

## 946-/947- AND 970-/971-TYPE CONNECTORS CLEANING PROCEDURES

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1. GENERAL

1.01 This section covers procedures to be followed when cleaning 946-/947- and 970-/971-type connectors within a bay framework or individual circuit packs.

1.02 Revision arrows are used to emphasize significant changes. The equipment test list is affected. The reasons for reissue are listed below.

- (a) Change procedures for cleaning connectors.
- (b) Change tool kit specified for cleaning connectors.

1.03 The cleaning procedures in this section are for 946-/947- and 970-/971-type connectors only using the KS-22678 cleaning kit\* and are not applicable to all types of connectors. These cleaning procedures are not intended for use in cases of wide spread

unit contamination, but are intended for the cleaning of isolated locations within a frame or unit that are contaminated.

### 2. SAFETY PRECAUTIONS

2.01 **DANGER:** Freon TA\* can be harmful if inhaled in sustained quantities. This solvent may extract skin oils resulting in dryness, cracking, and in some instances, infection. It is also possible for the solvent or its vapors to be absorbed through the pores of the skin resulting in much the same effects as inhalation. The following precautions should be observed.

- (a) Work in a well ventilated area.
- (b) Avoid prolonged exposure to the vapors.
- (c) Keep the work piece at least 1-1/2 feet away from the face so that vapors are not breathed directly.
- (d) Do not smoke in the area where solvents are being used.
- (e) Wear chemical goggles.
- (f) Do not spray on hot surfaces or open flames.

2.02 **Warning:** Care must be taken to restrict solvents to the contact area of the connector being cleaned. Freon TA will soften the

\* Trademark of E. I. duPont de Nemours & Co. Inc.

### NOTICE

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*acrylic cover coat used on FB and FC coded circuit packs. The solvent will also degrade the Room Temperature Vulcanized (RTV) encapsulant which protects the ceramic on FA coded circuit packs. If solvent does come in contact with the circuit pack, do not attempt to wipe the solvent away. Allow the solvent to evaporate of its own accord. Refer to Section 065-330-302 for general precautions to be observed when using cleaning fluids.*

2.03 Since the KS-22678, L103, solvent contains a lubricant, it should only be used to clean connectors. Under no conditions should this solvent be applied to relay contacts.

### 3. APPARATUS

3.01 **List of Tools and Materials:** The following list consists of tools and materials needed to clean 946-, 947-, 970- and 971-type connectors.

TOOLS	DESCRIPTION
—	484B Chemical Goggles, American Optical Co. or equivalent
KS-22678, L1	Cleaning Kit (This kit contains the following tools and materials):
KS-22488, L129	Illuminated Magnifier (4X)
KS-22678, L101	Handle
KS-22678, L102	Paddlepad (100 pads)
<b>MATERIALS</b>	
KS-22678, L103	Solvent (MS-181) (two cans)
KS-22678, L104	Instructions
KS-22678, L105	Case

### 4. CLEANING AND LUBRICATION PROCEDURES

4.01 Faulty operation of ESS\* switching equipment can be caused by almost any kind of contamination of the contact surfaces of the connectors. The objective of this cleaning method is to remove all

\* Trademark of Western Electric

foreign material from the gold-plated contact surfaces of the connectors. When a circuit pack is removed from the equipment, it must always be handled in such a manner that nothing touches the connector contact surfaces other than the specified cleaning material. After cleaning, it is essential that the circuit pack be inserted into its proper operating position in the equipment before it is exposed to any possible source of contamination.

**Note 1:** It is important to use this procedure and the cleaning tools which are specified. Do not leave out any steps. Do not deviate from this procedure.

**Note 2:** Contamination problems must be solved by using the proper cleaning procedures. Any reseating or adjusting of circuit packs only delays the problem. When replacing a pack with a spare, the cleaning instructions specified below are to be followed before inserting the pack into the frame.

4.02 Before cleaning, power down the frame containing connectors to be cleaned per local instructions. Removal of some fuses may be necessary to remove the power from certain circuit packs.

