

ELECTRICAL POWER-STATIC INVERTER - CAPACITOR C66 REPLACEMENT

I PLANNING INFORMATION

- A Effectivity - Static Inverter, Part Number 1-002-0102-0714, (Boeing P/N S282T004-7) Model 1C1000-1B, Mod Levels "-" thru "B", and Interim Part Number 1-110-0102-0714, Mod Level "B".
- B Reason - Several in-service occurrences on 767 aircraft and laboratory tests of the model 1C1000-1B static inverter have revealed that a potential for the inverter to latch during input power transfers exists. This latching condition will cause the unit to produce no output until the input power is removed for more than one second and then reapplied. Replacement of capacitor C66 on the Logic Power Supply PCB Assembly (p/n 1-002-0107-0386) with a 1.0 uF, 50 V capacitor is highly recommended.
- C Description - Replacement of capacitor C66 with a 1.0uF, 50 V capacitor will require removal of the static inverter rear panel, removal of 0.1 uF capacitor, replacement with 1.0 uF capacitor, replacement of the rear panel, and reidentification of the unit with new part number 1-111-0102-0714 (Boeing P/N S282T004-8).
- D Approval - This Service Bulletin has been reviewed by the Federal Aviation Administration (FAA) and the repair and modification herein complies with the applicable Federal Aviation Regulation (FAR) and are FAA approved.
- E Manpower - The estimated manpower required to accomplish this task is 30 minutes.

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- F Material - Operators who intend to do this change at their facility may obtain the parts Cost and Availability shown in paragraph III A., Parts Required Per Component, from vendor as shown below. The data shows the date when the parts are available.

<u>Part Number</u>	<u>Oty</u>	<u>Unit Price</u>	<u>Name</u>	<u>Date Available</u>
1-001-0323-0009	1	N/C	Capacitor, Ceramic, 1.0 uF, 50 V	31 August 1992
1-001-2501-0147	1	N/C	Nameplate (preprinted)	31 August 1992
1-001-3001-0043	2	N/C	Rivet, Stud Grooved	31 August 1992

1. The parts will be available August 31, 1992 through August 31, 1994. Send parts requests, Serial Numbers and Date of Mfg of units to be upgraded to Product Support Manager at the address below and refer to this service bulletin number.

Avionic Instruments Inc.
1414 Randolph Ave
Avenel, NJ 07001 USA

ATTN: Product Support Manager

2. The parts availability required to complete Mod A and B upgrades will be extended through August 31, 1994. Please direct requests to the address above.

- G Tooling - NONE
- H Weight and Balance - Not Affected

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- I Electrical - Not Affected
Load Data
- J Software - Not Applicable
Accomplishment
Summary
- K Reference - None
- L Other - Component Maintenance Manual,
Publications ATA No 24-20-27, 1-001-4902-0017
Affected will be revised to include this
service bulletin.

NOTE: In order to maintain configuration control it is required that Mod A per Service Bulletin Number 1-002-0102-0714-24-15 and Mod B per Service Bulletin Number 1-002-0102-0714-24-17 be incorporated prior to the incorporation of this service bulletin. Incorporation of this service bulletin will result in a part number change and a loss of all previous Mod level identification.

If you have a part number 1-002-0102-0714 (S282T004-7), mod level "-", "A", or "B"; upgrade and mark your unit as defined in the table below:

If Current Mod Level is:	Recommended Upgrade to Include:	New Nameplate Marking
-	Mod A,B and this mod	P/N 1-111-0102-0714 (Boeing P/N S282T004-8)
A	Mod B and this mod	P/N 1-111-0102-0714 (Boeing P/N S282T004-8)
B	This mod	P/N 1-111-0102-0714 (Boeing P/N S282T004-8)

If two or more mods are incorporated at the same time, only one functional performance check needs to be performed to verify proper inverter operation.

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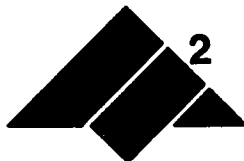
If you have a part number 1-110-0102-0714 (Boeing P/N S282T004-7), mod level "B", all of the upgrades have been incorporated at the factory prior to approval of the S282T004-8 part number change. To upgrade to a part number 1-111-0102-0714 (Boeing P/N S282T004-8), all that is required is removal of the existing nameplate and attachment of the new nameplate (p/n 1-001-2501-0147) following step 9. of II. Accomplishment Instructions only.

