07-1, 9-S07-2, 9-S07-3, 9-S07-10 | 18 Jan 2013 | Revision No. 4 of the Supplement Doc. No. 6.01.15-E-S07 is approved under the authority of DOA No. EASA.21J.052 | | | |
| 5 | AFM Revision 3 | 0, 3, 4A, 5 | 9-S07-2, 9-S07-3, 9-S07-7, 9-S07-9, 9-S07-13 | 01 Jul 2014 | Revision No. 5 of the Supplement Doc. No. 6.01.15-E-S07 is approved under the authority of DOA No. EASA.21J.052 | 29 Jan 2015 | | |

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| 6 | OAM 40-394 RACC ON during T/O and LDG Corrections | All | All except coverpage | 15 Feb 2016 | Revision No. 6 of the Supplement Doc. No. 6.01.15-E-S07 is approved by EASA under Approval No: 10057631 | 31 Mar 2016 | | |
| 7 | FAA Validation of OAM 40-394 | All | All | 22 Jun 2016 | Revision No. 7 of the Supplement Doc. No. 6.01.15-E-S07 is approved under CSV PN 0060050542 | 01 Jul 2016 | | |
| | | | | | | | | |

0.3 LIST OF EFFECTIVE PAGES

| Chapter | Page | Date |
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| 0 | 9-S07-1 | 22 Jun 2016 |
| | 9-S07-2 | 22 Jun 2016 |
| | 9-S07-3 | 22 Jun 2016 |
| | 9-S07-4 | 22 Jun 2016 |
| | 9-S07-5 | 22 Jun 2016 |
| 1 | 9-S07-6 | 22 Jun 2016 |
| 2 | EASA approved 9-S07-7 | 22 Jun 2016 |
| | EASA approved 9-S07-8 | 22 Jun 2016 |
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| | 9-S07-12 | 22 Jun 2016 |
| | 9-S07-13 | 22 Jun 2016 |
| | 9-S07-14 | 22 Jun 2016 |
| 4B | 9-S07-15 | 22 Jun 2016 |
| 5 | 9-S07-16 | 22 Jun 2016 |
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| 6 | 9-S07-18 | 22 Jun 2016 |
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| | 9-S07-21 | 22 Jun 2016 |
| | 9-S07-22 | 22 Jun 2016 |
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| 8 | 9-S07-24 | 22 Jun 2016 |

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1. GENERAL

This Supplement describes the function of the Recirculating Air - Cabin Cooling System and supplies all information for the safe and efficient operation of the system.

This Supplement is a permanent part of the AFM and must remain in the AFM at all times when the Recirculating Air - Cabin Cooling System is installed.

The operation of the Recirculating Air - Cabin Cooling System during Take Off and Landing is only approved if OÄM 40-394 is installed and is limited to specific airplane configurations.

2. OPERATING LIMITATIONS

2.7 MASS (WEIGHT)

Minimum flight mass : 988 kg (2178 lb)

2.15 LIMITATION PLACARDS

On the Instrument Panel:

THE AUX POWER SWITCH MUST BE SWITCHED OFF IN ALL EMERGENCIES, DURING TAKE-OFF, LANDING, GO-AROUND OR ABNORMAL OPERATING PROCEDURES, AT OUTSIDE AIR TEMPERATURES BELOW 10 °C (50 °F), ABOVE 10.000 ft MSL AND IF ADF IS IN USE.

If OÄM 40-394 is installed:

THE AUX POWER SWITCH MUST BE SWITCHED OFF IN ALL EMERGENCIES OR DURING ABNORMAL OPERATING PROCEDURES, AT OUTSIDE AIR TEMPERATURES BELOW 10 °C (50 °F), ABOVE 10.000 ft MEAN SEA LEVEL AND ADF IS IN USE.

2.16 OTHER LIMITATIONS

2.16.8 RECIRCULATING AIR - CABIN COOLING

The AUX POWER switch and the Recirculating Air - Cabin Cooling System must be switched OFF in all Emergencies, during Take-Off, Landing, Go-Around or Abnormal Operating Procedures, at outside air temperatures below 10 °C (50 °F) and above 10.000 ft MSL.

If OÄM 40-394 is installed: The AUX POWER SWITCH must be switched OFF in all emergencies or during abnormal operating procedures, at outside air temperatures below 10° C (50° F), above 10.000 ft MSL and if ADF is in use. For flight masses above 1280 kg, the AUX POWER SWITCH may only be switched ON during take-off and landing if the wheel fairings are installed.

