REPAIRING KS-21479 "WHITE and GRAY" WINCHESTER CONNECTORS D4, DCT AND SLC96 CHANNEL BANK BACKPLANES

CONTENTS

1. GENERAL

1.1 Scope of Section

1.11 This section covers the methods and general requirements for removing and replacing defective pins and/or housings on "White and Gray" Winchester connectors KS-21479 L6,7,8,10,11,12,20,21,22.

1.12 NOTE: Components of the "White" and "Gray" connectors are not interchangeable.

1.13 Repair procedures for "BLACK" AMP KS21479 connectors will be found in HB9, Sect 130.2. Components of the "BLACK", "WHITE" and "GRAY" connectors are not interchangeable.

1.14 Each figure in this section illustrates only the condition to which reference is made in the text and is not to be considered as covering requirements for other conditions that may be involved.

1.15 The requirements covered in this section shall be followed, except as modified by other applicable specifications.

1.2 Precautions - General precautions are covered in Handbook 0 and are to be observed at all times as they apply to particular operations to be performed. It is of utmost importance that injury to personnel, equipment damage and service interruptions be prevented. Wear safety glasses to protect against "flying" pins.

2. COMMON REQUIREMENTS AND METHODS

2.1 Disconnecting and Reconnecting wire wrapped connections - General Instructions in Sections 310, 311, 312, 313, 314, 315 and 350, Handbook 9, should be followed concerning the disconnecting and reconnecting of wire wrapped connections.

2.2 Other Preparation - Remove affected wire connections. Remove as many plug-ins as necessary for access to the connector in question. Place protective cover on shelf to catch falling pins. Wear safety glasses.

3. INSTALLING TOOLS

3.1 Tool set 545 (Pg8) for repair of pins and connector housings. See specific supplies/tools therein for the "White" and "Gray" Winchester KS21479 connectors. Do not mix the terminal pins of the "White" and "Gray" Winchester connectors with the terminal pins of other connectors in the tool set. See Para. 4.311 Table A for replacement pin information.

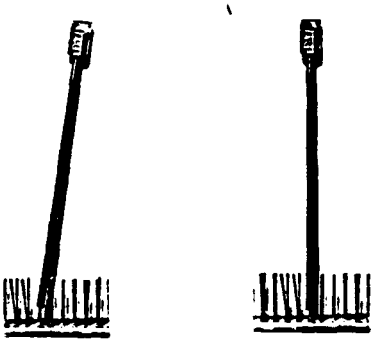
3.2 In addition to the tools and supplies primarily needed to replace connector pins or housings, the following common tools may be required.

3.21 Tools for disconnecting and reconnecting 26 or 24 gauge wire wrapped connections on .025 square pins.

Code	Description
R-4792	Wire Wrap bit for 24 gauge wire
R-4187	Wire Unwrapping Tool
R-4182	Wire Unwrapping Tool
R-4660	Wire Wrap bit for 26 gauge wire
R-4793	Sleeve for R-4792 Bit
R--	Wire Wrap Gun (Applicable)
R-4184	Sleeve for R-4660 bit
R-4473	Wire Stripper

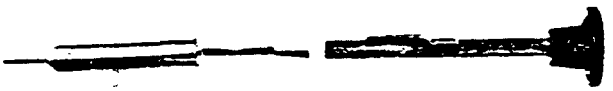
4. REPAIRING OR REPLACING TERMINAL PINS

4.1 Straightening Pins - The wrappable portion of a pin, if slightly bent so as to present a clearance defect, should be carefully straightened with either the R-4660 wire wrap bit, R-4791-DET 20 Pin Removal Tool, or R-4182 unwrapping tool. The tool used to straighten a terminal should encompass the entire wrappable portion of the pin. Excessive flexing of the terminal will weaken it.

