



SUPPLEMENT S007 AIR CONDITIONING SYSTEM

AFMS-S007

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The technical content of this document has been approved under the authority of the DOA
ref. EASA.21J.052.

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LIST OF EFFECTIVE DATA MODULES

Document title	Data Module Code	Issue date
List of Incorporated Changes - Change record	DA50S007- A-00-40-01-00A-00TA-D	23-11-2022
General Information - Description	DA50S007- A-15-01-00-00A-040A-D	18-05-2022
Limitation Placards - Description	DA50S007- A-11-30-00-99A-040A-D	22-11-2022
Recirculating Air Cabin Cooling Limitations - Description	DA50S007- A-15-10-00-26A-040A-D	10-11-2022
Emergency procedures - Emergency operation procedure	DA50S007- A-15-40-00-00A-141A-D	18-05-2022
Recirculating Air Cabin Cooling System Failures - Emergency operation procedure	DA50S007- A-15-48-00-01A-141A-D	18-05-2022
Recirculating Air Cabin Cooling System - Special operation	DA50S007- A-15-52-05-00A-161A-D	18-05-2022
Pre-Flight Inspection - Walk Around Check - Pre-operation procedure	DA50S007- A-15-33-00-02A-121A-D	18-05-2022
Pre-Flight Inspection - Cabin Check - Pre-operation procedure	DA50S007- A-15-33-00-01A-121A-D	18-05-2022
Normal Ground Operating Procedures - Description	DA50S007- A-15-33-00-00A-040A-D	18-05-2022
Recirculating Air Cabin Cooling System Ground Operation - Normal operation procedure	DA50S007- A-15-36-00-06A-131A-D	18-05-2022
Recirculating Air Cabin Cooling System Operation in Flight - Normal operation procedure	DA50S007- A-15-36-00-07A-131A-D	18-05-2022
Engine Shut Down - Post-operation procedure	DA50S007- A-15-35-00-02A-151A-D	18-05-2022
Take-Off Distance - Description	DA50S007- A-15-62-00-00A-040A-D	23-11-2022
Climb Performance - Take-Off Climb - Description	DA50S007- A-15-62-02-00A-040A-D	18-05-2022
Time, Fuel and Distance to Climb - Description	DA50S007- A-15-62-01-03A-040A-D	18-05-2022
Cruise Performance - Description	DA50S007- A-15-62-05-00A-040A-D	18-05-2022
Recirculating Air Cabin Cooling System - Description	DA50S007- A-21-01-00-00A-040A-D	18-05-2022

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01
GENERAL

01-01 List of Incorporated Changes

Change record

1 Issue References and Approvals

Issue No.	Reason	Approval Note	Date of Approval
001	OÄM-50-002/c	Issue 001 of this Supplement is approved under the authority of DOA no. EASA21J.052.	13-May-2022
002	OÄM-50-002/g	Issue 002 of this Supplement is approved under the authority of DOA no. EASA21J.052.	02-Dec-2022

Table 1 Issue References and Approvals

01-02 General Information

Description

1 General

This Supplement describes the function of the Air Conditioning System (RACC) 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.


02
OPERATING LIMITATIONS

02-01 Limitation Placards

Description

1 Limitation Placard

On the Instrument Panel:



THE RACC MUST BE SWITCHED OFF
IF THE ADF IS USED FOR NAVIGATION

Figure 1 - RACC Limitation Placard

02-02 Recirculating Air Cabin Cooling Limitations

Description

1 Recirculating Air Cabin Cooling Limitations

The Recirculating Air Cabin Cooling System adversely effects the accuracy of the ADF system (if installed). The RACC must be switched OFF if the ADF system is used for navigation.

03 EMERGENCY PROCEDURES

03-01 Emergency procedures
Emergency operation procedure

1 Emergency Procedures RACC General

NOTE

It is recommended to switch OFF the RACC System at Outside Air Temperatures below 10 °C (50 °F).

- A RACC control panel ON/OFF button.....OFF (press for 3 seconds)

03-02 Recirculating Air Cabin Cooling System Failures

Emergency operation procedure

1 RACC System Failures

Smoke and Fire

- A RACC control panel ON/OFF button.....OFF (press for 3 seconds)
- B Continue with SMOKE AND FIRE of main AFM.

