



Aircraft Fuel Cell Battle Damage Repair Kit 8999K6

Application Guide

February 2008

Product Description

This kit may be used for field repair of fuel cell bladders on aircraft such as helicopters. It will seal or protect the damaged areas (i.e., holes or gashes) with a field-applied patch until permanent repairs can be made.

The tape patches are for application to the inside of a de-fueled or partially de-fueled fuel cell. Proper patching procedure allows fuel to be added to the repaired fuel cell quickly so that flight can take place within a few minutes after the patch is applied. The patch provided in this kit is intended to hold fuel for 30 days or 100 flight hours. This repair does not restore the fuel cell to its original damage resistant level, nor does it restore structural strength to the airframe.

NOTE: A temporary battle damage repair is limited to the guidelines in the Airworthiness Release.

Components

Item	Qty.
3M™ Polyurethane Protective Tape 8641-36173 Gray (6" dia.)	2 each
3M™ Polyurethane Protective Tape 8641-36173 Gray (8" dia.)	2 each
3M™ Protective Tape Cleaning Wipes (30/pouch)	1 pouch
3M™ Adhesion Promoter 86A Wipes (5/pouch)	1 pouch
Scotch-Brite™ General Purpose Pad 7447	2 each
Plastic Squeegees	3 each
Kimwipes® disposable towels	12 each
Nitrile Rubber Gloves Size Large	6 pairs
Razor Blade and Holders	2 each
Acid Swab Brushes	4 each
Application Guide (60-9700-0094-3)	1 each
MSDS	1 each

Caution

Before handling any chemical products, always read the manufacturer's container labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information. Local air quality regulations may regulate or prohibit the use of surface preparation and cleaning materials based on solvent (VOC) content.

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Application

WARNING: The following fuel cell battle damage repair restores fuel cell functionality for a limited period of 30 days or 100 flight hours. This repair, however, does not restore the fuel cell to its original crash-resistant level. The risk of post crash fire, while not quantifiable, is increased with any battle damaged fuel cell even after incorporation of this repair. Furthermore, the immediate area surrounding the fuel cell repair may exhibit decreased ballistic self-sealing capability.

CAUTION: When handling any chemical product, read the manufacturer's labels and the Material Safety Data Sheets (MSDS) for important health, safety and environmental information. Local air quality regulations may regulate or prohibit the use of surface preparation and cleaning material based on solvent (VOC) content.

CAUTION: Follow instructions on the MRE heater for handling and operation. This kit contains material for temporarily repairing a damaged aircraft fuel bladder. The maximum flight time/calender day limit is 30 days or 100 hours, whichever occurs first. This kit contains materials that can be used to patch holes in fuel cells. The tape patches are for application to the inside of a de-fueled/partially de-fueled fuel cell. Proper patching procedure allows fuel to be added to the repaired fuel cell immediately.

Instructions for Fuel Cell Patching

- 1.) Drain the fuel from the damaged cell to a level six (6) inches below the wound. Use normal considerations to prevent fire, explosion or contamination of other parts of the aircraft.
- 2.) Gain access to the interior of the damaged fuel cell by removing aircraft access panels and fuel cell plates. Ensure safety considerations are observed while working in a hazardous environment. Use explosion proof flashlights and respirators as required. Use rubber gloves provided in the kit.
- 3.) Use the provided Kimwipes® disposable towels to thoroughly wipe the residual fuel from the area that is to be patched.
- 4.) Use the supplied razor blade to trim away excess jagged or torn material from around the damaged area.
- 5.) Use the provided 3M™ Protective Tape Cleaning Wipes to further clean the fuel residue from the surface that is to be patched. One packet of the 3M cleaning wipes should be sufficient to clean the area for one patch.
- 6.) Use provided 3M™ Adhesion Promoter 86A to wet the area that is to be patched. Apply enough of the 3M 86A promoter to ensure that the surface is wet. It will appear glossy. Allow the 3M 86A promoter to dry for about 10 minutes or until it loses its glossiness. DO NOT apply the 3M 86A promoter to the adhesive side of the tape patch or apply the patch to wet 3M 86A promoter on the surface of the cell. One packet of 3M 86A promoter should be sufficient to prime the area for one patch.
- 7.) Select a patch size that will allow for two (2) inches of contact of the patch onto intact, undamaged fuel cell material.

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Application (continued)

- 8.) Peel the protective liner from the selected patch and apply over the wound trying to keep the wound centered.
- 9.) Use your fingers and/or provided yellow squeegee to rub the patch down to the surface firmly and smoothly.

WARNING: Edge dressing protects the exposed adhesive on the tape patch edge from interacting with fuel in the cell. Failure to apply the edge dressing as described in the paragraph below will reduce the effectiveness of patch, risk obstructing the fuel pickup and filter, and increase the risk of fire.

NOTE: Shelf life for 3M™ Scotch-Grip™ Plastic Adhesive 826 is five (5) years from the fill date of the can. The fill date and expiration date can be found on the can label.