All units returned to the factory for repair or upgrade will be automatically upgraded with MOD A, B and this mod free of charge. The nameplate will be replaced to reflect the new part number 1-111-0102-0714 (S282T004-8) and customers should revise their provisioning data to reflect this part number change and track which units have been modified.

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II ACCOMPLISHMENT INSTRUCTIONS

Replacement of capacitor C66 on the Logic Power Supply Assembly will require the installer to remove the rear panel of the static inverter.

CAUTION: DISCONNECT INPUT POWER PRIOR TO HANDLING OR REMOVAL OF THE COVER OF THE STATIC INVERTER TO PREVENT ELECTRICAL SHOCK.

CAUTION: CIRCUIT CARD ASSEMBLIES CAN BE DAMAGED IF ELECTROSTATIC DISCHARGE (ESD) PROCEDURES ARE NOT FOLLOWED DURING MAINTENANCE PROCEDURES. A CONDUCTIVE WRIST STRAP MUST BE WORN AT ALL TIMES WHEN HANDLING CIRCUIT CARD ASSEMBLIES. THE WRIST STRAP MUST BE CONNECTED TO GROUND THROUGH A RESISTANCE BETWEEN 250 KILOHMS AND 1 MEGOHM.

1. Remove ten (10) screws securing rear panel, item 45 on figure 1.
2. Carefully remove rear panel, item 40 on figure 1.

NOTE: IT IS NOT NECESSARY TO REMOVE THE LOGIC POWER SUPPLY PCB ASSEMBLY TO PERFORM THIS UPGRADE.

3. Using figure 2, locate position of capacitor C66, item 195 on figure 2.
4. Carefully desolder capacitor C66 (p/n 1-001-0323-0010) and discard.
5. Carefully solder capacitor C66 (p/n 1-001-0323-0009) into same location using SN63-type solder and 60 W nominal soldering iron.
6. Clean, touch-up and conformal coat area around C66 using Humiseal Type 1B31 or equivalent conformal coating to protect area from moisture.

CAUTION: USE CARE TO ENSURE THAT ARINC MOUNTING HOLES ARE PROPERLY ALIGNED WITH HOLES IN BOTTOM COVER FLANGE. (SEE FIGURE 3)

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7. Carefully install the rear panel and replace the ten (10) screws, item 45 of figure 1 removed in step 1.
8. Verify that both MOD A and MOD B have been incorporated prior to reidentification. If either or both have not been incorporated, perform these upgrades.
9. Reidentify the Static Inverter as follows:
 - 1.- Verify that the part number is 1-111-0102-0714 and that the serial number and date of Mfg on the new nameplate are identical to the nameplate currently on the unit.
 - 2.- Using the flat-head screwdriver, carefully pry nameplate from the front panel at location of rivets.
 - 3.- Using pliers, carefully grasp rivet head and pull the rivet out. Repeat for second rivet.
 - 4.- Discard used rivets and old nameplate.
 - 5.- Position new nameplate on front panel as shown in figure 4 and carefully secure with new rivets by tapping lightly with hammer.
10. Perform function test defined in Addendum 1 to verify inverter performance.
11. Return inverter to stock or installation upon successful completion of functional test.
12. Should the inverter fail the functional test, test and troubleshoot unit or return to Avionic Instruments Inc. for repair.

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III MATERIAL INFORMATION

A Parts Required Per Component - To get the parts listed below, refer to paragraph I.F., Material- Cost and Availability.

NOTE: One kit consisting of the component listed below is required for each static inverter.