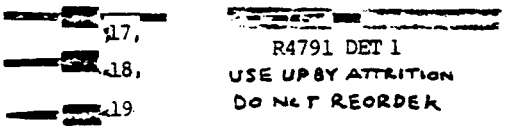


4.2 Removing Pins from PWB and Housing with R4791 DET 20

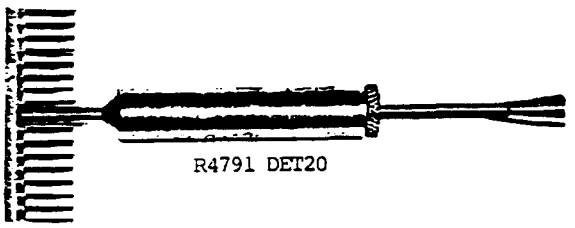
4.21 R-4791DET20 is a "universal" type pin removal tool which can be used to remove pins of any length, including pins broken at the "compliant" portion. R-4791 DET20 replaces R-4791DET1, 17, 18, 19.



R4791 DET20



4.22 If the wrappable portion of a pin is intact and is not bent, place the R4791-DET 20 tool fully on the terminal until the tool rests on the backplane. Keeping the tool axially aligned with the terminal, firmly grasp and push the pin removal tool until a sharp, snap-hammer action drives the pin loose. Pull the pin at the contact end, from the connector housing, with R-4476 longnose pliers. A protective cover should be on the shelf.



R4791 DET20

4.23 If the wrappable portion of a pin is broken close to the compliant section, use R-4791-DET 20 as in 4.22 above.

4.3 Inserting Replacement Pins

4.31 R-4791-DET 2 insertion tool with "BLUE" color is used to insert single contact pins into the KS-21479 "WHITE" Winchester connectors. R-4791-DET22 insertion tool with "RED" color is used to insert single contact pins in to the KS-21479 "GRAY" Winchester connectors. IMPORTANT: The correct insertion tool must be used for WHITE and GRAY connectors. When it is required to insert a contact pin in an extreme left or right row of connectors, adjacent to the metal frame of the bank where clearance prevents use of the tools, an alternate pin insertion procedure is described in Para. 4.321.

R4791 DET2
BLUE for WHITE CONNECTOR

R4791 DET22
RED for GRAY CONNECTOR

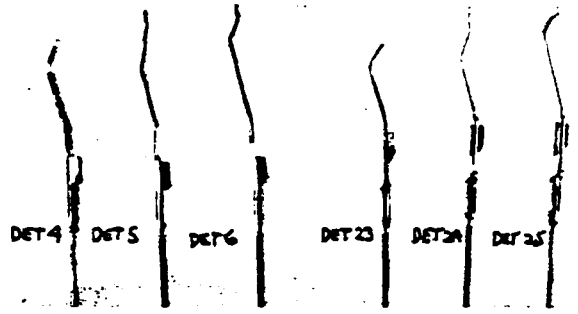
4.311 Replacement pins for KS21479 "WHITE" and "GRAY" connectors on RICHMOND backplanes (for D4, DCT, SLC96).