The Recirculating Air - Cabin Cooling System adversely effects accuracy of the ADF system (if installed) and the WX 500 Stormscope (if installed). The AUX POWER switch must be switched OFF if the ADF system is used for navigation.

3. EMERGENCY PROCEDURES

If OÄM 40-394 is NOT installed:

CAUTION

The AUX POWER switch and the Recirculating Air - Cabin Cooling System must be switched OFF in all Emergencies, during Take-Off, Landing, Go-Around or Abnormal Operating Procedures, at Outside Air Temperatures below 10 °C (50 °F) and above 10.000 ft MSL.

If OÄM 40-394 is installed:

CAUTION

The AUX POWER switch must be switched OFF in all emergencies or during abnormal operating procedures, at outside air temperatures below 10° C (50° F), above 10.000 ft MSL and if ADF is in use.

AUX POWER switch OFF

3.9.4 RECIRCULATING AIR - CABIN COOLING SYSTEM FAILURES

Smoke and Fire

AUX POWER switch OFF

Continue with 3.5 - SMOKE AND FIRE.

Excessive Noise or Vibration

AUX POWER switch OFF

4A NORMAL OPERATING PROCEDURES

4A.5 CHECKLISTS FOR NORMAL OPERATING PROCEDURES

If OÄM 40-394 is NOT installed:

CAUTION

The AUX POWER switch and the Recirculating Air - Cabin Cooling System must be switched OFF in all Emergencies, during Take-Off, Landing, Go-Around or Abnormal Operating Procedures, at Outside Air Temperatures below 10 °C (50 °F) and above 10.000 ft MSL.

If OÄM 40-394 is installed:

CAUTION

The AUX POWER switch must be switched OFF in all emergencies or during abnormal operating procedures, at outside air temperatures below 10° C (50° F), above 10.000 ft MSL and if ADF is in use. For flight masses above 1280 kg, the AUX POWER SWITCH may only be switched ON during take-off and landing if the wheel fairings are installed.

4A.5.1 PRE-FLIGHT INSPECTION

I. Cabin Check

Item e1) is added:

e1) AUX POWER switch check OFF

■

II. Walk-Around Check, Visual Inspection

3. *Fuselage, Left Side:*

Item e1) is added:

e1) Cabin cooling air outlet/inlet visual inspection

5. *Fuselage, Right Side:*

Item b1) is added:

b1) if OÄM 40-316/i or later is not installed:

Cabin cooling air outlet visual inspection

8. *Front Fuselage:*

Underside:

Item f1) is added:

f1) Cabin cooling air inlet/outlet visual inspection

4A.5.2 BEFORE STARTING ENGINE

Item 18A is added:

18A. AUX POWER switch check OFF

4A.5.6 BEFORE TAKE-OFF

Item 8A is added (if OÄM 40-394 is NOT installed):

8A. AUX POWER switch check OFF

4A.5.12 APPROACH & LANDING

Approach:

Item 4A is added (if OÄM 40-394 is NOT installed):

4A. AUX POWER switch check OFF

4A.5.15 ENGINE SHUT-DOWN

Item 4A is added:

4A. AUX POWER switch check OFF

**4A.5.21 RECIRCULATING AIR - CABIN COOLING SYSTEM GROUND
OPERATION**

Ground Operation with External Power Unit

1. POWER lever check IDLE
2. Parking brake set
3. AVIONIC MASTER check OFF
4. AUX POWER check OFF
5. ELECTRIC MASTER check OFF
6. ENGINE MASTER check OFF
7. External power connect
8. Recirculating Air - Cabin Cooling Switch . ON

Ground Operation with Engine Running

NOTE

If OÄM 40-314 Rev. 'j' or earlier is installed, keep the propeller RPM above 800 RPM for RACC Ground Operation.

1. AUX POWER switch ON
2. Recirculating Air - Cabin Cooling Switch . ON

Power Off

1. Recirculating Air - Cabin Cooling Switch . OFF (press button for 1 s)
2. AUX POWER switch OFF

END OF CHECKLIST

4A.5.22 RECIRCULATING AIR - CABIN COOLING SYSTEM OPERATION IN FLIGHT

If OÄM 40-394 is NOT installed:

CAUTION

The AUX POWER switch and the Recirculating Air - Cabin Cooling System must be switched OFF in all Emergencies, during Take-Off, Landing, Go-Around or Abnormal Operating Procedures, at Outside Air Temperatures below 10 °C (50 °F) and above 10.000 ft MSL.

