

MTC50 Connector Assembly and Installation Procedures

1. Purpose and Scope

This engineering standard covers the following procedures for Raychem MTC50 connectors:

- connector keying
- mating hardware installation
- insert installation and removal
- cable clamp installation
- panel mounting
- connector mating and unmating

These procedures are applicable to the following components:

- MTC50 connector shells, 1-inch and 2-inch, plug and receptacle.
- MTC50 connector inserts, 1-inch and 2-inch, pin and socket, **A** and **B** types.
- MTC50 boxmount connectors: pin and socket types.
- Any MTC connector shells using MTC50 style mating hardware.

2. References

None required.

3. Tools

1. 7/64-inch hex key.
2. CE-1603400 torque driver, 9 inch-pound capacity, with 7/64-inch hex key tip.
3. CE-1605300 torque driver, 15 inch-pound capacity, with 7/64-inch hex key tip.
4. D-659-0001 insert removal tool (plastic).
5. CE-1201900 insert removal tool (metal).
6. Needle-nose pliers.
7. Phillips screwdriver, #1 tip.

4. Materials

None required.

5. Procedures

Connector components referred to as "inserts" in this document may be termed "wafers" in other documents. The terms "insert" and "wafer" refer to the same MTC connector components.

5.1 Installing and Removing Shell Keying Pins

5.1.1 Keying Combinations

There are 64 possible keying combinations using rectangular and triangular keying pins. Figure 1 illustrates the keying pin positions and suggested code designations for the keying combinations.