<u>Part Number</u>	<u>Qty</u>	<u>Unit List Cost</u>	<u>Key Word</u>	<u>Instruction</u>
1-001-0320-0009	1	No Charge	Capacitor, Ceramic, 1.0 uF, 50 V	Install
1-001-2501-0147	1	No Charge	Nameplate (preprinted)	Install
1-001-3001-0043	2	No Charge	Rivet, Stud Grooved	Install

In addition, the following commercially available items will be required to complete installation:

<u>Description</u>	<u>Qty</u>
Pliers, Needle-nose	1
Screwdriver, Flat-head	1
Screwdriver, Phillips-head	1
Hammer	1
Solder Type SN63	A/R
Humiseal Type 1B31 or equivalent	A/R
Conformal Coating	

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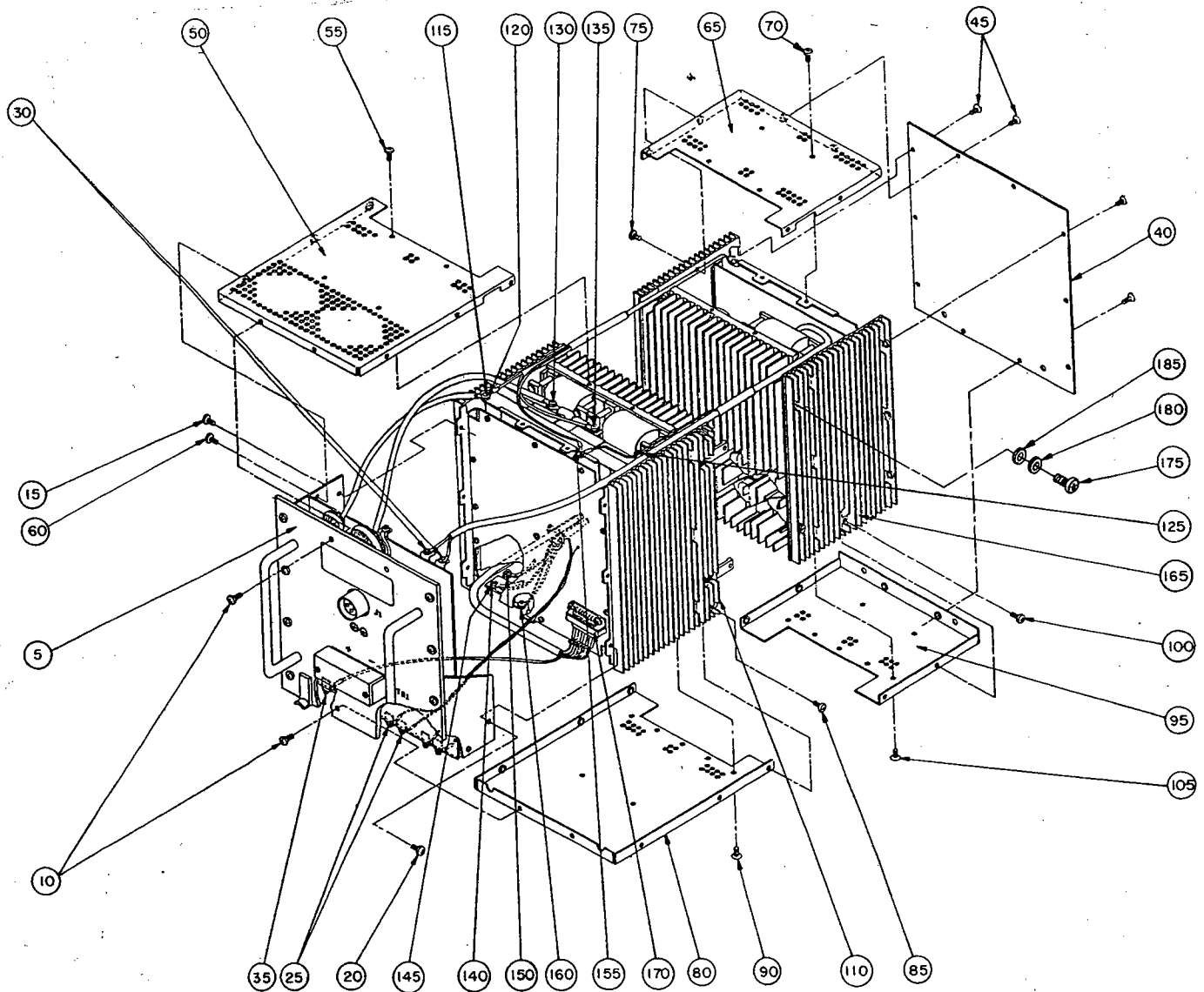