If OÄM 40-394 is installed:

CAUTION

The AUX POWER switch must be switched OFF in all emergencies or during abnormal operating procedures, at outside air temperatures below 10° C (50° F), above 10.000 ft MSL and if ADF is in use. For flight masses above 1280 kg, the AUX POWER SWITCH may only be switched ON during take-off and landing if the wheel fairings are installed.

Power On

1. AUX POWER switch ON
2. Recirculating Air - Cabin Cooling Switch . ON

Power Off

1. Recirculating Air - Cabin Cooling Switch . OFF
2. AUX POWER switch OFF

END OF CHECKLIST

| | | |
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4B ABNORMAL OPERATING PROCEDURES

If OÄM 40-394 is NOT installed:

CAUTION

The AUX POWER switch and the Recirculating Air - Cabin Cooling System must be switched OFF in all Emergencies, during Take-Off, Landing, Go-Around or Abnormal Operating Procedures, at Outside Air Temperatures below 10 °C (50 °F) and above 10.000 ft MSL.

If OÄM 40-394 is installed:

CAUTION

The AUX POWER switch must be switched OFF in all emergencies or during abnormal operating procedures, at outside air temperatures below 10° C (50° F), above 10.000 ft MSL and if ADF is in use.

5. PERFORMANCE

If OÄM 40-394 is NOT installed:

CAUTION

The AUX POWER switch and the Recirculating Air - Cabin Cooling System must be switched OFF in all Emergencies, during Take-Off, Landing, Go-Around or Abnormal Operating Procedures, at Outside Air Temperatures below 10 °C (50 °F) and above 10.000 ft MSL.

If OÄM 40-394 is installed:

CAUTION

The AUX POWER switch must be switched OFF in all emergencies or during abnormal operating procedures, at outside air temperatures below 10° C (50° F), above 10.000 ft MSL and if ADF is in use. For flight masses above 1280 kg, the AUX POWER SWITCH may only be switched ON during take-off and landing if the wheel fairings are installed.

5.3 PERFORMANCE TABLES AND DIAGRAMS

5.3.7 TAKE OFF DISTANCE

NOTE

The ground roll distance with the RACC System set to ON is increased by 30 m (99 ft).

The Take-off distance with the RACC System set to ON is increased by 40 m (132 ft).

5.3.9 CLIMB PERFORMANCE - CRUISE CLIMB

NOTE

The Rate of Climb with the Recirculating Air - Cabin Cooling System switched ON is reduced by 25 ft/min.

5.3.11 CRUISE PERFORMANCE

NOTE

The Cruise Speed with the Recirculating Air - Cabin Cooling System switched ON is reduced by 4%.

5.3.16 APPROVED NOISE DATA

■ If OÄM 40-394 (RACC ON during T/O) is installed:

Maximum Flight Mass 1280 kg (2825 lb):

ICAO Annex 16 Chapter X 71.6 dB(A)

CS-36 Subpart C 71.6 dB(A)

■ 14 CFR Part 36, App.G 71.3 dB(A)

Maximum Flight Mass 1310 kg (2888 lb):

ICAO Annex 16 Chapter X 71.8 dB(A)

CS-36 Subpart C 71.8 dB(A)

■ 14 CFR Part 36, App.G 71.6 dB(A)

- No determination has been made by the Federal Aviation Administration that the
- noise levels of this aircraft are or should be acceptable or unacceptable for operation
- at, into, or out of, any airport.

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6. MASS AND BALANCE / EQUIPMENT LIST

No change.

7. DESCRIPTION OF THE AIRPLANE AND ITS SYSTEMS

7.13 RECIRCULATING AIR - CABIN COOLING SYSTEM

The recirculating air - cabin cooling system consists of the following main parts:

