

**SECTION 9**

**Airplane Flight Manual Supplement AVE10**

**Winter Operation**

This supplement is applicable and must be inserted into Section 9 of the Pilot's Operating Handbook when a radiator inlet baffle and / or an engine preheater system from Horn GmbH is installed onto the airplane. The information within this supplement adds to or replaces information within the basic Airplane Flight Manual.

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<i>Document No.:</i>	<i>Issue:</i>	<i>supersedes Issue:</i>	<i>Date:</i>	<i>Page:</i>
FM-AT01-1010-310	A.09	A.08 (13.04.15)	26.06.2017	AVE10-1

**Table of Contents Supplement AVE10**

1.	General	AVE10 - 3
2.	Limitations	AVE10 - 3
3.	Emergency Procedures	AVE10 - 3
4.	Normal Procedures	AVE10 - 4
5.	Performance	AVE10 - 4
6.	Weight and Balance	AVE10 - 4
7.	System Description	AVE10 - 4
8.	Handling, Service and Maintenance	AVE10 - 5

<i>Document No.:</i>	<i>Issue:</i>	<i>supersedes Issue:</i>	<i>Date:</i>	<i>Page:</i>
FM-AT01-1010-310	A.09	A.08 (13.04.15)	26.06.2017	AVE10-2

## 1. General

### 1.1 Radiator inlet baffle, combined radiator (Behr) and separated radiators (SB-AT01-029)

With OAT at take-off location (GND) below 59°F (+15°C) for combined radiator unit (Behr) or below 50°F (+10°C) for separated radiators by installation of a radiator inlet baffle “standard” the effective area of the cooler unit is reduced.

The following placard has to be affixed:

**combined radiator (Behr):**  
below the landing light

WINTER KIT **MUST** BE REMOVED ABOVE 59°F (15°C)  
WINTER KIT SHOULD BE INSTALLED BELOW 41°F (5°C)

**separated radiators:**  
at the baffle

#### combined radiator (Behr) and separated radiators:

With OAT at take-off location (GND) below 41°F (+5°C) alternatively installation of radiator inlet baffle “Swiss” is recommended. It has a bigger reduction area and thereby is more effective. For radiator inlet baffle “Swiss” the following placard has to be affixed for combined radiator (Behr) below the landing light, for separated radiators at the baffle:



Installation of radiator inlet baffle for combined radiator (Behr) is defined in SB-AT01-003.

### 1.2 Engine preheater system Horn GmbH

To minimize wear by engine cold starts an engine preheater system from Horn GmbH can be installed. Operation of this system is only allowed with the aircraft parked and all systems switched off. With this AFM supplement only an overview of the system is given. For operating instructions the manufacturer’s instructions are obligatory.

## 2. Limitations

### 2.1 Radiator inlet baffle, combined radiator (Behr) and separated radiators (SB-AT01-029)

The **maximum** tested OAT for take-off with radiator inlet baffle “**standard**” installed is **59°F (15°C)** for combined radiator (Behr), **50°F (10°C)** for separated radiators.

Take-off with installed radiator inlet baffle “**Swiss**” is recommended up to **41°F (+5°C)** at **maximum**.

**The pilot is anymore responsible to maintain engine limitations as specified in Airplane Flight Manual chapter 2.4.1 f) and g).**

### 2.2 Engine preheater system Horn GmbH

No change to limitations with engine preheater system installed.

## 3. Emergency Procedures

No change to emergency procedures with radiator inlet baffle and / or engine preheater installed.

Document No.:	Issue:	supersedes Issue:	Date:	Page:
FM-AT01-1010-310	A.09	A.08 (13.04.15)	26.06.2017	AVE10-3

## 4. Normal Procedures

### 4.1 Radiator inlet baffle, combined radiator (Behr) and separated radiators (SB-AT01-029)

Expand check item 6(d) of the Exterior check B) in AFM section 4.4.1:

#### Radiator / oil cooler intake:

- CHECK if free from obstructions and if applicable remove or mount radiator inlet baffle according to OAT on ground at take-off location

### 4.2 Engine preheater system Horn GmbH

Expand check item 2. Tow bar in AFM section 4.4.2:

- Tow bar and power supply engine preheater system.....CHECK if removed

## 5. Performance

No change in aircraft performance with radiator inlet baffle and / or engine preheater installed.

## 6. Weight and Balance

### 6.1 Radiator inlet baffle, combined radiator (Behr) and separated radiators (SB-AT01-029)

The effect on weight and balance of the radiator inlet baffle is negligible.

### 6.2 Engine preheater system Horn GmbH

Installation has to be taken into account with a mass of **0.3kg** and a lever of - **0.901m** into the weight and balance record of the AFM.

## 7. System Description

### 7.1 Radiator inlet baffle, combined radiator (Behr) and separated radiators (SB-AT01-029)

The radiator inlet baffle is a composite angular piece which is installed with integrated quick release fasteners to the lower cowling in front of the radiator unit / the radiators. The effective performance of the radiator unit / radiators is reduced, whereby the operating temperatures of oil and water are increased.

### 7.2 Engine preheater system Horn GmbH

The preheater system is installed at the engine compartment. It consists of a 150W heater pad at the bottom of the engine block, a 110W heater pad at the oil tank, connecting cables as well as a connector plug located at the opening for external power connection.

Document No.:	Issue:	supersedes Issue:	Date:	Page:
FM-AT01-1010-310	A.09	A.08 (13.04.15)	26.06.2017	AVE10-4

## 8. Handling, Service and Maintenance

### 8.1 Radiator inlet baffle, combined radiator (Behr) and separated radiators (SB-AT01-029)

If not in use the baffle should be removed from the cowling by unlocking the quick release fasteners and stored in the baggage compartment.

### 8.2 Engine preheater system Horn GmbH

Operation, Maintenance and any repair has to be in accordance with the manufacturer's instructions (see installation and operation manual engine preheater P/N 120567):

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D-78244 Gottmadingen  
fon +49 (0)7731 7803-0  
fax +49 (0)7731 7803-93  
e-mail: [info@horngmbh.com](mailto:info@horngmbh.com)

Before operation of the system it has to be ensured that all wiring, in particular the earth grounding wires to the oil tank and to the engine block are undamaged. Earth grounding has to be tested according to national regulations regularly.

Connection to the mains supply is only allowed power-off plugged to the system first via the provided 10m connection cable with integrated earth leakage circuit breaker (ELCB) and second to a 230V AC mains socket with grounding! Disconnection from the mains supply is only allowed vice versa. Otherwise there remains a risk for mains voltage being present on the aircraft structure and also formation of sparks may be possible!

#### WARNING

#### **Danger of electrical shock and sparking!**

The heater pads are controlled by bi-metal strips and can reach up to 311°F (155°C) at their outside.

#### WARNING

#### **Danger of skin burn!**

Do not operate the system unattended! In case of malfunction of a bi-metal strip overheating of the engine compartment and resulting damages can occur!

At every maintenance inspection of the aircraft an additional check for proper adhesion and condition of the heater pads as also proper condition of the wiring and the plug has to be performed.

Repair of components or of the complete preheater system is only allowed after approval from the manufacturer Horn GmbH.

<i>Document No.:</i>	<i>Issue:</i>	<i>supersedes Issue:</i>	<i>Date:</i>	<i>Page:</i>
FM-AT01-1010-310	A.09	A.08 (13.04.15)	26.06.2017	AVE10-5