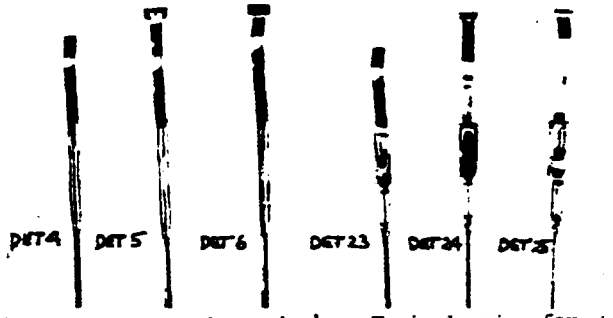
TABLE A

R-4791 DETAIL	ORDER NO.	TYPE PIN	CONNECTOR LIST NOTES
WINCHESTER KS21479 "WHITE" CONNECTOR			
4	23479104	SHORTING	L-7,10,11,12, 21,22
5	23479105	LATE MAKE	L-6,7,10,11,12, 21,22
6	23479106	EARLY MAKE	L-6,7,10,11,12, 21,22
27	23479127	EARLY MAKE	L-8(HEAVY PLATE)
28	23479128	LATE MAKE	L-8(HEAVY PLATE)
31	2347131	EARLY MAKE	L-20(SHORT TAIL)
32	23479132	LATE MAKE	L-20(SHORT TAIL)
7	23479107	HOUSING	REPLACEMENT
WINCHESTER KS21479 "GRAY" CONNECTOR			
23	23479123	SHORTING	L-7,10,11,12, 21,22
24	23479124	LATE MAKE	L-6,7,10,11,12, 21,22
25	23479125	EARLY MAKE	L-6,7,10,11,12. 21,22
29	23489129	EARLY MAKE	L-8(HEAVY PLATE)
30	23479130	LATE MAKE	L-8(HEAVY PLATE)
33	23479133	EARLY MAKE	L-20(SHORT TAIL)
34	23479134	LATE MAKE	L-20(SHORT TAIL)
26	23479126	HOUSING	REPLACEMENT

4.32 Using Tool R-4791 Details 2 and 22

a) Select the identical type of terminal pin to replace the faulty pin which has been removed from the Backplane Connector Housing. See Para 3.1, 4.311(TABLE A)



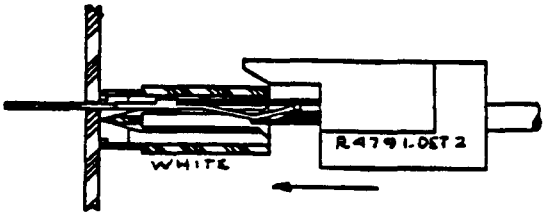


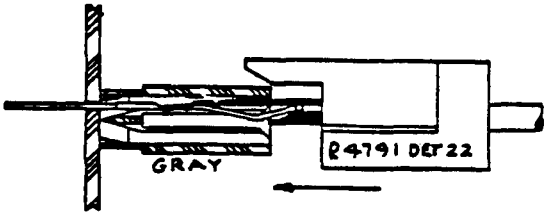
Typical pins for "WHITE" CONNECTOR

Typical pins for "GRAY" CONNECTOR

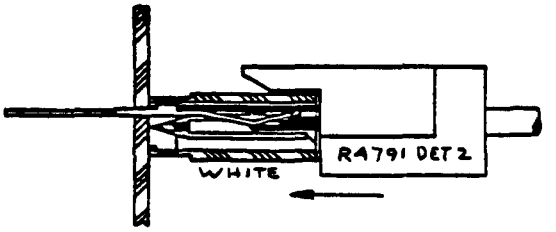
b) Place the new pin in the correct insertion tool R-4791 DET 2, BLUE for WHITE connector; R-4791 DET 22, RED for GRAY connector) as shown in the following sketch. Be sure the pin is lined up with the tool; that the pin is held snugly in the tool; and that the pin shoulder contacts and rests squarely on the tool. If pin cannot be held in tool, see Par. C.

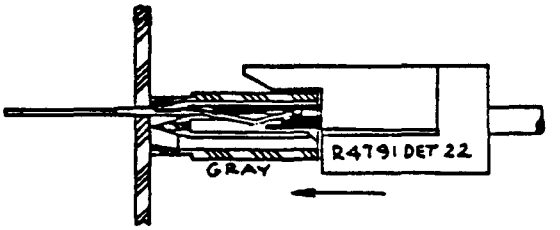
c) Place pin into the connector housing channel from which the defective pin was removed. The pin and insertion tool should be positioned as in the following sketch. The tool must bottom on and be perpendicular to the connector housing.