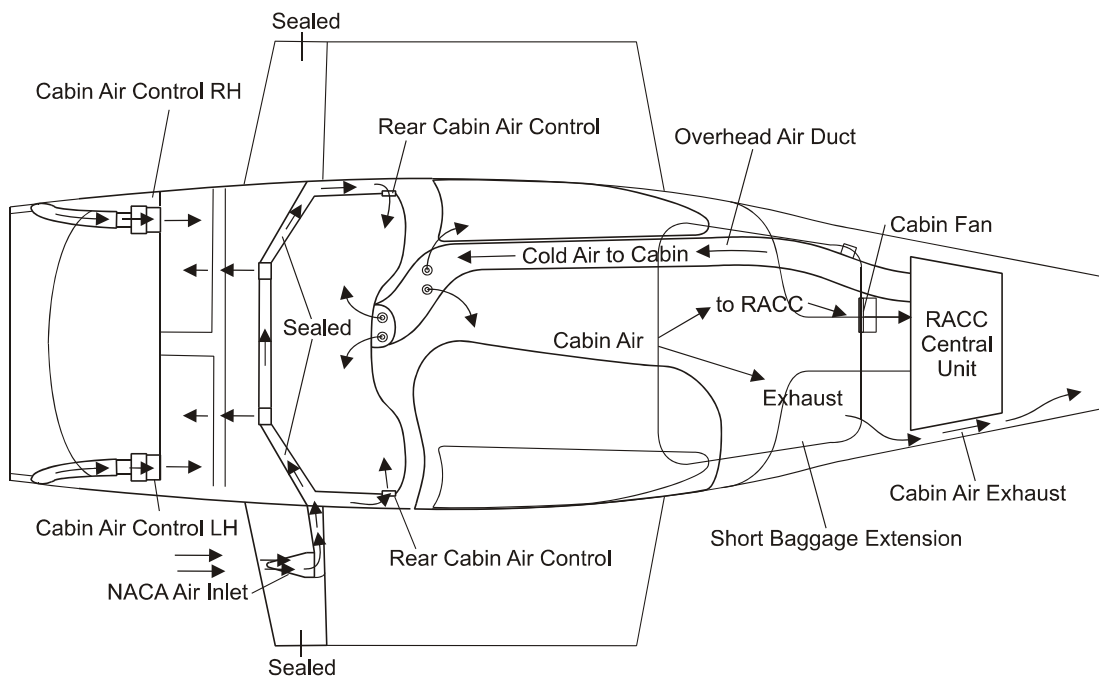
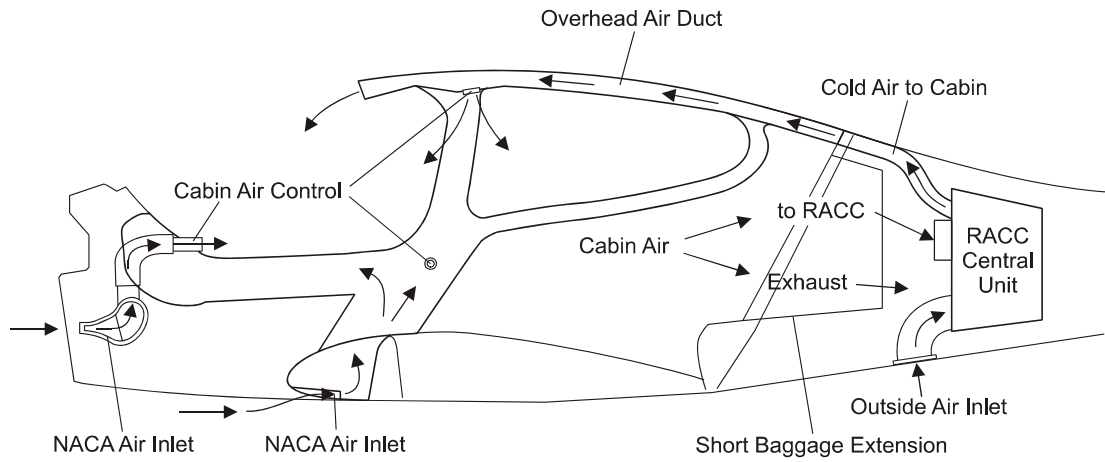
- AUX POWER switch and control panel (center console)
- Central unit (aft of the baggage compartment)
- Additional alternator (in the engine compartment)

The recirculating air - cabin cooling system is not connected to the electrical system of the airplane. The additional alternator provides the electrical power to operate the recirculating air - cabin cooling system independently.