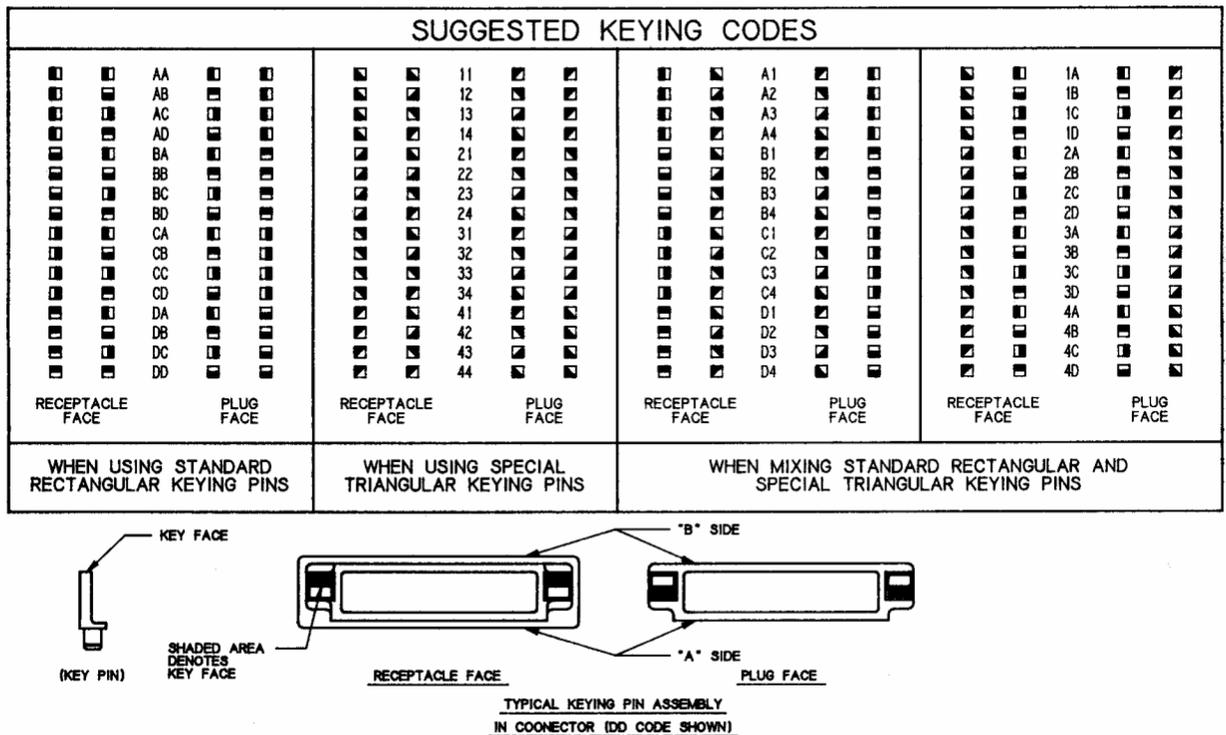


Figure 1. Keying Combinations and Suggested Codes

5.1.2 Installing Keying Pins

To insert the keying pins, push them straight into their square recesses (in the connector mating face) using needle-nose pliers (Figure 2).

- Make sure that the projecting tabs are in the keying positions specified on the applicable drawing (paragraph 5.1.1).
- Make sure the keying pins are fully seated into their recesses.
- Minor surface scratches or nicks caused by the pliers are acceptable in triangular keying pins.

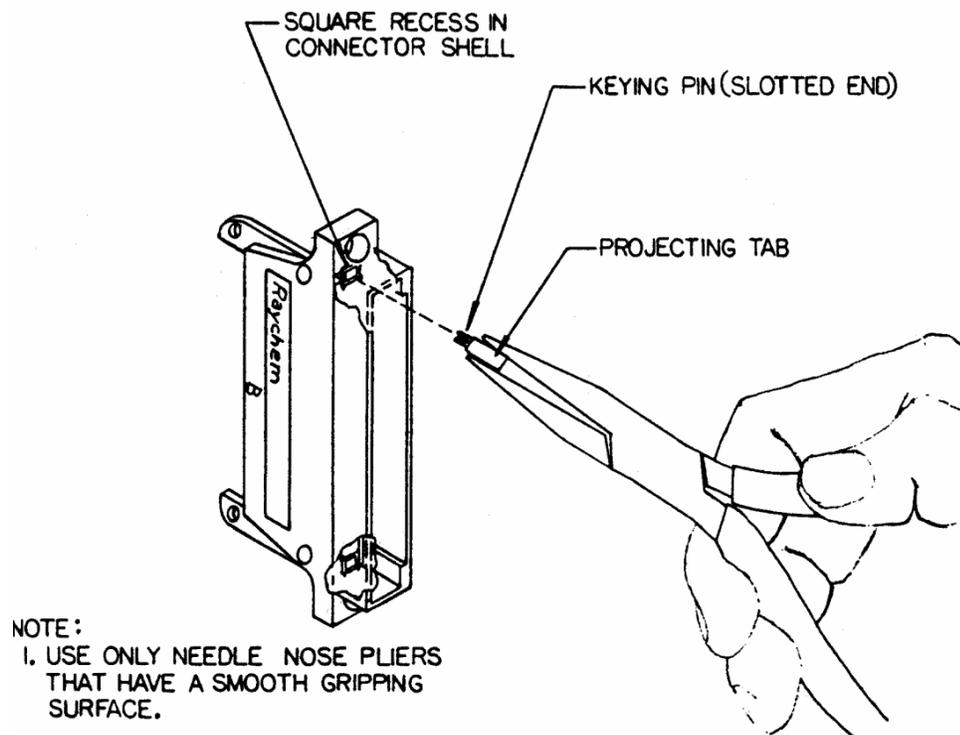


Figure 2. Keying Pin Insertion

5.2 Installing Mating Hardware on Receptacles That Are Not Panel Mounted

5.2.1 General Information

Mating hardware can be installed on the receptacle shells either before or after the inserts are installed in the shells.

5.2.2 Procedure

Install three panel washers, one retainer bushing, and one cap screw and lockwasher on each side of the shell (Figure 3).

- Torque requirement is 14 to 16 inch-pounds (use tool CE-1605300 or equivalent).
- Use only the hardware supplied with the connector.