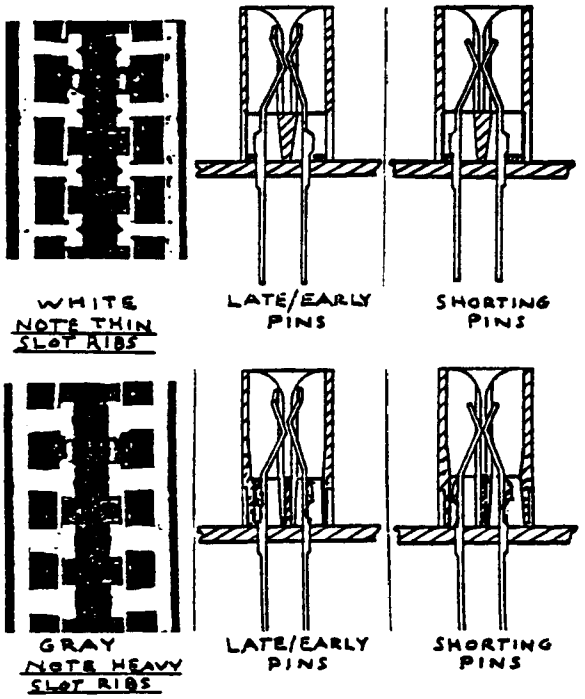


d) Firmly grasp and push the pin insertion tool until a sharp, snap-hammer action drives the pin into the backplane Printed Circuit Board.





e) Check that the terminal pin has been properly set, and that the pin contact is correctly aligned with respect to both the connector housing and the other pin contacts in the housing. The contact end of pin should touch the Housing Rib Shoulder as shown (except for shorting pins).



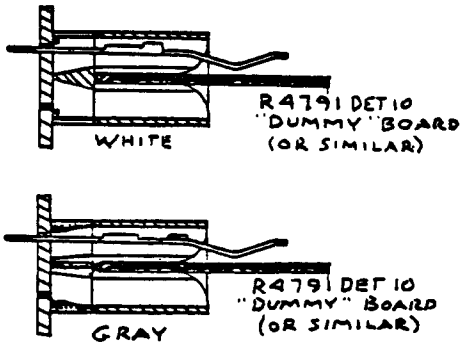
4.321 Alternate Pin Insertion Method. Due to possible interference between the R-4791 DET 2 or R-4791 Det 22 insertion tools and the bank frame, insertion of pins in the extreme end blocks may require the following alternate method to para. 4.32:

a) If there are no damaged terminal contacts to prevent entry of the R-4791 DET 10 seating wedge (non-conductor "dummy" board), push it into the connector. However, if either any early or late make contacts are damaged and will interfere with "dummy" board entry, remove the damaged terminal first. If a shorting terminal is removed for any reason, without a "dummy" board inserted, the mating or opposite shorting terminal should also be removed; this will allow "dummy" board entry without possible damage to the mating shorting terminal.

b) Insert R-4791 DET 10 seating wedge ("dummy" board) into the connector. See Note in (d).

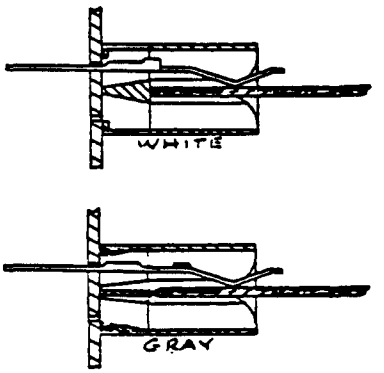
c) Select the appropriate new terminal pin which will replace the faulty pin that has been removed. See Note in (d). See Para. 3.1 and 4.311.

d) By hand, carefully place and position the new pin into the connector housing slot from which the faulty pin was removed. See Note below.



