



Field Modification FM09013

J1000 Adding Surge Protection

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FM09013 – J1000 - Installing Surge Protection Field Modification

1 INTRODUCTION

This document describes how to install surge protection in the J1000's final filter.

1.1 Equipment Affected

This procedure applies to the NARA40, NARA40A, NARA40B and NARA40C.

1.2 Responsibility for Implementation of Procedure

This procedure should be carried out by qualified station maintenance personnel who are familiar with the J1000 transmitter.

1.3 Scheduling

The transmitter needs to be 'off-air' during this procedure.

1.4 Manpower Requirements

This modification will require one hour to complete.

1.5 Special Tools/Test Equipment

Standard electronic hand tools.

1.7 Materials Required

There are two possible parts kits used with J1000 transmitters:

See Table 1 for a J1000 identified as NARA40 or NARA40A.

See Table 2 for a J1000 identified as NARA40B or NARA40C.

Table 1: Parts Kit – Nautel # 197-8068-01 (for NARA40 and NARA40A J1000s)

Qty	Nautel Part # and Description
1	FM09013 Documentation
1	197-8067-02 Spark Gap Assembly (pre-assembled as shown in Figure 4)
3	UM83 Surge Arrestor, 470 V, +/- 15%
1 ft	WE16 Wire, 20 AWG, Solid Tinned Copper

Table 2: Parts Kit – Nautel # 197-8068 (for NARA40B and NARA40C J1000s)

Qty	Nautel Part # and Description
1	FM09013 Documentation
1	197-8067-01 Spark Gap Assembly (pre-assembled as shown in Figure 5)
3	UM83 Surge Arrestor, 470 V, +/- 15%
1 ft	WE16 Wire, 20 AWG, Solid Tinned Copper

NOTE

The Installation procedure in paragraph 2 references two different RF power probes - NAFP99 (used in NARA40 and NARA40A transmitters) and NAPF07 (used in NARA40B and NARA40C transmitters). This procedure is also valid for all subsequently identified assemblies (e.g., NAFP99A and NAPF07C/02) that use the same base nomenclature (NAFP99 or NAPF07).

2 INSTALLATION

- (a) Unsolder the wire from RF output connector J1. Remove the other end of the wire from the RF power probe.
- (b) Remove the RF power probe (NAFP99 or NAPF07) from the RF power assembly, ensure to first disconnect interconnect wiring.
 - For an NAFP99: remove diodes CR4, CR6, CR7, CR8 and CR9. Install three UM83 surge arrestors, from the 197-8068-01 parts kit, in the CR4, CR7, and CR8 locations, leaving approximately 1 cm (1/4 inch) of space between the component and board (see Figure 1). Install WE16 solid tinned copper wire jumpers in the CR6 and CR9 locations.



- For an NAPF07: remove diodes CR5, CR6, CR7, CR8 and CR9. Install three UM83 surge arrestors, from the 197-8068 parts kit, in the CR5, CR6 and CR7 locations, leaving approximately 1 cm (1/4 inch) of space between the component and board (see Figure 1). Install WE16 solid tinned copper wire jumpers in the CR8 and CR9 locations.
- (c) Remove two M5 screws on the outside plate of E7 RF output connector. Install the spark gap assembly (Nautel Part # 197-8067-01 or -02) as shown in Figure 2. Nautel ships the spark gap assembly pre-assembled (see Figure 4 or 5). Secure the assembly to the ceramic pillar using an HF11 #10 screw with an HAB26 external washer on the outside plate. Install an HMSP31 M5 screw to the outside plate and attach to the other side of the spark gap assembly using the nut and external washer removed earlier (see Figure 2). Tighten hardware and set the spark gap to 0.030 inches. Solder the yellow, teflon wire to RF output connector J1.
- (d) Reinstall the RF power probe. Connect the white cable to J1 on NAFP99 or to J2 on NAPF07 before securing the board (see Figure 3). Use caution when mating the connectors. Pull the white cable out as far as possible to allow ample length to work with. Align the cable plug male end with the board's female end. If you force the male plug in without proper alignment it may dislodge the connector on the board and result in the loss of RF current sample. When installing, push the male plug in by centering it with the female end to ensure proper alignment and ease of installation. After making the connection, slide the board into place and secure. Use a long screwdriver to access the back screws.
- (e) For the NAFP99, connect the HAM13 quick-disconnect connector on the new spark gap assembly (see Figure 4) to E7 on the board. For the NAPF07, connect the HV16 terminal lug on the new spark gap assembly (see Figure 5) to TB1-4 on the board.
- (f) The procedure is complete. Return the J1000 to service.