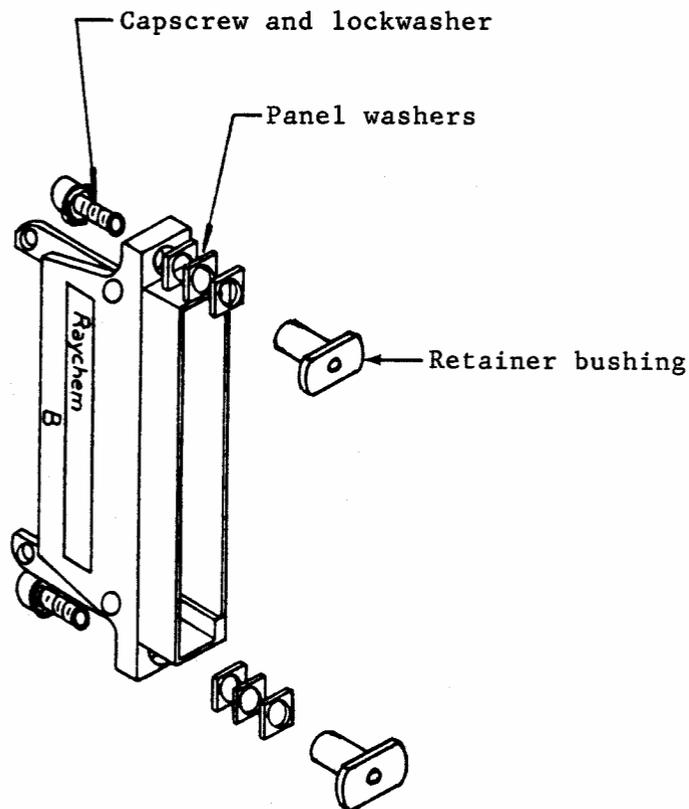


Figure 3. Mating Hardware Installation

5.3 Inserting Inserts into Shells

5.3.1 General Information

1. Inserts can be inserted **only** into unmated shells.
2. The following insert types can be inserted into either a plug or a receptacle shell: pin inserts, socket inserts, dummy inserts.
3. Inserts and shells are keyed to assure proper assembly (Figure 4).
 - **A** inserts must be inserted into the **A** side of the shell, so that the single key meshes with the single keyway.
 - **B** inserts must be inserted into the **B** side of the shell, so that the double key meshes with the double keyway.
4. Inserts for each shell must be inserted together as a pair.