4.03 Connectors should be cleaned using this procedure whenever reseat problems exist or when circuit packs are replaced. Tools used in this cleaning procedure include throwaway KS-22678, L102, paddlepads and a KS-22678, L101, handle. They are used together to clean both the 946/947 and 970/971 connectors. Each paddlepad is used to clean only one connector pair and then is discarded. The cleaning is done with the KS-22678, L103, solvent consisting of Freon TA which contains a 1 percent mixture of OS-124 lubricant in a spray container. After cleaning, a thin layer of lubricant will remain on the contacts thereby eliminating the need for a special lubricating operation.

#### A. 947- or 971-Type Connectors

4.04 To clean 947- or 971-type connectors, proceed as follows:

- (1) Verify that the power has been removed from the frame.

(2) Remove the circuit pack from the frame. The 947- or 971-type connector should be cleaned first. Place the circuit pack on a cart or table being sure that nothing touches the connector contacts.

(3) **Warning: When handling paddlepads, do not touch the black pad material. This will minimize contaminants from coming in contact with the paddlepad.**

(4) Remove a new paddlepad from the sealed plastic container. Attach the pad to the handle by sliding it into the slot at the end of the handle. Absolute cleanliness of the pad must be maintained.

(5) Wet both sides of the pad with solvent, concentrating the spray across each side toward the end of the paddlepad until the pad just begins to drip. Shake off the excess drops of solvent into a waste can or other suitable container.

(6) Immediately insert the paddlepad into the 947- or 971-type connector until it bottoms in the back of the connector. Do not allow the paddlepad to touch adjacent components or circuit packs. Be sure it bottoms in the connector.

(7) Remove and insert the paddlepad from the 947- or 971-type connector five times to create a scrubbing action on the contact surfaces.

(8) The cleaning of the connector is complete. Carefully remove the paddlepad and handle from the card slot so that the pad does not touch adjacent components.

(9) The same paddlepad is used to clean the 946- or 970-type connector; therefore, care must be taken to ensure that the paddlepad is kept clean.

#### B. 946- or 970-Type Connectors (On a Circuit Pack)

4.05 To clean 946- or 970-type connectors, proceed as follows:

(1) Wet both sides of the paddlepad with solvent.

(2) Concentrate the spray toward the end of the paddlepad. Spray the solvent until the paddlepad just begins to drip.

(3) Shake off the drops of excess solvent into a waste can or other suitable container.

(4) Position the circuit pack so that the connector may be wiped easily.

(5) Immediately wipe the 946- or 970-type connector contact surfaces five times on one side, being sure to wipe the full length of all contacts.

(6) Turn the circuit pack over so that the uncleaned side of the connector is exposed.

(7) Respray both sides of the paddlepad with solvent concentrating the spray toward the end of the paddlepad. Spray until the paddlepad begins to drip.

(8) Shake off the drops of excess solvent into a waste can or other suitable container.

(9) Immediately wipe the uncleaned side of the 946- or 970-type connector contact surfaces five times. Wipe the full length of all contacts.

(10) Inspect the connector for contamination using the KS-22488, L129, 4X magnifying glass. Carefully inspect both sides of the connector and all contacts for small particles of lint or any remaining foreign objects.

(11) If any contaminants remain on the circuit pack connector, repeat the cleaning process for the 946- and 970-type connectors.

**Note:** If contamination is still present after the second cleaning, replace the circuit pack with a new one. Return the contaminated circuit pack per local instructions for repair. The replacement circuit pack must be cleaned and inspected per this instruction.

(12) Remove the paddlepad from the handle and discard it. (The paddlepad is used to clean one connector pair only.)

(13) After cleaning the circuit pack, reinsert it into the frame making sure it is properly seated.

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**Note:** The solvent contains a lubricant which remains on the conductor contacts after cleaning; thus eliminating the need for additional lubrication of the connectors.

**4.06** To reapply power to the frame, proceed as follows:

- (1) Replace any fuses previously removed.
- (2) Reapply power to the frame in accordance with local instructions.

(3) Perform test diagnostics to verify that the circuit pack functions properly and all troubles have been cleared. If a trouble persists at a specific location, reclean the connectors two times as described in paragraphs 4.04 and 4.05.

(4) If the equipment still indicates connector contamination after following the above procedure, call the local Electronic Systems Assistance Center (ESAC) or appropriate engineering organization for further assistance.†