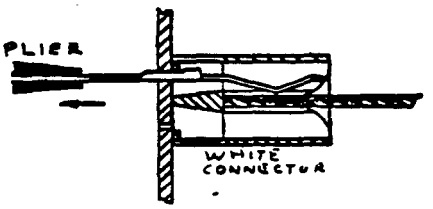
NOTE: If a connector is in a confined location, it may be necessary to change the above sequence so that the terminal pin is placed in the connector before the "dummy" board. If this modified sequence is used for "shorting" terminal pins, the two opposing shorting pins should be inserted into the connector first; the "dummy" board should then be inserted between the shorting terminals. If necessary, a smaller version of the "dummy" board may be used.

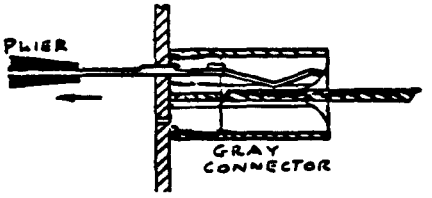
e) Carefully slide the pin, so as not to distort it, through the hole in the Backplane Printed Circuit Board until the wrappable portion protrudes on the wiring side. Do Not Press the Pin through the hole.



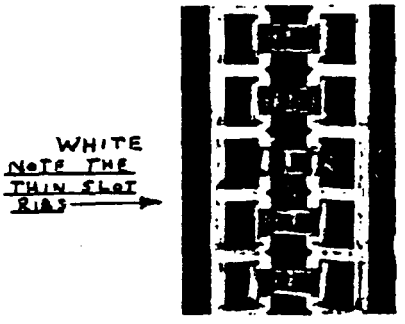
f) Using R-4476 longnose pliers, carefully grasp and pull the protruding wrap end of pin straight, until the compliant section has been pulled through the hole and the pin is firmly seated.

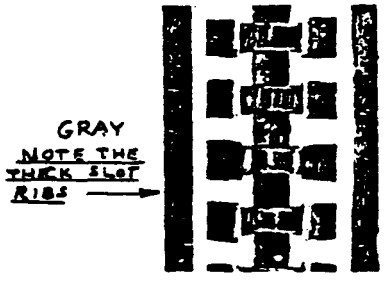
CAUTION: Do not pull any more than necessary to seat the pin; avoid flexing or bending the pin.





g) Check that the contact pin is properly aligned with respect to the housing, and the other pins contacts in the connector. The contact end of pin (except for shorting pins) should touch the housing rib shoulder as shown.





5. REMOVING OR REPLACING CONNECTOR HOUSING R-4791 DET7

Extreme caution will be required if it is necessary to remove or replace a Backplane Connector Housing. R-4791 DET3 Housing removal tool is designed to extract the connector housing.

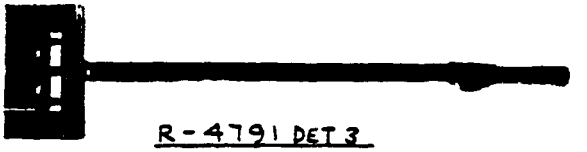
5.1 Working on Connector Housing with Terminals and Wiring Intact:

a) Determine first that it would be beneficial to leave the terminals and/or wiring in place.

b) Remove surrounding plug-in units for free access to the connector Housing in question.

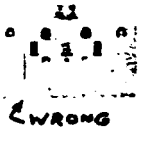
c) Be sure that no adjacent items will be damaged when R-4791 DET 3 removal tool is manipulated.

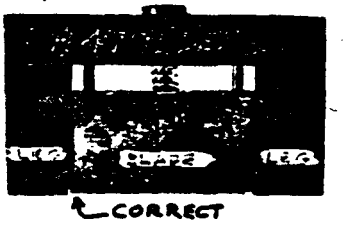
5.11 Using R-4791 DET 3, Housing Removal Tool



