

**Supplement 003
TO THE AIRPLANE FLIGHT MANUAL
DA 40 NG**

Cold Weather Operation

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1	AFM Revision 3, Corrections	0, 4A, 7	9-003-03, 9-003-04, 9-003-08, 9-003-11, 9-003-15	01-Jul-2014	Revision No. 1 of the Supplement Doc. No. 6.01.15-E-003 is approved under the authority of DOA No. EASA.21J.052	29-Jan-2015		

0.2 LIST OF EFFECTIVE PAGES

Chapter	Page	Date
0	9-O03-1	22-Apr-2013
	9-O03-2	22-Apr-2013
	9-O03-3	01-Jul-2014
	9-O03-4	01-Jul-2014
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4B, 5, 6	9-O03-13	22-Apr-2013
7	9-O03-14	22-Apr-2013
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1. GENERAL

This Supplement describes the operation and recommended procedures of the DA 40 NG when operated in cold environment.

It provides recommended procedures to preheat the engine and the pilot's compartment as requested by Section 2.16.1 of the basic AFM.

This Supplement provides information necessary for the efficient operation of the coolant radiator inlet baffle which may be installed in the main cooling air inlet of the cowling (OÄM 40-364) and the battery heating system (OÄM 40-363).

The information contained in this Supplement is to be used in conjunction with the complete AFM.

This Supplement is a permanent part of the AFM and must remain in the AFM at all times when OÄM 40-364 (Coolant Radiator Inlet Baffle) or OÄM 40-363 (Battery Heating System) is installed.

2. OPERATING LIMITATIONS

2.15 LIMITATION PLACARDS

On the Coolant Radiator Inlet Baffle:

Remove at Outside Air
Temperatures on Ground
above 0°C / 32°F

3. EMERGENCY PROCEDURES

No change.

4A. NORMAL OPERATING PROCEDURES

4A.5 CHECKLISTS FOR NORMAL OPERATING PROCEDURES

4A.5.1 PRE-FLIGHT INSPECTION

NOTE

If the airplane shall be operated at temperatures below -20°C (-4°F), specific parts of the airplane must be pre-heated. Refer to Section 4A.5.21 for more information.

8. Front Fuselage:

- f1) Coolant radiator inlet baffle (if installed) check that the outside air
 temperature permits use
- f2) Coolant radiator inlet baffle (if installed) check for looseness, improper
 mounting and obvious damage

4A.5.16 POST FLIGHT INSPECTION

4. If the airplane will be parked in ambient conditions possibly prohibiting removal of water in the tanks because of freezing, drain the tanks while the fuel is still warm.

4A.5.21 EXTERNAL PRE-HEATING PROCEDURES

Engine Pre-Heating Procedure

If the engine is cold soaked to a temperature below -20°C (-4°F), the engine compartment must be pre-heated with an external pre-heater.

NOTE

If the engine is not pre-heated properly, internal engine damage and a subsequent engine failure may result.

The engine compartment must be pre-heated, until the engine oil temperature is above -20°C (-4°F), recommended is a temperature between -15°C (5°F) and -10°C (14°F).

There are two recommended ways to pre-heat the engine:

a) Electric Heating Fan

Cover the engine with an insulating cowling cover including the spinner. Place an electric heating fan with an approx. heating power of 2.0 kW (e.g. DEFA Termini 2100, 230 V) and a maximum outlet temperature of 80°C (176°F) in the lower cowling air outlet and heat the engine until the engine oil temperature reaches the temperature stated above. The approximate heating time to rise the engine oil temperature by 10°C (18°F) is 50 min.

b) Hot Air Blower available on the Aerodrome

If available, cover the engine with an insulating cowling cover including the spinner. Use an hot air blower available on the aerodrome to heat the engine compartment through the lower cowling air outlet until the engine oil temperature reaches the temperature stated above. Make sure the maximum outlet temperature of the blower does not exceed 80°C (176°F). The approximate heating time to rise the engine oil temperature by 10°C (18°F) is 20 min. if using a standard device (e.g. UMP-350).

Cabin Pre-Heating Procedure

If the cabin and the equipment is cold soaked to a temperature below -20°C (-4°F), the cabin must be pre-heated with an external pre-heater.

Recommended procedure to pre-heat the cabin:

Place an electric heating fan with an approx. heating power of 2.0 kW (e.g. DEFA Termini 2100, 230 V) in the passenger compartment, the fan blowing forward. Make sure the maximum outlet temperature of the blower does not exceed 80°C (176°F) and does not blow towards the cabin windows or interior material. Preheat the cabin for approximately 30 min.

Batteries Pre-Heating Procedure

If the airplane is cold soaked to a temperature below -30°C (-22°F) and the battery heating system (OÄM 40-363) did not pre-heat the batteries during the parking period, the airplane batteries must be pre-heated for at least 12 hours using the battery pre-heating system.

NOTE

The battery pre-heating system is designed for continuous use while on the ground. It is powered via a standard 230 V AC power plug.

4A.5.22 OPERATION WITH COOLANT RADIATOR INLET BAFFLE**Install / Remove Coolant Radiator Inlet Baffle****NOTE**

The coolant radiator inlet baffle must be installed for operation at outside air temperatures at take-off below -30°C (-22°F) and must be removed for operation at outside air temperatures at take-off above 0°C (32°F).

