

TDFM-9000 SERIES DUST-COVER OVERLAY INSTALLATION PROCEDURE

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INTRODUCTION:

Some customers have been using our TDFM-9000 series products in dusty/desert environments possibly with the aircraft doors off. This unfortunately has the consequence of dust/sand building up in the keypad of the radio - as well as other avionics equipment - and some buttons may jam over a period of time.

Until now the only way to deal with this issue was to periodically disassemble the radio front panel assembly and clean out the dust, and then re-assemble the radio. Now with the dust-cover overlay kit, a protective membrane is placed over the keypad buttons, protecting the buttons from dust/sand infiltration.

This kit is specifically intended for the TDFM-9000, TDFM-9200, TDFM-9300 and the RC-9000 Products.

NOTE: The TDFM-9000 family of radios was not originally designed to be operated in a dusty environment. This retro-fit kit and installation document does it's best to deal with the subtle unique mechanical nuances you may encounter during the dust-cover overlay installation on your TDFM-9000 series radio.

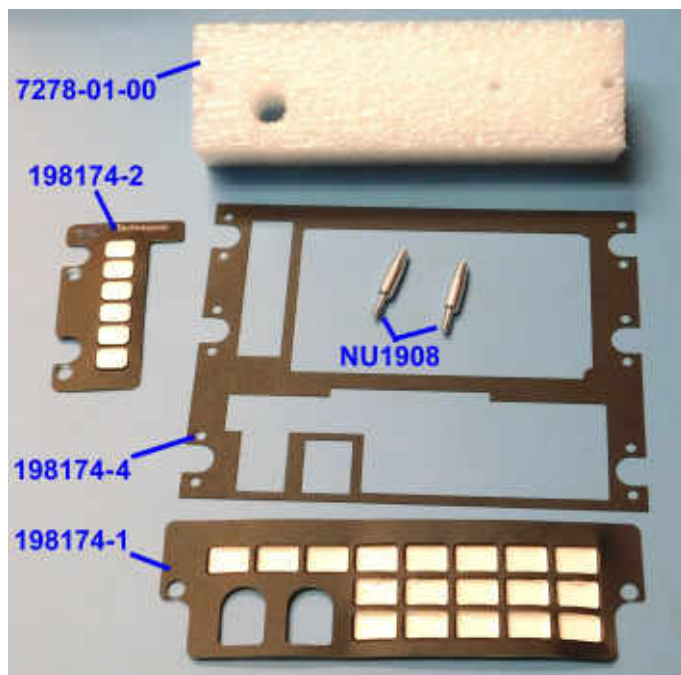
TOOLS REQUIRED:

- 1) LN21 (1/16") hex driver
- 2) Number 2 Philips screwdriver
- 3) Tweezers
- 4) Exacto-knife



DUST-COVER OVERLAY KIT CONTENTS: (Kit P/No: 199818)

- 1) Dust-cover overlay application foam (P/No: 7278-01-00)
- 2) Overlay guide/alignment pins (P/No: NU1908)
- 3) Dust-cover overlay for main keyboard (P/No: 198174-1)
- 4) Dust-cover overlay for menu buttons (P/No: 198174-2)
- 5) Front panel spacer (P/No: 198174-4)



MAIN KEYPAD OVERLAY INSTALLATION PROCEDURE:

It is best to do any work on the TDFM-9000 Series radio's front panel, with the radio sitting upright on its heatsink.



Before this mod can be applied to the radio, it is important that the front panel surface is clean, and that the radio does not already have sand/dust infiltrating the radio. If either of these is the case - please clean the radio first. Refer to Step 13 and Step 14 if necessary for instructions on disassembling the front panel.

Step 1:

First step to install the dust-cover overlay, is to remove the 2 black screws to the left and right of the main keyboard, and then install the 2 alignment pins so that the dust-cover overlay/sticker can be installed more easily, and in proper alignment.



Step 2:

With the alignment pins installed, using an exacto-knife if necessary - remove the adhesive protective backing from the main keypad dust-cover overlay/sticker.



Step 3:

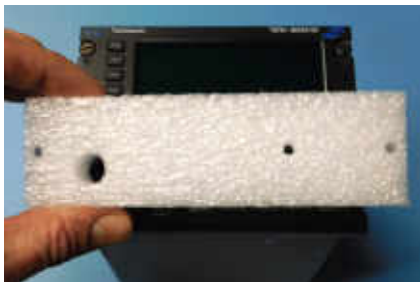
Using the 2 holes on the dust-cover overlay, place the 2 holes over the alignment pins installed in Step 1.



NOTE: DO NOT attempt to place the overlay stickers onto the front panel without the use of the alignment/guide pins. Since the adhesive is strong enough to peel the paint off the plastic front panel's surface, you pretty much get ONE CHANCE to install the overlay stickers. You will likely have difficulty peeling off and re-positioning the overlay sticker(s) without damaging the panel.