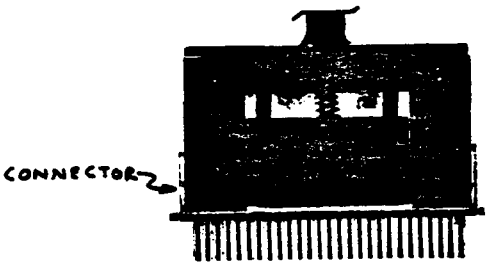
R-4791 DET 3

a) It is important that the tool blade not extend beyond the legs, to avoid possible damage to the Backplane PCB. With the CAM handle in straight-up position, adjust the lower edge of the blades to be almost flush with (but does not extend beyond) the legs of the tool. This is done by turning the CAM handle clockwise or counter-clockwise as required. NOTE: On updated versions of this tool it should not be necessary to make this adjustment because the blade-leg position is preset. (Caution - check that this preset condition is correct).

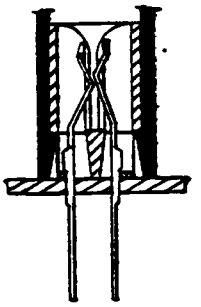




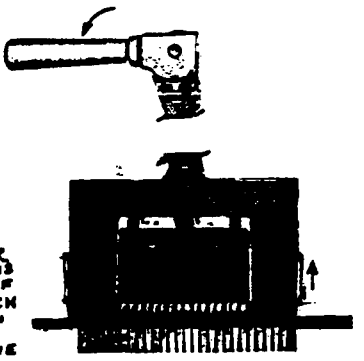
b) Center the tool on the connector housing; press the tool uniformly over the Housing, until the tool rests on the Backplane Board.



c) The inside blade "Lip" or "Ledge" should be under the mating connector housing "LIP" or "Ledge" as in the following sketch.

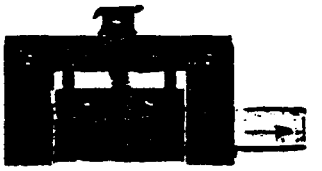


d) Lower the CAM handle to its limit, to pull the Connector Housing away from the Printed Circuit Board. The Housing should be carefully extracted from the PCB; extreme caution taken so as not to disturb, displace or damage the terminal contacts.



e) Remove any damaged or defective terminals before the Housing is replaced. Insert replacement terminals after the new Housing is in place.

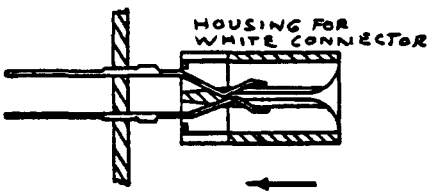
f) Remove the Housing from the tool by sliding sideways and pulling it out.

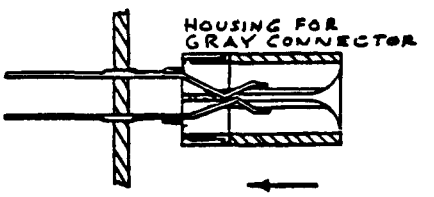


5.12 Installing Connector Housing R-4791 DET 7 With Pins in Place

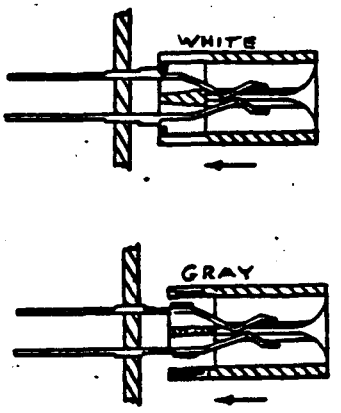
Extreme care is necessary when installing a new Housing, so that it is correctly positioned on the backplane PCB.

a) Carefully position and rest the Housing on the terminal contacts; check to see that the contacts are in the correct slots before continuing.