Installation

- Move the Coolant Radiator Inlet Baffle in place in the lower cowling air intake
- Mount the Coolant Radiator Inlet Baffle with the two provided Cam-Locks

Removal

- Hold the Coolant Radiator Inlet Baffle and release the two Cam-Locks
- Move the Coolant Radiator Inlet Baffle free of the airplane
- Store the Coolant Radiator Inlet Baffle in the airplane

4B. ABNORMAL OPERATING PROCEDURES

No change.

5. PERFORMANCE

No change.

6. MASS AND BALANCE

No change.

7. SYSTEM DESCRIPTION

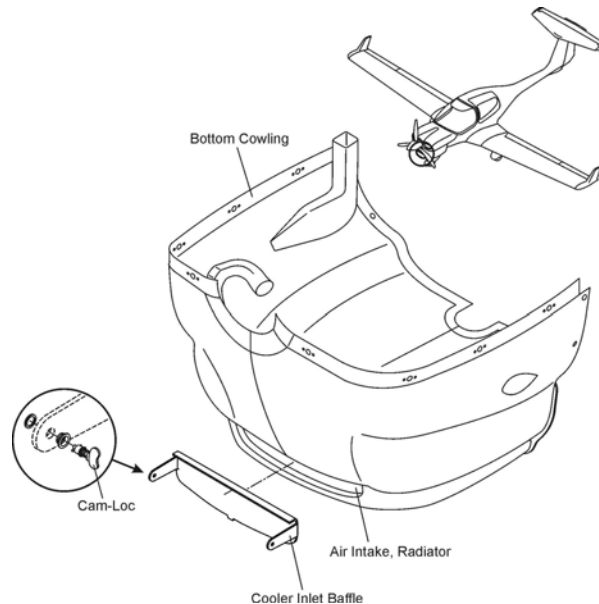
7.9 POWER PLANT

7.9.5 COOLING SYSTEM

Coolant Radiator Inlet Baffle

If OÄM 40-364 is installed, below an outside air temperature of -0°C (32°F) at take-off a baffle may be installed into the lower cowling front inlet using 2 cam-locks to restrict the airflow through the large coolant radiator and through the engine compartment. This will stabilize the engine-fluid temperatures at a more favorable value for operation and rise the temperatures of components installed in the engine compartment.

Below an outside air temperature of -30°C (-22°F) at take-off, the coolant radiator inlet baffle must be installed when operating the airplane.



Coolant Radiator Inlet Baffle installed in lower cowling

7.10 ELECTRICAL SYSTEM

7.10.1 GENERAL

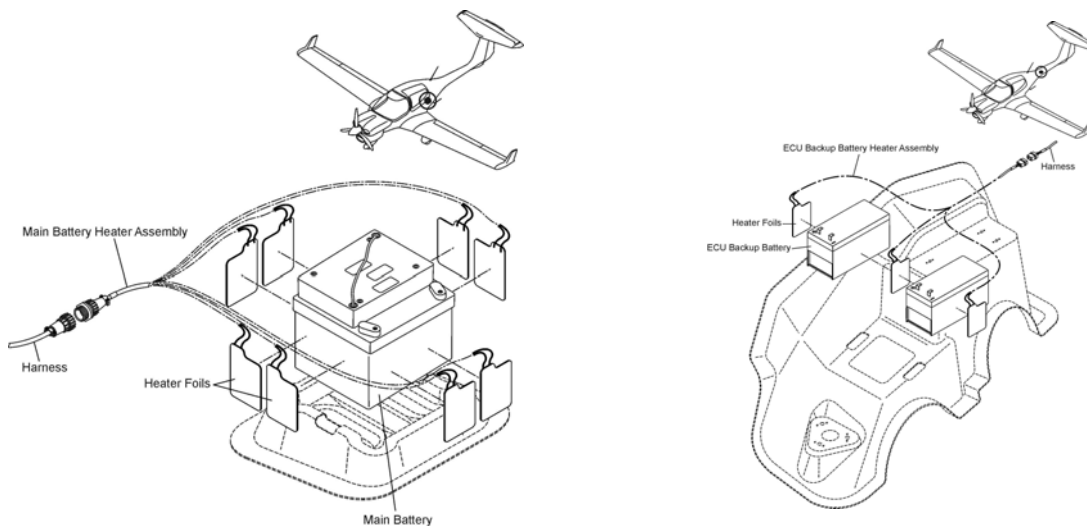
Battery Heating System

If OÄM 40-363 is installed, heater foils are attached to the main battery and the ECU backup batteries as shown in the Figure below. The heater foils have an internal temperature regulation system and are designed for continuous operation.

The battery heating system is completely independent from the airplane's electrical system and is designed for use on the ground only. It is powered via a standard 230 V AC power plug. The power plug is installed in the aft lower baggage compartment and easily accessible.

The use of the battery heating system is recommended at temperatures below 0°C (32°F) during short or long term parking and as well as a pre-heating system prior to operation.

At outside air temperatures below -30°C (-22°F) it is mandatory, to pre-heat the batteries prior to operation.



Batteries with heater foils attached (OÄM 40-363)

8. AIRPLANE HANDLING, CARE AND MAINTENANCE

No change.