FIGURE 1

STATIC INVERTER FINAL ASSEMBLY

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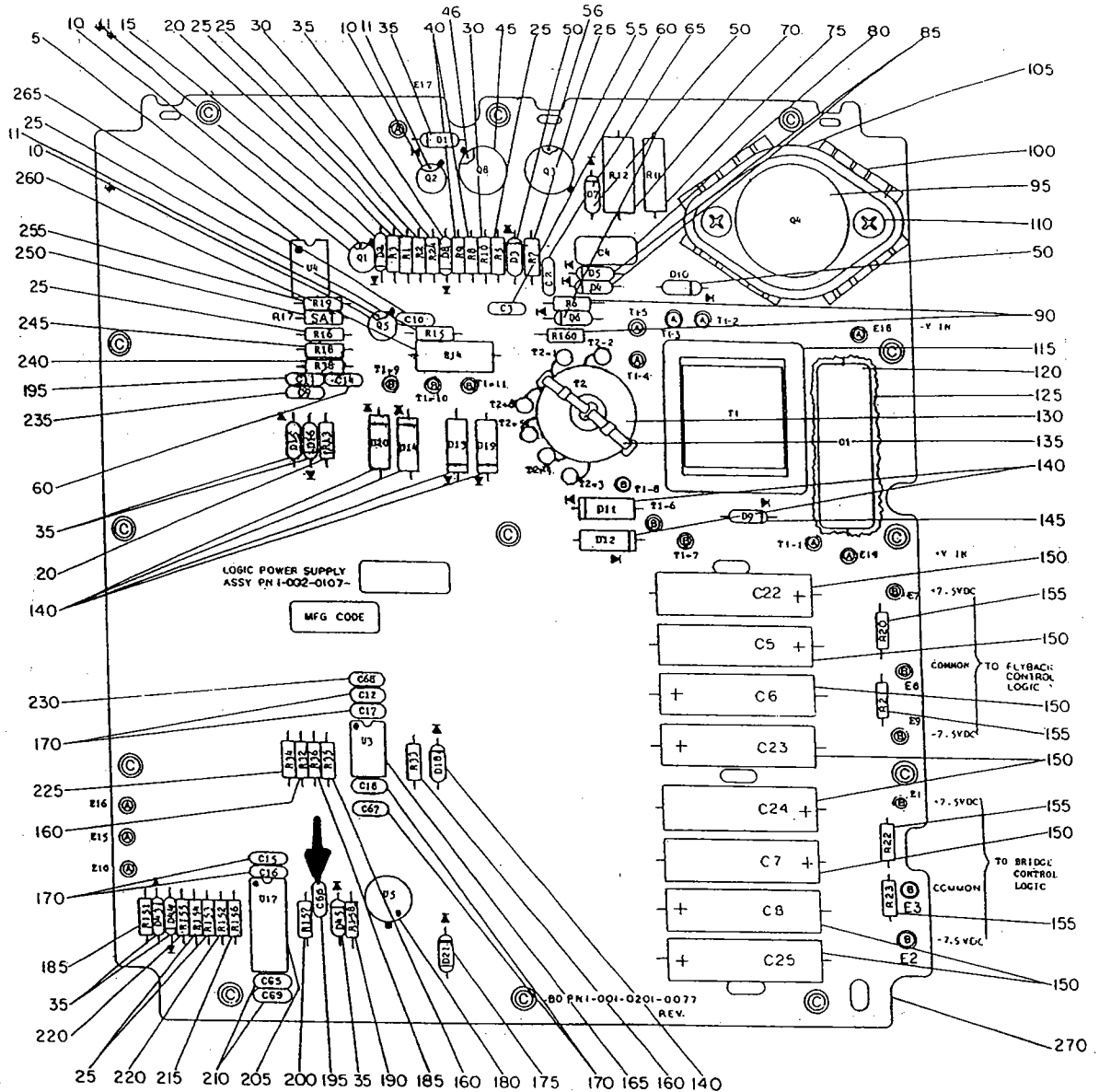