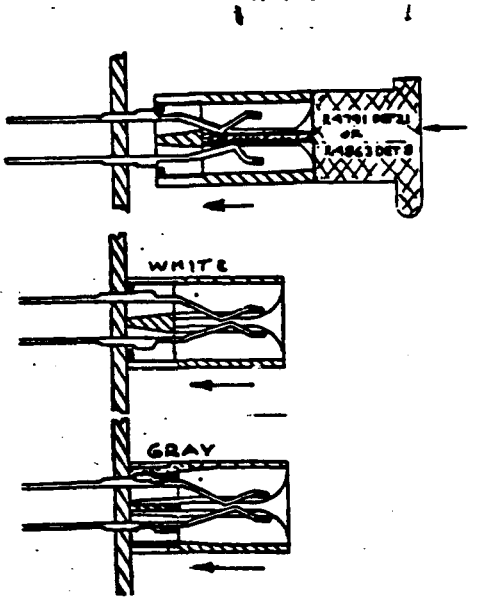




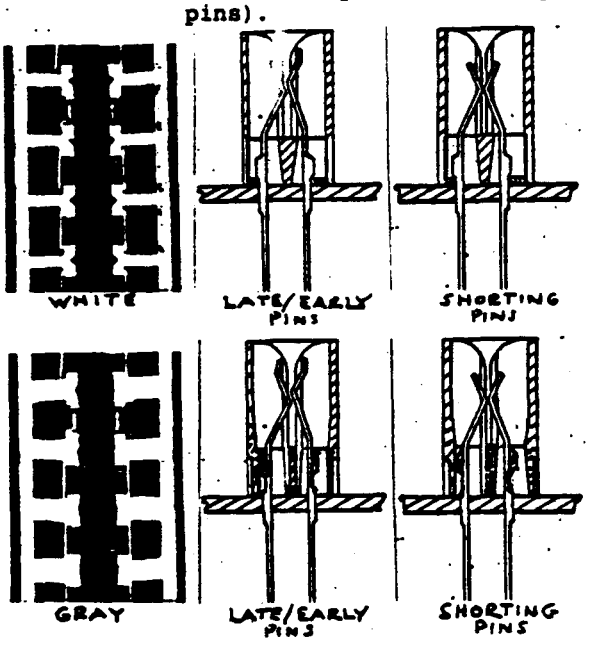
b) Carefully and uniformly press the Housing down over the terminal contacts until it rests on the compliant portion of the terminals. The housing will be about 3"/32 from the PCB. Before proceeding, check that each terminal contact is in its correct slot. If a pin has been bent or damaged and impedes the correct installation of the housing, it will be necessary to remove the Housing and pin. If the housing has not been damaged, it may be used again. A new pin can be inserted after the housing has been installed.



c) Use Housing Assembly Tool R-4791 DET 21 (or R4863 DET8) or a flat wood block. Carefully and uniformly tap or press on the Housing until it snaps past the shoulder of the compliant section of the terminals. The Housing should be resting flush on the PCB.



d) Check that each pin contact is properly positioned and aligned with respect to the Housing and the other pin contacts. The contact end of each pin should touch the slot rib shoulder as shown (except for shorting pins).



5.2 Installing Connector Housing Where Most or all Pins Must be Replaced.

a) Determine which of the terminals have contacts that are still in good shape. Leave these terminals in place, even if the wiring ends are damaged, to aid in installing a new housing.

b) Remove all other damaged pins.