Excessive Noise or Vibration

- A RACC control panel ON/OFF button.....OFF (press for 3 seconds)

Failure Indication on Control Panel Display

If failure "FP", "OP" or "SC" is displayed on control panel display

- A RACC control panel ON/OFF button.....OFF (press for 3 seconds)

No Airflow / No Cooled Airflow from RACC Overhead Air Outlets

- A RACC control panel ON/OFF button.....OFF (press for 3 seconds)

03A
ABNORMAL OPERATING PROCEDURES

03A-01 Recirculating Air Cabin Cooling System

Special operation

1 Abnormal Operating Procedures

NOTE

It is recommended to switch OFF the RACC System at Outside Air Temperatures below 10 °C (50 °F).

04 NORMAL OPERATION PROCEDURES

04-01 Pre-Flight Inspection - Walk Around Check
Pre-operation procedure

1 Walk-around check, visual Inspection

Fuselage, right side, underside:

A RACC air in/outlet.....visual inspection

04-02 Pre-Flight Inspection - Cabin Check
Pre-operation procedure

1 Pre-Flight Inspection

Cabin check

In front of the central headliner device unit:

- A RACC control panel.....check OFF (no indication on RACC control unit or LED flashing)

04-03 Normal Ground Operating Procedures

Description

1 Checklists for Normal Operating Procedures

NOTE

It is recommended to switch OFF the RACC System at Outside Air Temperatures below 10 °C (50 °F).

04-04 Recirculating Air Cabin Cooling System Ground Operation

Normal operation procedure

1 RACC System Ground Operation

Ground Operation with External Power Unit on rear EPU plug

NOTE

The External Power Unit must be capable to supply a minimum of 100 A at 28 V DC to operate the RACC - System.

- | | | |
|---|---------------------------------------|------------|
| A | POWER lever..... | check IDLE |
| B | Parking brake..... | set |
| C | AVIONIC MASTER..... | check OFF |
| D | ELECT. MASTER..... | check OFF |
| E | ENGINE MASTER..... | check OFF |
| F | External power to rear EPU plug..... | connect |
| G | RACC control panel ON/OFF button..... | ON |

Ground Operation with Engine Running

NOTE

At low RPM the RACC is automatically disconnected from its power supply and requires re-activation. This may happen during the ECU test and taxiing.

- | | | |
|---|---------------------------------------|----|
| A | RACC control panel ON/OFF button..... | ON |
|---|---------------------------------------|----|

Power Off

- | | | |
|---|---------------------------------------|---------------------------|
| A | RACC control panel ON/OFF button..... | OFF (press for 3 seconds) |
|---|---------------------------------------|---------------------------|

04-05 Recirculating Air Cabin Cooling System Operation in Flight

Normal operation procedure

1 RACC System Operation in Flight

NOTE

It is recommended to switch OFF the RACC System at Outside Air Temperatures below 10 °C (50 °F).

NOTE

At low RPM the RACC is automatically disconnected from its power supply and requires re-activation. This may happen during the ECU test and taxiing.

Power On

A RACC control panel ON/OFF button.....ON

Power Off

A RACC control panel ON/OFF button.....OFF (press for 3 seconds)

04-06 Engine Shut Down
Post-operation procedure

1 Engine Shut-Down

A RACC control panel.....check OFF (no indication on RACC control unit or LED flashing)

05 PERFORMANCE

05-01 Take-Off Distance**Description****1 Take-Off Distance****NOTE**

With the Recirculating Air - Cabin Cooling System switched ON the Ground Roll Distance is increased by 75 m (246 ft) and the Take-Off Distance is increased by 150 m (492 ft).

NOTE

At ISA, sea level and MTOM the Take-Off Distance is increased by 44 m (144 ft) resulting in a total Take-Off Distance of 778 m (2552 ft).

05-02 Climb Performance - Take-Off Climb**Description****1 Climb Performance - Take-Off Climb****NOTE**

The Rate of Climb with the Recirculating Air - Cabin Cooling System switched ON is reduced by 70 ft/min.

NOTE

For the Take-Off Climb with 100 % power at ISA, sea level and MTOM the climb rate is reduced by 47 ft/min resulting in a Take-Off climb rate of 806 ft/min.