FIGURE 2

LOCATION OF CAPACITOR C66 ON LOGIC POWER SUPPLY ASSEMBLY

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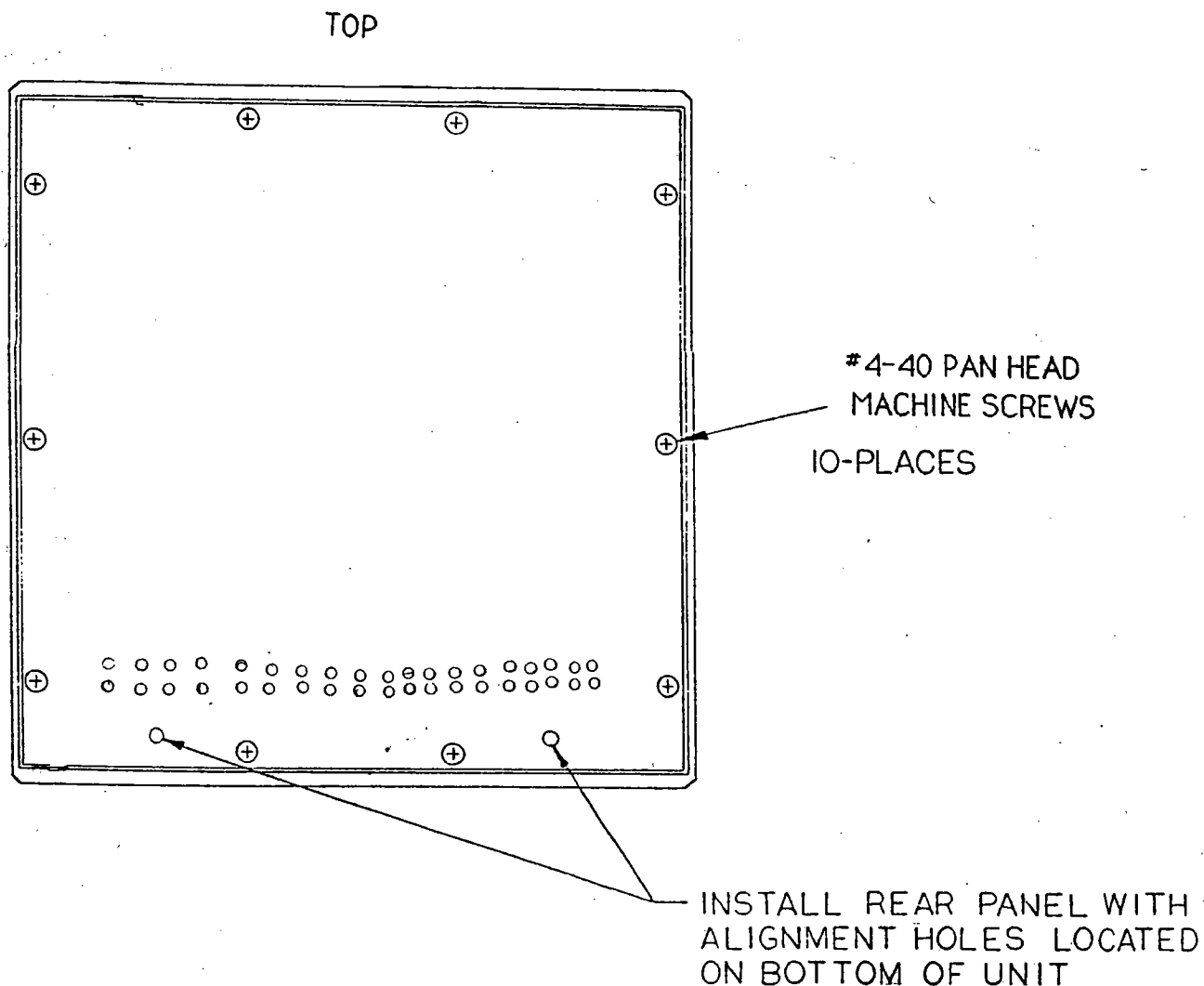


