

Service Bulletin SB-3

February 19, 2004

Procedures specified in this service bulletin must be accomplished in accordance with accepted methods of aircraft maintenance and applicable government regulations. Appropriate log book entries must be made.

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SUBJECT

This service bulletin describes an inspection of SAFE-HEET engine pre-heaters for indications of electrical short and subsequent damage to the engine oil pan. In addition, measures are provided to prevent future damage. Non-compliance could result in engine oil loss and subsequent engine failure.

BACKGROUND

SAFE-HEET engine pre-heaters are a red-orange silicone adhesive pad that attach to the bottom of an engine oil pan. They are about 1/32-inch thick with a ¼-inch thick silicone potted area where a black power cord and a green ground wire attach. McFarlane Aviation has received two reports of electrical arcing and subsequent erosion of the oil pan resulting in a small hole and engine oil loss. Both reports involved SAFE-HEET Model 720 and Teledyne/Continental O-470 and IO-520 engines. The probable cause in both of these cases is lightning induced power spikes or mechanical damage resulting in breakdown of the insulation near the power cord.

PART NUMBERS AFFECTED

SAFE-HEET Model 700, 705, 715 and 720 Engine Pre-heater Kits

IDENTIFICATION METHODS

1. Search the aircraft's maintenance records for an entry indicating the installation of a SAFE-HEET engine pre-heater.
2. Visually inspect the engine pre-heater for ink markings indicating SAFE-HEET.

COMPLIANCE

Compliance is mandatory for all installations of SAFE-HEET engine pre-heaters on Teledyne/Continental (x)O-470 and (x)O-520 engines where the (x) indicates any specific model prefixes. Compliance is recommended for all other installations. Part I of the accomplishment instructions must be complied with before the next flight. Part II of the accomplishment instructions must be complied with before the next use of the SAFE-HEET engine pre-heater.

APPROVAL

Technical portions are FAA approved.

ACCOMPLISHMENT INSTRUCTIONS

Part I (To be performed by owner/operator or a qualified aircraft mechanic)

- 1) Visually inspect the area near and below the SAFE-HEET engine pre-heater for indications of oil leakage. If leakage is indicated, accomplish Part II of before the next flight.
- 2) Label the pre-heater as "OUT OF SERVICE" in the vicinity of the power plug to indicate that the pre-heater is not to be used.

Part II (To be performed by a qualified aircraft mechanic)

- 1) With an Ohm meter at the 10kΩ setting, **verify continuity** between the round ground prong of the power plug and a clean, unpainted surface on the engine.
- 2) With an Ohm meter at the 10kΩ setting, **verify that there is no continuity** between the round ground prong and either flat prong.
- 3) Visually inspect the area of the pre-heater in the vicinity of the ¼-inch thick power cord potting for any signs of a burned, charred or over-heated area. The burned area will exhibit a dark brown or black color. An area that was over-heated may be a lighter shade of orange than the surrounding heat pad. See Figure 1 for typical signs of damage.
- 4) Visually inspect the area of the pre-heater in the vicinity of the ¼-inch thick power cord potting for any signs of oil leakage.
- 5) If Steps 1 through 4 indicate damage or oil leakage, then perform Steps 5a through 5c:
 - a) Remove the SAFE-HEET and any adhesive in the area of the ¼-inch thick power cord potting from the oil pan.
 - b) Inspect the oil pan where the ¼-inch thick pre-heater power cord potting was, for indications of damage caused by electrical erosion or arcing. If arcing damage is present, then repair or replace the oil pan.
 - c) Replace the removed pre-heater with a new SAFE-HEET Model 7XX where XX indicates the last two digits of the model number removed. Model 7XX series engine pre-heaters now include SAFE-HEET Service Kit 709SK.
- 6) If Steps 1 through 4 show no indications of damage or oil leakage, then install SAFE-HEET Service Kit 709SK per the service kit instructions.

SAFE-HEET Service Kit 709SK detects and prevents continued arcing between a damaged SAFE-HEET and the engine oil pan. However, the service kit may not prevent initial damage.

MATERIAL PRICE AND AVAILABILITY

The following are available from McFarlane Aviation (prices subject to change without notice):

<u>Part Number</u>	<u>Description</u>	<u>Price</u>
700	SAFE-HEET Pre-heater Kit with Service Kit 709SK	\$174.95
705	SAFE-HEET Pre-heater Kit with Service Kit 709SK	\$174.95
720	SAFE-HEET Pre-heater Kit with Service Kit 709SK	\$174.95
709SK	SAFE-HEET Service Kit	\$28.95

CREDIT INFORMATION

McFarlane Aviation will replace, at no cost, any damaged SAFE-HEET that is still under warranty. In addition, McFarlane will provide a 709SK Service Kit free of charge for any SAFE-HEET pre-heater still under warranty. For replacement, the damaged SAFE-HEET must be returned with a copy of maintenance records indicating the SAFE-HEET installation and the N-number of the aircraft from which it was removed.

DISTRIBUTION

This service bulletin has been distributed to various aviation publications and to all customers for whom McFarlane Aviation has sales records indicating the purchase of any 700 series SAFE-HEET engine pre-heaters. All McFarlane Aviation service bulletins may also be found at www.mcfarlaneaviation.com. Please forward this urgent information to the current owner or operator of the affected aircraft. For further information or questions call (800) 544-8594. All persons are free to copy this information if it is copied in its entirety with no alterations or additions.

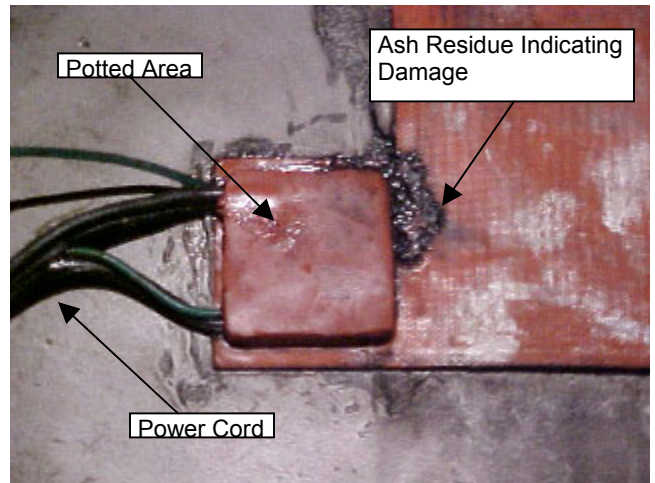


Figure 1: Typical indications of electrical damage.