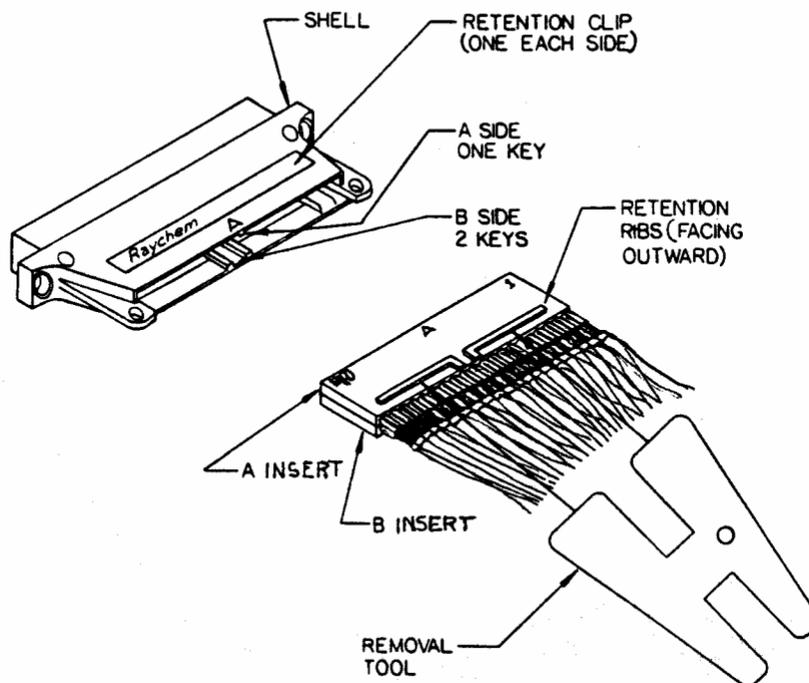


Figure 4. Installing Inserts into Shell

5.3.2 Procedure

1. Position the two inserts evenly together with their retention ribs facing outward.
2. Orient the **A** insert toward the **A** side of the shell and the **B** insert toward the **B** side of the shell (Figure 4).
 - When the insert is properly oriented, the keys in the shell and the keyways in the insert retention ribs will match.
3. Push the inserts into the shell until the retention clips click into place
 - If an insert is unterminated or if the wires are not rigid enough to push the insert into place, use removal tool (D-659-0001) to push against the retention ribs of the insert until the insert clicks into place.
 - If you are inserting a dummy insert, use the D-659-0001 removal tool to push it into place.
4. Pull gently on the wires to make sure that both inserts are seated and locked into place.

5.4 Installing Cable Clamp

When a cable clamp is required, install it using the hardware provided (Figure 5).

- (Round wires only) Before tightening clamp, dress wires evenly across the resilient portion of the clamp.

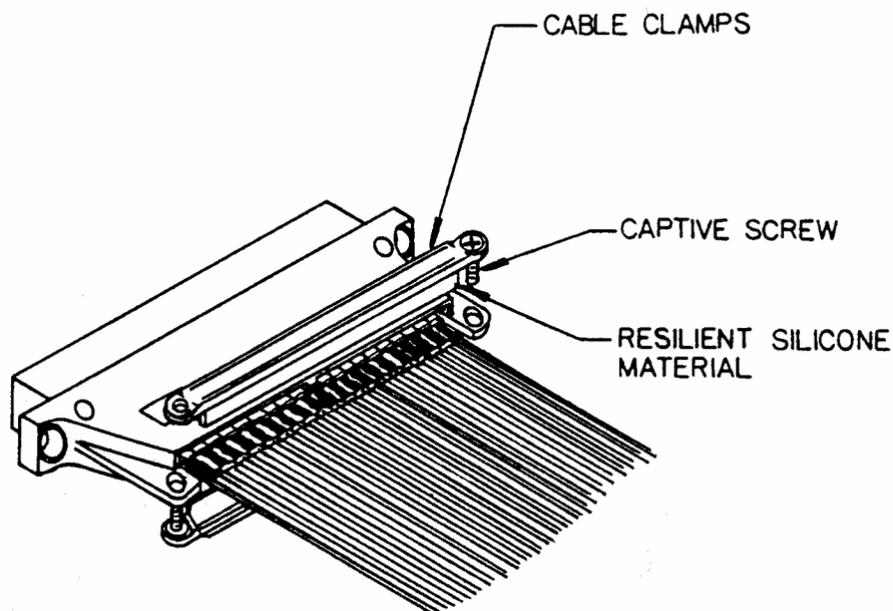


Figure 5. Cable Clamp Installation

5.5 Panel Mounting of Receptacle Shells

5.5.1 General Information

1. All receptacle shells can be back-mounted on panels of the thicknesses listed in Table II.
 - For panel cut-out dimensions, see connector specification control drawing.
2. If two or more receptacle connectors are panel mounted with their flat sides together, and cable clamps are used, inserts and cable clamps must be installed before the connector is mounted on the panel.

5.5.2 Procedure

1. Measure the panel thickness, and refer to Table II to determine the number of panel washers required.
 - Panel thicknesses not listed in Table II are not recommended.