FIGURE 3

LOCATION OF ARINC MOUNTING HOLES IN REAR PANEL

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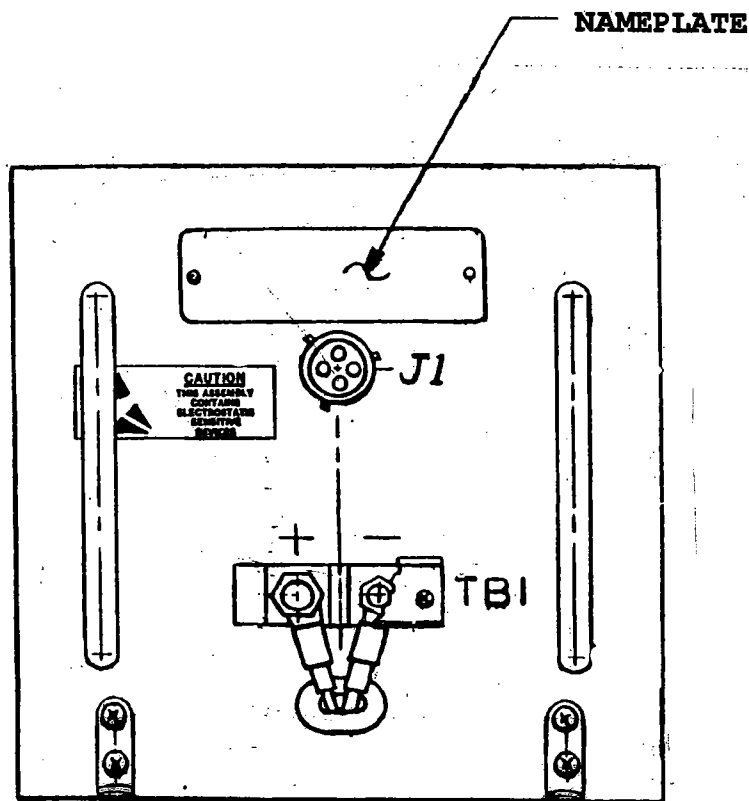


FIGURE 4

NAMEPLATE LOCATION

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ADDENDUM 1 FUNCTIONAL TEST REQUIREMENTS

1. General

This section contains instructions for testing the Model 1C1000-1B Static Inverter. Testing is performed according to the procedure outlined in this section. The purpose of this test is to demonstrate that the static inverter meets all critical parameters and operates within the specified limits.

2. Test Equipment

A. Required Test Equipment

Figure 101 specifies the test equipment that is required for this test procedure. Alternate test equipment may be substituted provided its accuracy and performance are suitable for obtaining data consistent with the requirements of this procedure.

B. Test Setup

Figure 102 specifies the connections for the test setup.

3. Testing

This procedure establishes the operating conditions for the unit.

WARNING: DISCONNECT ALL POWER FROM THE STATIC INVERTER BEFORE MAKING CONNECTIONS OR PERFORMING ASSEMBLY OR DISASSEMBLY OPERATIONS.

A. Test Setup (See Figure 102)

- (1) Connect dc power supply, dc ammeter (with shunt, if required), and dc voltmeter to input of unit-under-test (UUT) -- TB1 on front panel. (Large diameter stud is positive; small diameter stud is negative.)

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<u>Equipment</u>	<u>Manufacturer</u>	<u>Model</u>	<u>Specifications</u>
Dc Power Supply	Sorenson	-DCR40 125A	0 to 40 V, 0 to 125 A
Dc Voltmeter	Weston	931	0 to 50 V $\pm 2\%$
Dc Ammeter	Weston	931	0 to 100 A
Shunt for Dc Ammeter (if required)			
Ac Voltmeter, True Rms	Weston	433	0 to 150% $\pm 2\%$
Ac Ammeter	Weston	904	0 to 50 A $\pm 2\%$
Linear Load			1000 W
SPST Switch	Augat (Alco Switch)	TT13A- 2T	3A, 28 Vdc