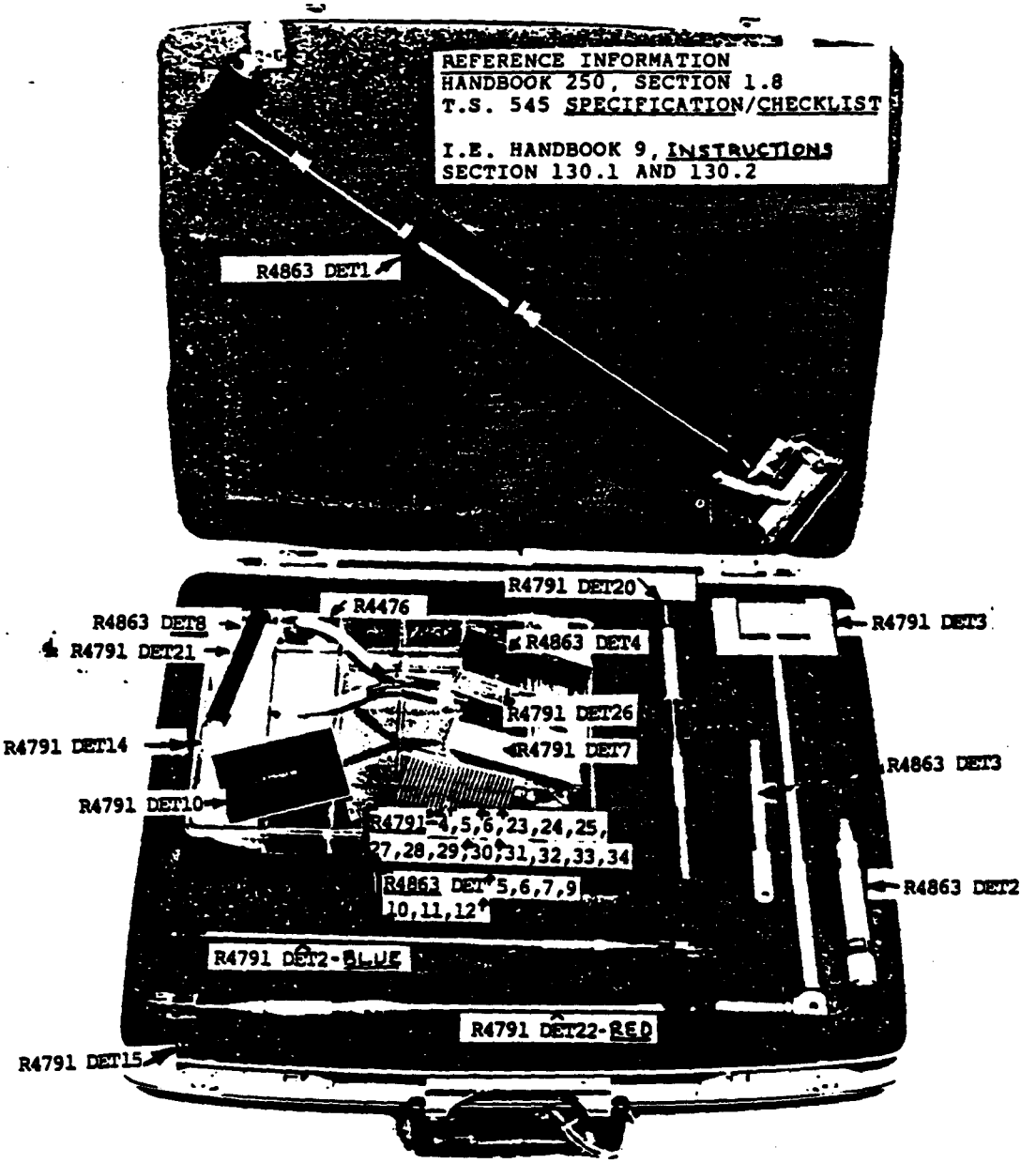
c) Remove connector housing as in Para. 5.

d) Install new connector housing as in Para. 5.12.

e) Replace the damaged terminals which first were removed, and then any damaged terminals (one at a time) which were left in place. Follow instructions in Para. 4.

f) Check the connector housing and terminals for position and alignment.

5.3 Reconnect wiring per HB9 requirements, Sections 310, 311, 312, 313, 314, 315 and 350.



T.S.545

Manager, Engineering Tranamission Products

REASON FOR REISSUE:
1. Major Revisions, Supercedes Section .130.1, 10/30/79.
2. To specify this section for the "White" and "GRAY" Winchester KS21479 connectors.