05-03 Time, Fuel and Distance to Climb
Description

1 Time, Fuel and Distance to Climb

NOTE

The time, fuel and distance to climb with the RACC system switched ON is increased by 15%.

05-04 Cruise Performance**Description****1 Cruise Performance****NOTE**

The Cruise Speed with the Recirculating Air - Cabin Cooling System switched ON is reduced by 10 kts.

07
**DESCRIPTION OF THE AIRPLANE AND ITS
SYSTEMS**

07-01 Recirculating Air Cabin Cooling System

Description

1 Airconditioning (RACC) System

The airconditioning system (Recirculating Air Cabin Cooling System - RACC) consists of the following main parts:

- RACC control panel (in front of central headliner device unit)
- Overhead air ducts and eyeball vent air outlets
- RACC unit (aft of the baggage compartment cover)

The RACC system is not connected to the primary electrical system of the airplane. Alternator 2 provides the electrical power to operate the RACC System. As soon as an alternator failure is detected by the G1000 system, the RACC is disconnected from the power supply of Alternator 2.

Furthermore, in case of activation of the essential bus, the RACC is disconnected from the power supply.

NOTE

The RACC System effects the performance of the airplane. Refer to Chapter 5 of this Supplement.

1 Recirculating Air - Cabin Cooling Schematic

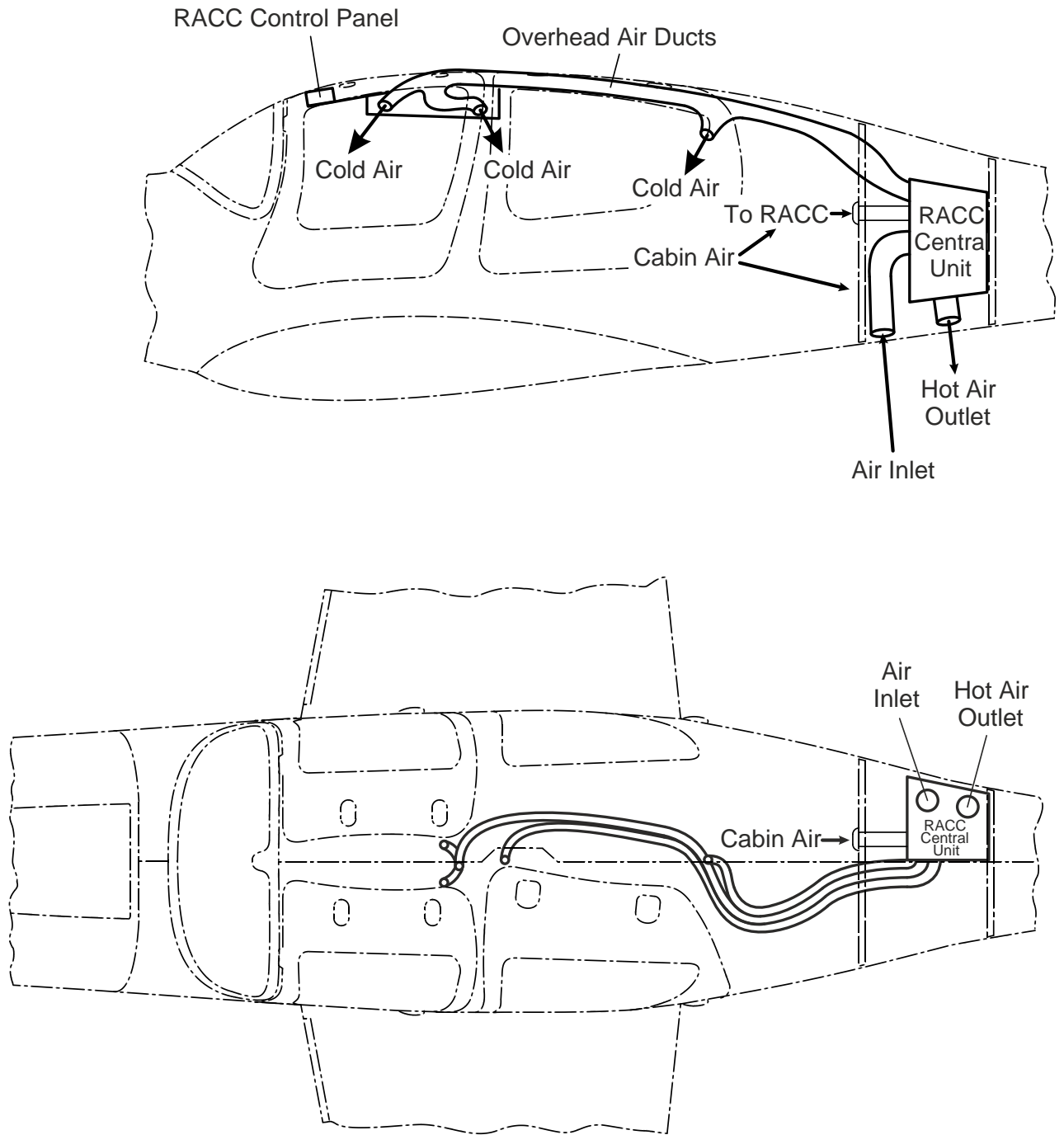


Figure 1 - RACC System Schematic

2 Control Panel