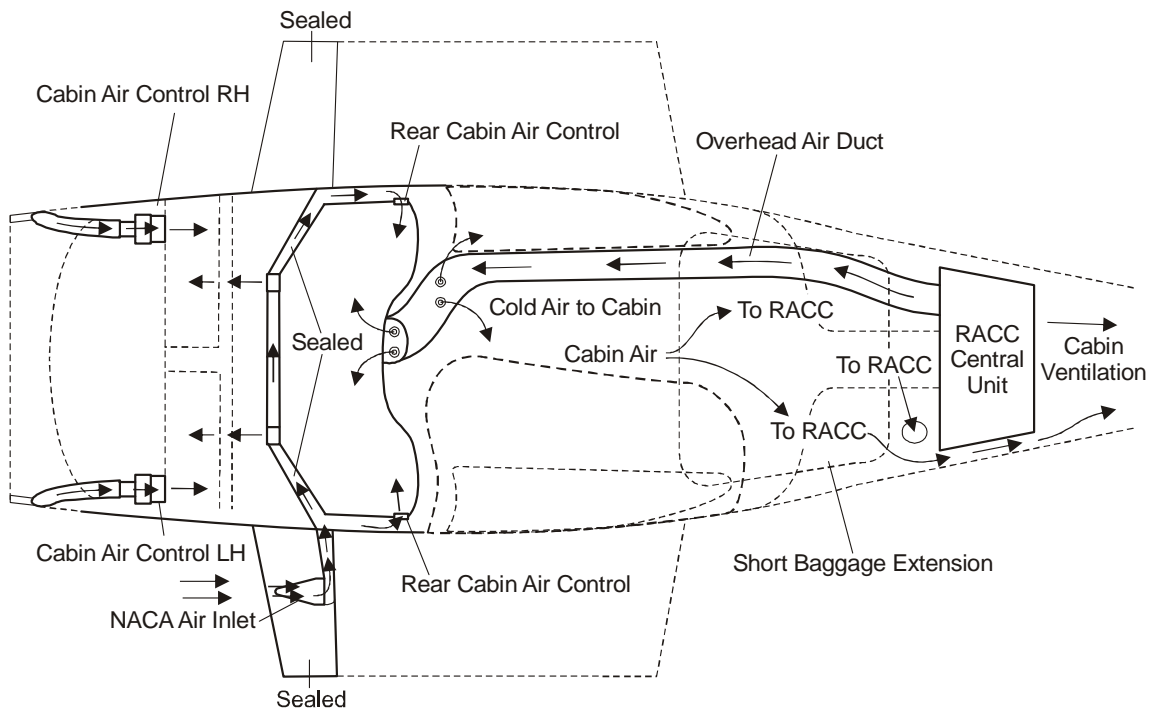
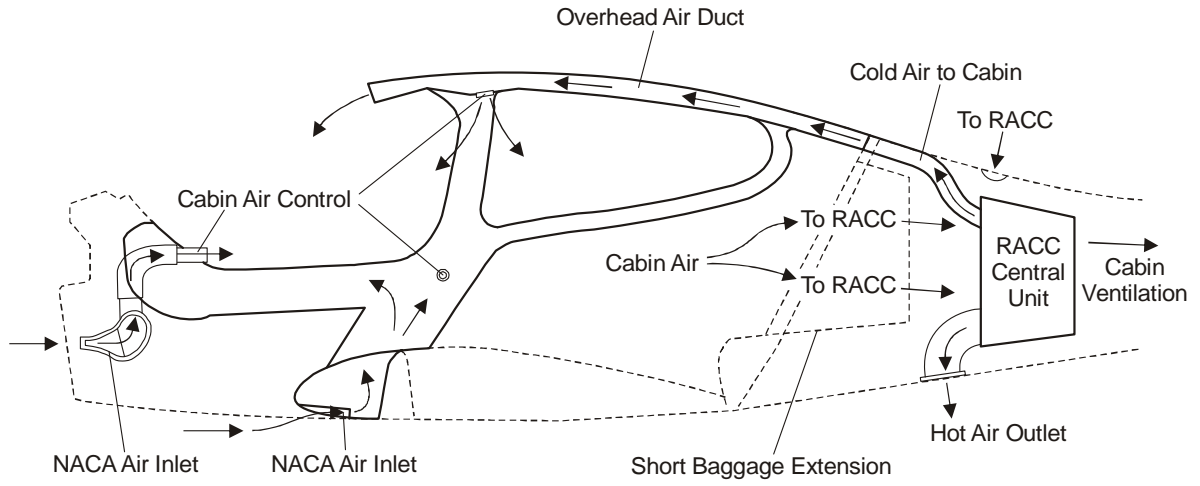
NOTE

The recirculating air - cabin cooling system effects the performance of the airplane. Refer to Chapter 5 of this Supplement.