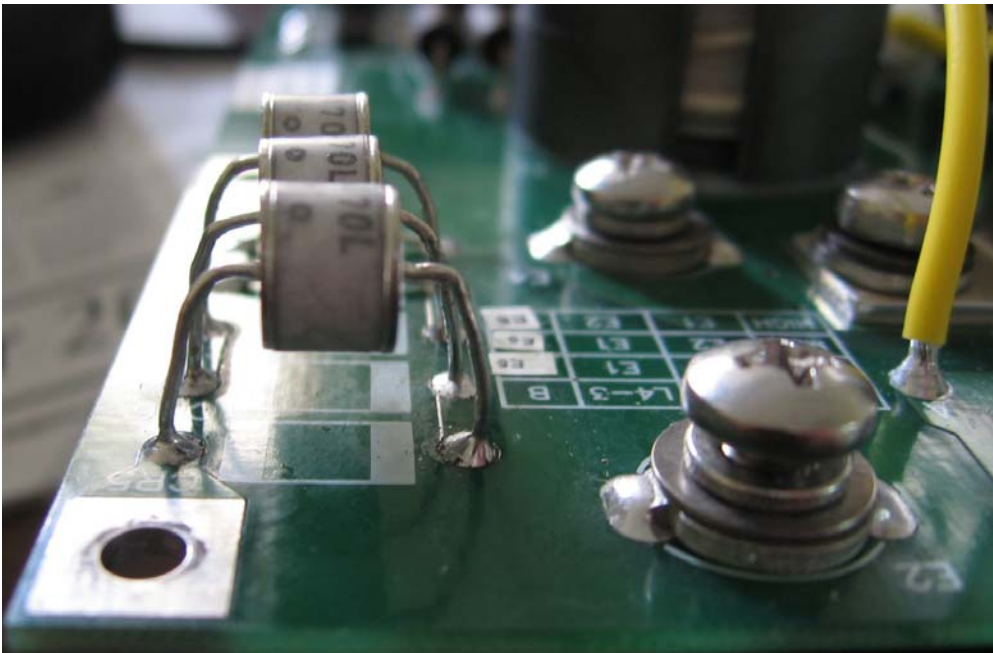


Figure 1: Surge arrestor installation



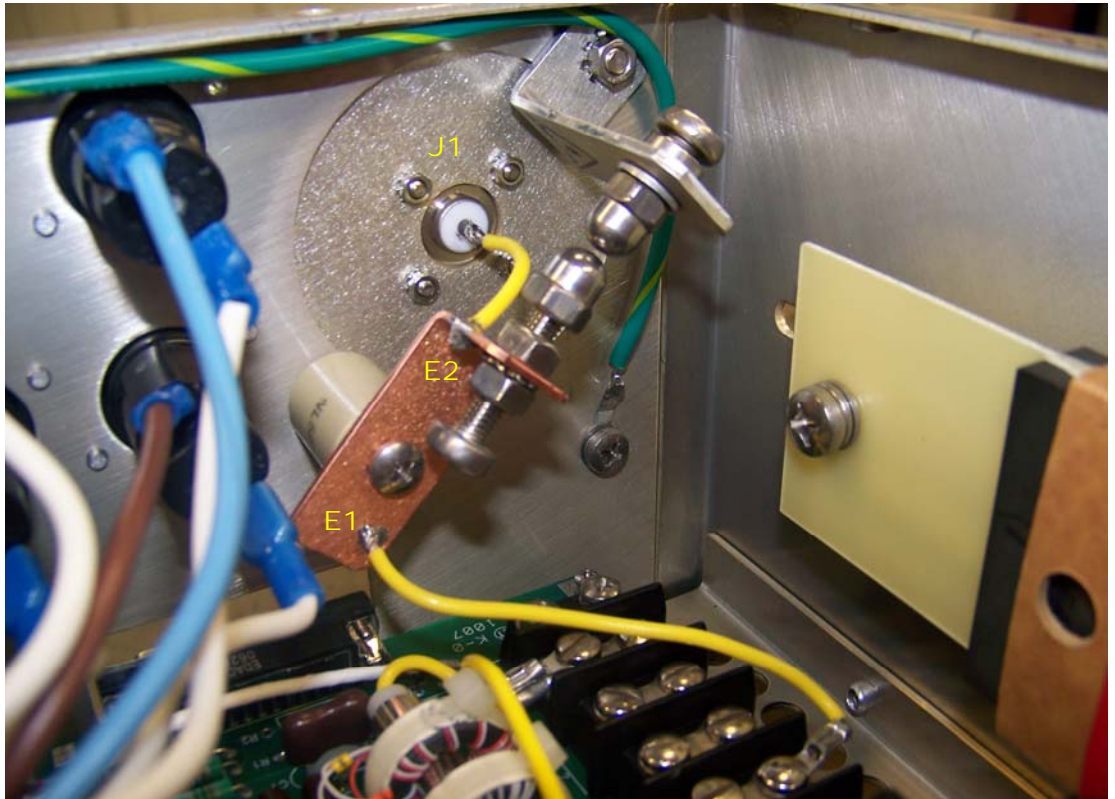


Figure 2: Spark gap assembly location

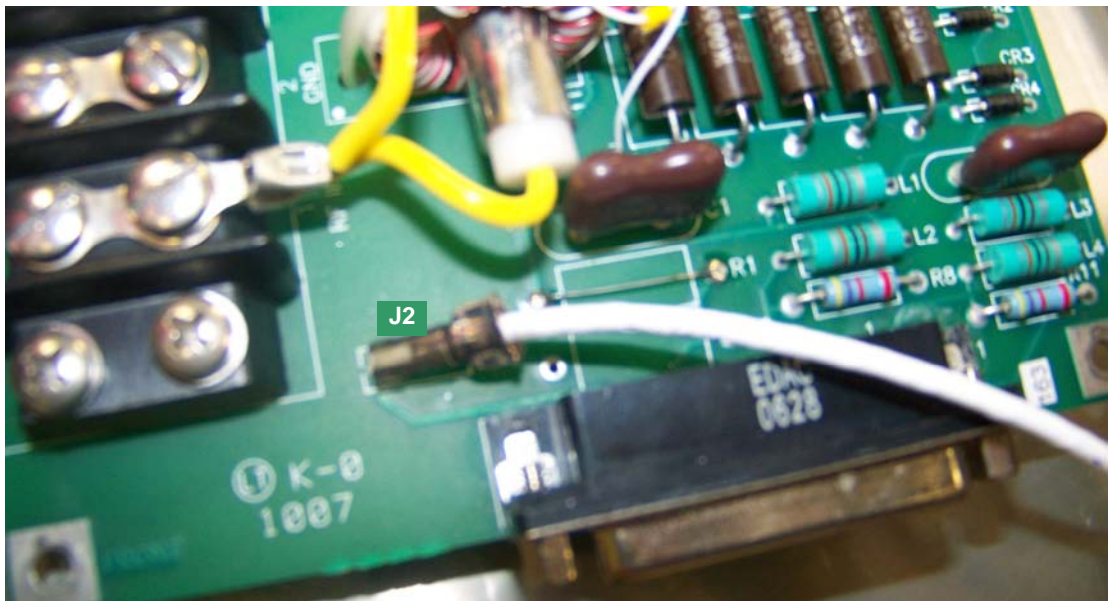


Figure 3: Installing the white cable on J1 of the NAFP99 or J2 on the NAFP07 (NAFP07 shown)