Step 4:

Place the dust-cover overlay application foam, over the same alignment pins, and press down on the foam firmly to evenly adhere the dust-cover overlay to the plastic front panel. The big hole in the foam piece sits over the control/volume knob.



Step 5:
Remove the alignment pins and replace the screws you took out in Step 1.

Step 6:
With the dust-cover overlay installed, it is now important to TEST every keypad button, to ensure you feel the tactile 'click' to ensure the button can be properly actuated by finger-presses.



MENU BUTTONS OVERLAY INSTALLATION PROCEDURE:

Step 7:
Remove the upper and middle left 2 screws.

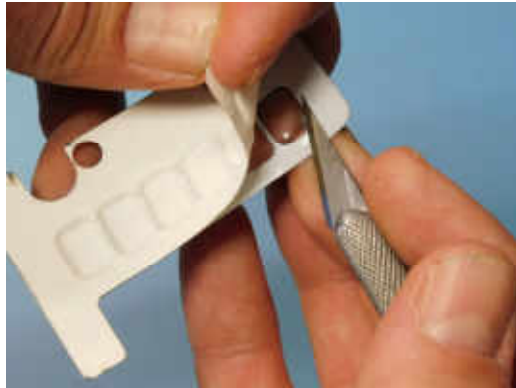


Step 8:
Install the alignment pins into the holes you just removed the screws from.



Step 9:

Using an exacto-knife if necessary - remove the adhesive protective backing of the menu buttons dust-cover overlay/sticker.



Step 10:

Just like the main keyboard dust-cover overlay, place the menu buttons overlay holes over the 2 alignment pins, then align the 2 holes of the foam piece onto the alignment pins and press down firmly on the foam to evenly adhere the overlay/sticker to the plastic front panel.



Step 11:

Replace the 2 screws you took out in Step 7.

Step 12:

As was done after the main keyboard overlay sticker installation – you must test each menu button to ensure you can feel and hear the tactile 'click'.



- IF all the main keypad and menu buttons press with no issues (ie: you can feel and hear the tactile 'click'), then you are done and the radio can be installed back into the aircraft..

- IF any of the buttons did not have the tactile click feel/sound, then proceed to the next step(s).

FRONT PANEL SPACER INSTALLATION PROCEDURE:

Any of the buttons that fail to press with a tactile feel, is because the dust-cover overlay is 'pre-pressing' that particular switch. (*The keypad switches themselves take a mere 0.010" (10 mil) to actuate.*) In that case, we need to add the front panel spacer between the plastic front panel, and the aluminum plate that the plastic front panel attaches to. This moves the overlay sticker and keypad buttons further from the switches by 0.010" (10 mil). Thereby eliminating the 'pre-press'.

Step 13:

With the radio on it's heatsink, and using the LN21 (1/16") hex driver loosen the set-screws on the knob and remove it, and remove the 6 screws that hold the plastic front panel on.



NOTE: Now before taking the radio plastic front panel off, it is IMPORTANT to flip the radio unit upside down while taking the plastic front panel off, or else the lens and metal lens spacer and cardboard gasket will fall out, and the keypad buttons will fall out and scatter all over the place and you will have to place them all back into their correct places by hand.

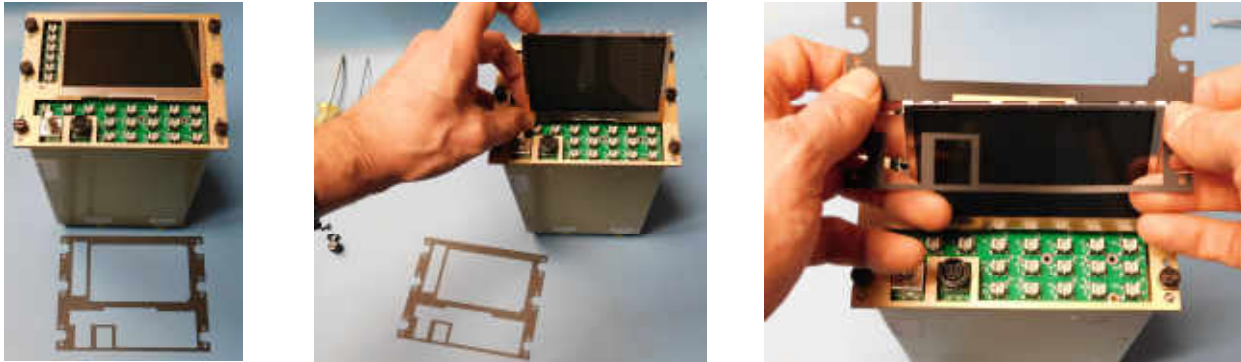
Step 14:

Now carefully remove the plastic front panel. Pry up the bottom of the radio from the panel from the keypad side as shown. The LCD panel is held in place only by it's ribbon cable which in effect will act like a hinge. Take the panel off slowly and gently so as not to let the LCD panel 'flop' out and damage or tear the ribbon cable.