The RACC control panel is located in front of the central headliner device unit. The RACC System is electrically connected to alternator 2 and to the rear EPU plug, which provides the electrical power for the system. If electrical power is provided, the Power Status LED flashes. To operate the RACC 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 °C. Press shortly on the ON/OFF button to get the actual cabin temperature displayed.

In case of certain failures in the system, a failure code is displayed on the control panel.

FP Low or high pressure situation in the refrigerant circuit

OP and SC Cabin temperature sensor failure

In that case the RACC has to be switched off and maintenance on the RACC unit is necessary. Refer to Emergency procedures.

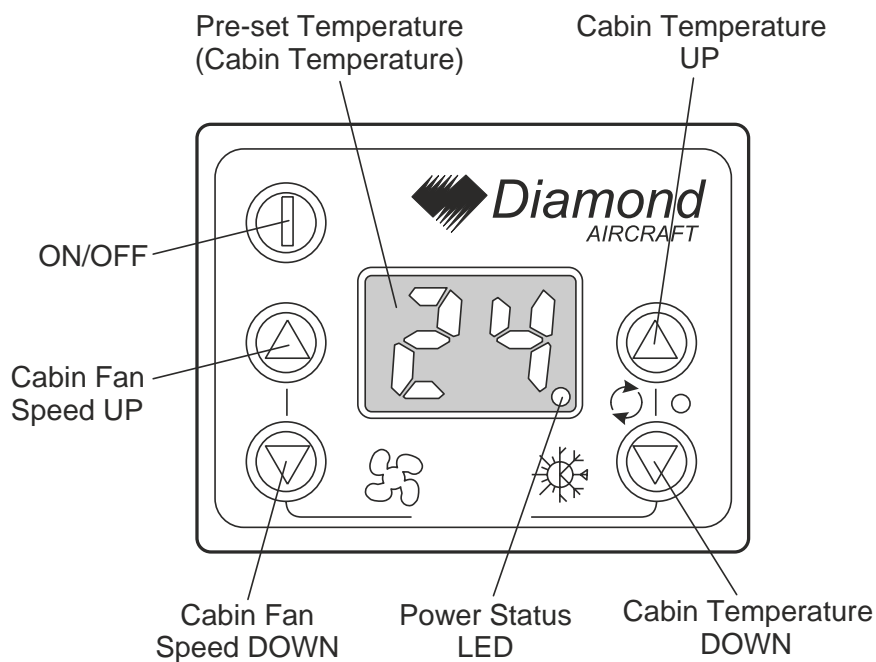


Figure 2 - Control Panel

3 RACC Unit

The RACC unit is located behind the passenger seats and the rear baggage cover. It takes cabin air at the rear baggage cover and recirculates it through the central unit and via the overhead air duct to the cooling air nozzles in the overhead panel. The RACC unit consists of an electrically driven compressor, two fans, heat exchangers, air inlets, air outlets, a control panel 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.

4 RACC Power Supply

As soon as the engine is running, alternator 2 provides the electrical power for the RACC system.

The RACC system is automatically disconnected from the electrical system in case of a failure of alternator 2 or if the ESSENTIAL BUS switch is set to ON.

On the ground, the RACC System is powered via a separate EPU plug, located on the RH rear lower fuselage shell.