- 10.) Apply the edge dressing (3M™ Scotch-Grip™ Plastic Adhesive 826) to the outer 1/4 inch of the tape patch and overlap dressing onto the fuel cell using the acid swab brushes included in the kit. Repeat the process after the first coat is tacky (approximately five (5) minutes). Ensure tape patch edging is 100% covered.
- 11.) If the temperature of the fuel cell area is less than 60°F (16°C), hold an MRE heater over the completed patch and area for two (2) minutes. Use care not to spill the water in the MRE heater in the fuel cell. Instructions for the activation of an MRE heater can be found on the outside of the heater. Wear protective gloves when handling the heater. The objective is to get the patch and the fuel cell to 70°F (21°C) or above for a few minutes to allow the pressure sensitive adhesive to “wet out” the surface of the fuel cell.
- 12.) The fuel cell may be filled with fuel. It should retain fuel without leaks or 30 days for 100 flight hours.
- 13.) Re-package the remaining components and place in the repair kit for a future repair job. Once the outer packet has been opened, the remaining items in the kit will have a useful service life of two (2) years, if kept clean and dry.
- 14.) Make the appropriate entries in the aircraft logbook indicating a BDAR repair has been made that has calendar and flight time restrictions of 30 calendar days or 100 flight hours. (i.e., Aft fuel cell has a temporary BDAR repair. Fuel cell must be replaced by 1 Feb 05 or 1234.5 hrs.)

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Safety and Regulatory	Before handling any chemical products, always read the container label and the MSDS. Local air quality regulations may regulate or prohibit the use of surface preparation and cleaning materials based on solvent (VOC) content.																
Handling and Storage	Shelf life for the unopened kit is five (5) years from the date of manufacture. Once the foil pouches have been opened, the shelf life for the materials in that packet is two (2) years. Not to exceed five (5) years from the date of manufacture. Store kits at 60-80°F (16-27°C) for maximum storage life. Rotate stock on a “first-in first-out” basis. Keep kits in a clean area, away from excessive moisture and out of direct sunlight. Store kits in the shipping carton.																
Precautionary Information	Refer to Product Label and Material Safety Data Sheet for health and safety information before using this product. For additional health and safety information, see www.3M.com/msds or call 1-800-364-3577 or (651) 737-6501.																
For Additional Information	In the U.S., call toll free 1-800-235-2376 or fax 1-800-435-3082 or 651-737-2171. For U.S. Military, call 1-866-556-5714. If you are outside of the U.S., please contact your nearest 3M office or one of the following branches: <table><tr><td>Australia 61-2-498-9711 tel 61-2-498-9710 fax</td><td>Austria 01-86686-298 tel 01-86686-229 fax</td><td>Brazil 55 19 3838-7876 tel 55 19 3838-6892 fax</td><td>Canada 800-410-6880 ext. 6018 tel 800-263-3489 fax</td></tr><tr><td>China 86-21-62753535 tel 86-21-62190698 fax</td><td>Denmark 45-43-480100 tel 45-43-968596 fax</td><td>France 0810-331-300 tel 30-31-6195 fax</td><td>Germany 02131-14-2344 tel 02131-14-3647 fax</td></tr><tr><td>Italy 02-7035-2177 tel 02-7035-2125 fax</td><td>Japan 03-3709-8245 tel 03-3709-8743 fax</td><td>Korea 02-3771-4114 tel 02-786-7429 fax</td><td>Netherlands 31-71-5-450-272 tel 31-71-5-450-280 fax</td></tr><tr><td>South Africa 11-922-9111 tel 11-922-2116 fax</td><td>Spain 34-91-321-6000 tel 34-91-321-6002 fax</td><td>Switzerland 01-724-9114 tel 01-724-9068 fax</td><td>United Kingdom (0) 161-237-6174 tel (0) 161-237-3371 fax</td></tr></table>	Australia 61-2-498-9711 tel 61-2-498-9710 fax	Austria 01-86686-298 tel 01-86686-229 fax	Brazil 55 19 3838-7876 tel 55 19 3838-6892 fax	Canada 800-410-6880 ext. 6018 tel 800-263-3489 fax	China 86-21-62753535 tel 86-21-62190698 fax	Denmark 45-43-480100 tel 45-43-968596 fax	France 0810-331-300 tel 30-31-6195 fax	Germany 02131-14-2344 tel 02131-14-3647 fax	Italy 02-7035-2177 tel 02-7035-2125 fax	Japan 03-3709-8245 tel 03-3709-8743 fax	Korea 02-3771-4114 tel 02-786-7429 fax	Netherlands 31-71-5-450-272 tel 31-71-5-450-280 fax	South Africa 11-922-9111 tel 11-922-2116 fax	Spain 34-91-321-6000 tel 34-91-321-6002 fax	Switzerland 01-724-9114 tel 01-724-9068 fax	United Kingdom (0) 161-237-6174 tel (0) 161-237-3371 fax
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This product was manufactured under a 3M quality standard registered under AS9100 or ISO9001 standards.



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