Recirculating Air - Cabin Cooling Schematic



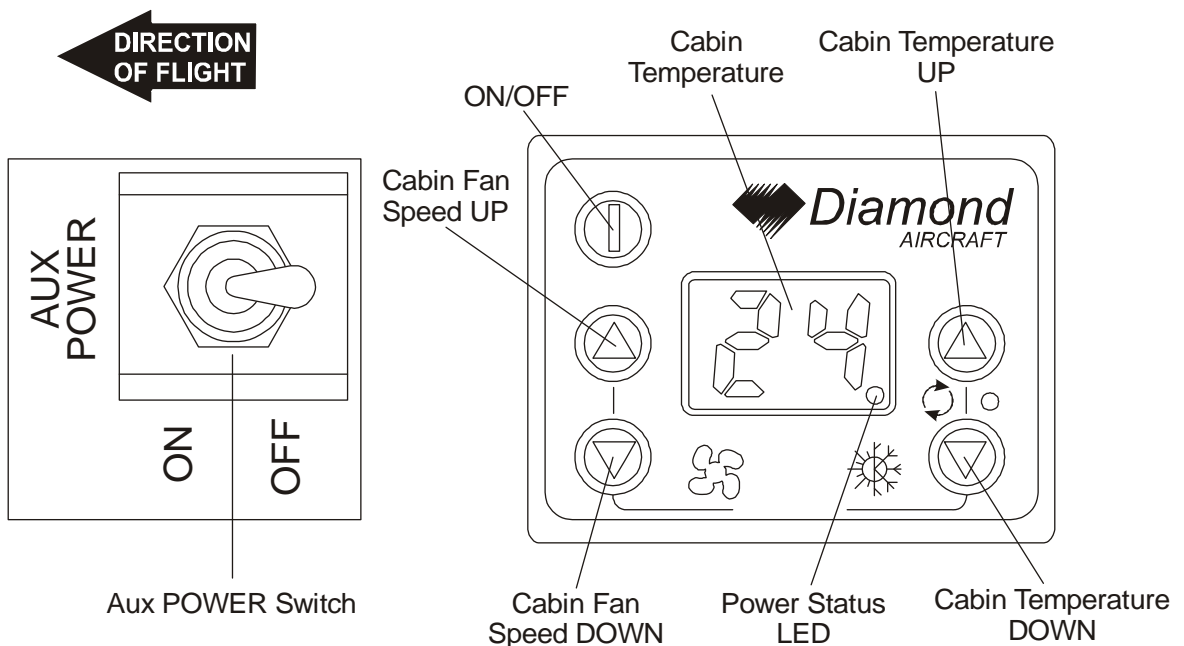
RACC System Schematic



RACC System Schematic, if OÄM 40-316/i or later is installed

Control Panel

The AUX POWER switch and the control panel are located on the center console. If the AUX POWER switch is set to ON, the recirculating air - cabin cooling system is electrically connected to the additional alternator which provides the electrical power for the system and the Power Status LED is flashing. To operate the recirculating air - cabin cooling system press the ON/OFF button once and wait until the display is permanently illuminated. The fan speed (three speed settings) is controlled with the UP and DOWN buttons to the left of the temperature display. The temperature preset buttons are located to the right of the temperature display. The preset cabin air temperature is shown on the temperature display in °F, if OÄM 40-316/i or later is installed the preset cabin air temperature is shown in °C.



Central Unit

The central unit is located behind the passenger seats and the short baggage extension. It takes cabin air from the aft portion of the short baggage extension and recirculates it through the central unit and via the overhead air duct to the cooling air nozzles in the overhead panel. The central unit consists of an electrically driven compressor, heat exchangers, air inlets, air outlets and a control box. According to the preset cabin air temperature on the control panel, the control box operates the compressor and all essential control elements of the central unit in order to achieve the preset cabin air temperature.

Additional Alternator

The additional alternator is located at the front RH side of the engine next to the gearbox. The additional alternator is mounted to the engine via a single bolt at the bottom (this allows to rotate the alternator to tension the drive belt) and two bolts at the top which are connected to the engine gearbox via a bracket. A pulley is installed on a drive disc at the propeller shaft which drives the additional alternator via a V-belt. Connected to the propeller drive disc is an axial fan to provide engine gearbox cooling.

If the AUX POWER switch is set to ON, the additional alternator provides the electrical power for the recirculating air - cabin cooling system.

8. AIRPLANE HANDLING, CARE AND MAINTENANCE

No change.