Table II. Panel Washer Selection

Panel Thickness	Number of Washers
No panel	3
0.031 - 0.036 inch (0.79 - 0.91 mm)	2
0.062 - 0.067 inch (1.57 - 1.70 mm)	1
0.093 - 0.097 inch (2.36 - 2.46 mm)	0

2. Mount the receptacle shell as shown in Figure 6, using the required number of washers.
 - Use the 7/64-inch hex key for tightening the cap screw. Torque requirement is 14 to 16 inch-pounds (use tool CE-605300 or equivalent).
3. Make sure that the distance between the retainer bushing and the front of the receptacle shell is 0.178 inch or more, as illustrated in Figure 6.

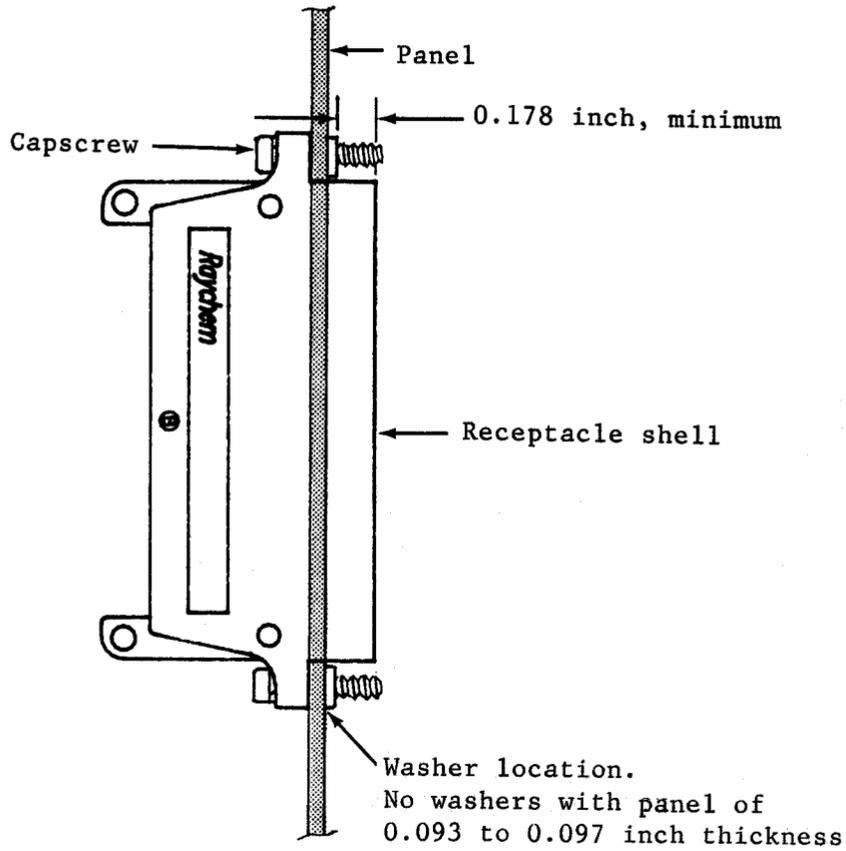


Figure 6. Panel Mounting Details

5.6 Mating and Unmating of Connectors

5.6.1 Prerequisites for Connector Mating

Before attempting to mate connectors, make sure that the following prerequisites are met:

1. Shell keying: Both shells must be keyed according to the same keying code (see Section 5.1).
2. Contact types: Intermating contacts must be opposite types, except for dummy inserts. Pin contacts intermate only with socket contacts.

5.6.2 Connector Mating

Mate connectors as follows:

1. Insert the plug shell into the receptacle shell.
 - Shells are polarized, and will go together only one way.
2. Engage both jacking sockets one full turn.
3. Alternately turn jacking sockets approximately one turn at a time until both are fully engaged. Torque requirement is 9 to 10 inch-pounds (1.02 to 1.13 Newton-meters). Use tool CE-1603400 or equivalent.

CAUTION

Less than required torque may result in lack of sealing and loosening during vibration. Greater than required torque may result in damage to the interface or adhesive bonds.

5.6.3 Connector Unmating

Unmate connectors as follows:

1. Loosen both jacking sockets one full turn.
2. Loosen the two jacking sockets until the connector halves can be separated.
 - Alternate between the two sides, turning the jacking sockets one or two turns per side.
3. Remove the plug shell from the receptacle.