Step 15:

Now place the radio back on the heatsink, and lift up the LCD panel, as you need to feed it through the bottom cutout of the front panel spacer. Be careful not to damage the ribbon cable of the LCD panel.



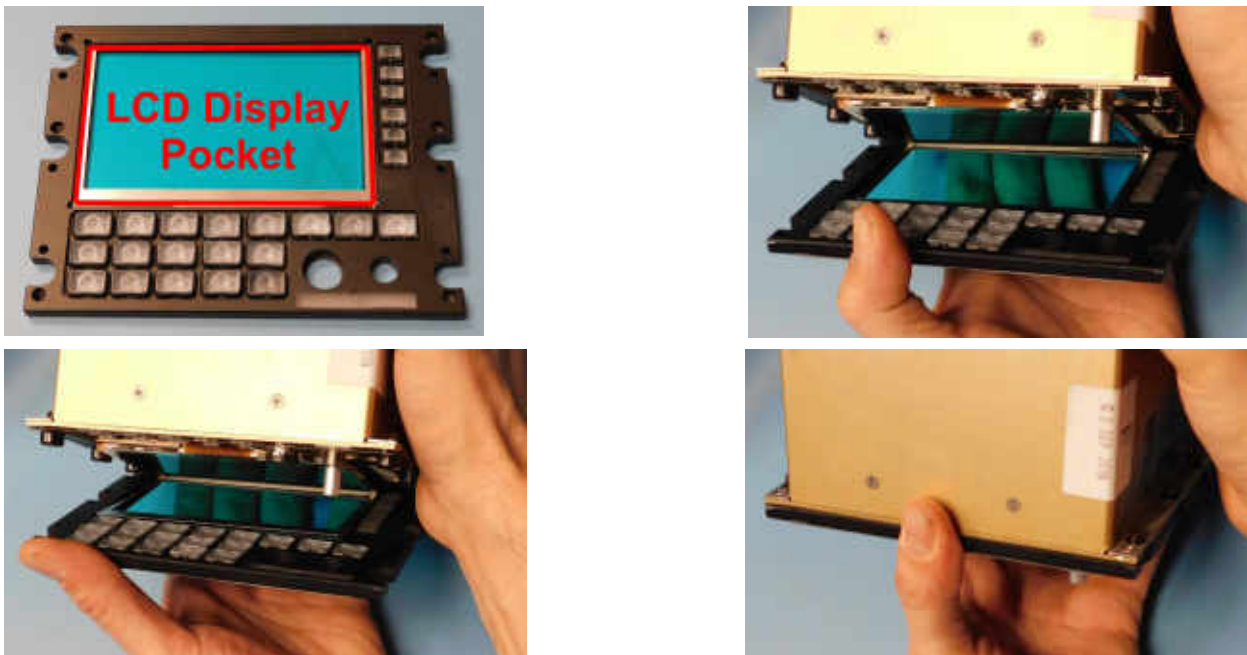
Step 16:

carefully guide/finesse the front panel spacer so it sits properly over the encoder, programming connector and the Dzus fasteners. When properly placed - it should look like this:



Step 17:

With the front panel spacer installed, hold the plastic front panel in one hand face-down with the buttons, and lens spacer and gasket and lens itself properly placed in the panel – place the LCD panel in the LCD display pocket of the plastic front panel – top side first since the panel is dangling from the ribbon cable.



Step 18:

When the plastic panel is properly attached, flip the radio back onto its heatsink, and re-install all the screws and the knob. Ensure the knob is raised slightly off the plastic front panel (approx 1mm) or you will not be able to press/engage the knob's integrated tactile switch.



Step 19:

As you did in Step 6 and Step 11, test all the main keypad buttons and menu buttons that were pre-pressed and, see if the pre-press has been resolved. If the pre-press has been resolved then the TDFM-9000 series dust-cover overlay kit is installed and the radio can be installed back into the aircraft.

If there still are any pre-pressed buttons, there is potentially a tactile switch out of spec, or the paint is too thick on that particular button cap - and the radio will unfortunately have to be taken apart one more time and the button caps of any pre-pressed switches will have to be sanded down.

Step 20:

Remove the front panel again per Step 13 and Step 14.

Step 21:

Take out the button-caps of any pre-pressed switches and sand the bottom side (non-text side) of the button. 200 to 300 grit sandpaper is recommended. Rub the button cap over the sandpaper a few times. We recommend you measure the thickness of the button cap, and remove approx 0.010" (10 mil) off the bottom of the button cap.



Step 22:

Place the sanded buttons back into their correct location and orientation.

Step 23:

Reassemble the front panel per Step 17 and Step 18.

This should sort out any remaining pre-pressed buttons of the main or menu buttons, and the radio can now be installed back into the aircraft.