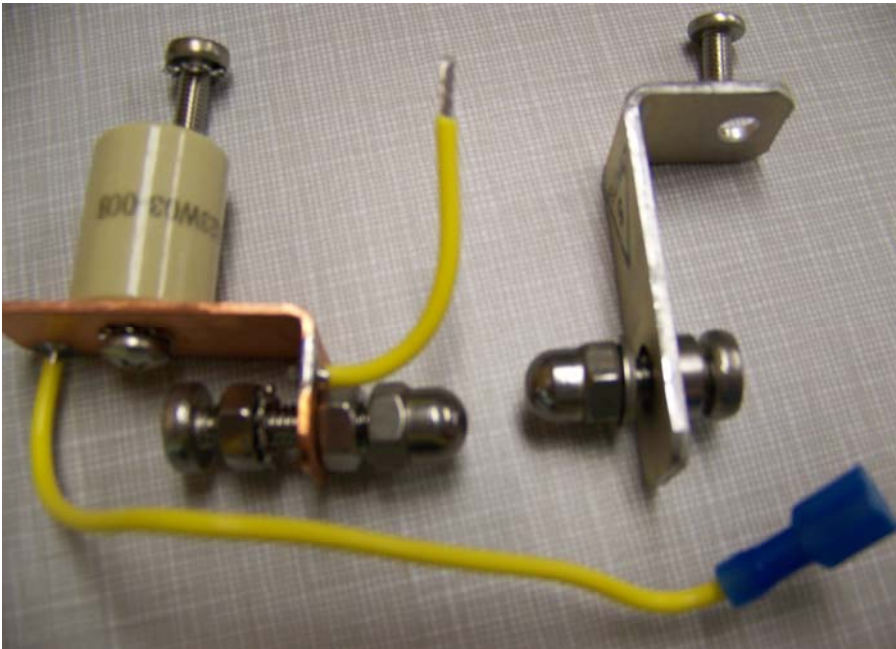


Figure 4: Spark Gap Assembly 197-8067-02 (showing HAM13 quick-disconnect), for use with NAFP99



Figure 5: Spark Gap Assembly 197-8067-01 (showing HV16 terminal lug), for use with NAFP07