5.7 Removing Inserts

5.7.1 General Information

Inserts can be removed only from unmated shells.

5.7.2 Removing Inserts from Terminated Connectors

1. Remove cable clamp, if present.
2. Insert the D-659-0001 removal tool into the rear of the shell on either **A** or **B** side (Figure 7).
3. Push the removal tool in until it slides past the retention clip and bottoms out inside the shell.
4. Remove the insert next to the removal tool by pulling on the wires.
5. The remaining insert can be removed without the tool.

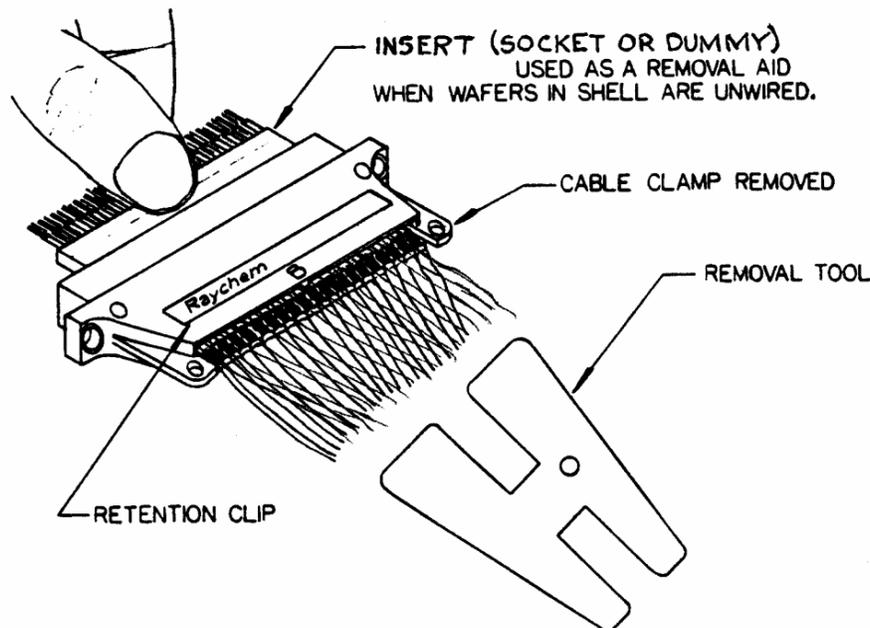


Figure 7. Use of Insert Removal Tool

5.7.3 Insert Removal Procedure for Unterminated Inserts

1. Insert the D-659-0001 removal tool into the rear of the shell on either **A** or **B** side.
2. Use a socket insert or a dummy insert to push the insert out of the shell from the mating end (Figure 7).

NOTICE

THE INFORMATION GIVEN HEREIN, INCLUDING DRAWINGS, ILLUSTRATIONS AND SCHEMATICS WHICH ARE INTENDED FOR ILLUSTRATION PURPOSES ONLY, IS BELIEVED TO BE RELIABLE. HOWEVER, RAYCHEM MAKES NO WARRANTIES AS TO ITS ACCURACY OR COMPLETENESS AND DISCLAIMS ANY LIABILITY IN CONNECTION WITH ITS USE. RAYCHEM'S OBLIGATIONS SHALL BE ONLY AS SET FORTH IN RAYCHEM'S STANDARD TERMS AND CONDITIONS OF SALE FOR THIS PRODUCT AND IN NO CASE WILL RAYCHEM BE LIABLE FOR ANY INCIDENTAL, INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE SALE, RESALE, USE OR MISUSE OF THE PRODUCT.

USERS OF RAYCHEM PRODUCTS SHOULD MAKE THEIR OWN EVALUATION TO DETERMINE THE SUITABILITY OF EACH SUCH PRODUCT FOR THE SPECIFIC APPLICATION.