NOTE: Equivalent substitutes may be used

FIGURE 101

REQUIRED EQUIPMENT LIST FOR TEST PROCEDURE

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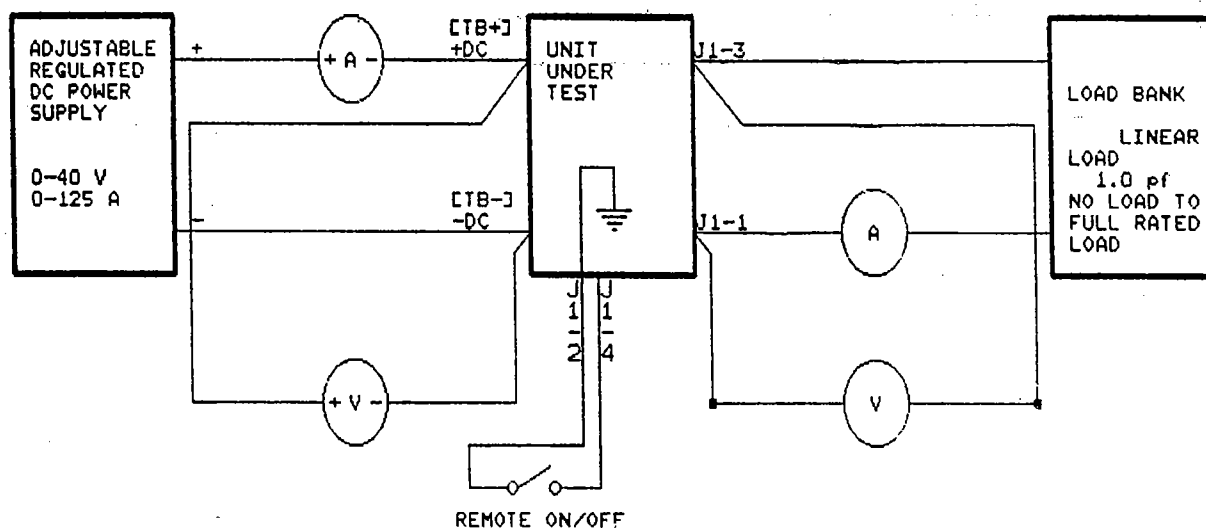


FIGURE 102

CONNECTIONS FOR TEST SETUP

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A. Test Setup (See Figure 102) (Continued)

- (2) Connect ac ammeter, ac voltmeter, and 1000 W nominal linear load to pins 1 and 3 of J1 on the front panel of the UUT.

NOTE: To minimize voltmeter reading error due to line losses, connect dc voltmeter directly to J1 and ac voltmeter directly to TB1.

B. Test Procedure

Perform steps of test procedure in listed order. Figure 103 specifies limits for each measured value. Testing must be stopped if any reading is out of tolerance and should be continued only after all faults have been corrected.

1. No-Load Test

- (a) Disconnect 1000 W nominal linear load from J1 on UUT.
- (b) Adjust dc power supply to 24 $-2/+4$ Vdc.
- (c) Measure and record input current, output voltage. Record measured values and compare to limits in Figure 103.

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2. Full-Load Test

- (a) Connect 1000 W nominal linear load to J1 on UUT. Calculate the efficiency at full rated load and input voltages of 22V and above using the following equation:

$$n = \frac{V_{out} * I_{out}}{V_{in} * I_{in}} * 100\%$$

The calculated efficiency at full-rated should be at least 82% for input for input voltages of 22 V or greater.

- (b) Adjust dc power supply to 24 -2/+4 Vdc.
- (c) Measure and record input current, output voltage. Record measured values and compare to limits in Figure 103.
- ## 3. Remote On/Off Test

- (a) Adjust dc power supply to 24 -2/+4Vdc.
- (b) Close remote on/off switch for 5 seconds. This grounds Pin J1-4).
- (c) UUT output should be zero.
- (d) Open remote on/off switch. Verify that output returns.
- (e) Turn off dc power supply and disconnect load.

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C. Limits, Measured Values

Check all readings against values specified in Figure 103. Repairs are required if input current, output voltage, or efficiency are not within tolerance.

Input		Output			
Voltage (Vdc)	Current (Adc)	Voltage (Vrms)	Current (A)	Eff. (%)	Load (W) Nominal
22-28	3.5 (1)	110-120	0	N/A	0
22-28	70 (1)	110-120	8.7 (2)	82	1000

(1) Worst case input current limit for 22 V input, 1000 W load.

(2) Nominal output current, load dependent. 1000 W current equal to output voltage divided by load resistance (typically 13.2 ohms at 1000 W).

FIGURE 103

LIMITS FOR MEASURED VALUES

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