

Figure 1

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**1. INTRODUCTION**

Each Crimp Quality Monitor Applicator consists of a *Standard Heavy Duty Miniature Applicator*, a *modified ram cap assembly*, which contains a wiring shroud, a printed circuit board, and gaskets; and a *ram assembly* containing a sensor, a flexible film cable assembly, and special hardware for connecting the applicator to the Crimp Quality Monitor. See Figure 1.

The applicators are powered by terminating units listed in Figure 2.

This applicator instruction sheet contains information concerning End- and Side-Feed Type Heavy Duty Miniature Quick-Change Applicators used with the Crimp Quality Monitor Assembly 764632. These instructions are designed to supplement the standard side- and end-feed type applicator instruction sheets shipped with the applicator. Refer to the applicator assembly sheet shipped with the applicator for recommended spare parts.

Refer to the Customer Manual (409-5804) shipped with the Crimp Quality Monitor for information concerning Crimp Quality Monitor Kit 765640.

**NOTE** Pay particular attention to the **NOTE**, **CAUTION**, and **DANGER** statements found in the machine manuals listed in Figure 2, the *Crimp Quality Monitor Manual (409-5804)*, and the applicator instructions shipped with the *Crimp Quality Monitor applicator (listed on the applicator assembly drawing)*.

Refer to Paragraph 7 for a description of document revision.

**2. INSTALLATION**

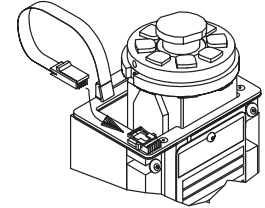
In order for the Crimp Quality Monitor applicator assembly to operate properly with a Crimp Quality Monitor, the applicator assembly must be present and in good working order. If the applicator or the monitor are operating incorrectly, contact a Field Service Specialist for diagnostic measures.

**NOTE** Save the original shipping crate for returning the applicator to Tyco Electronics.

1. Install the applicator according to the instructions packaged with the Heavy Duty Miniature Applicator and the termination machines. Once installed, the applicator must be connected to the monitor.

**NOTE** Be sure there is be a cable running from a MINI-DIN connector on the Modified Ram Cap Assembly to a subminiature D male connector on the free end of the cable.

**NOTE** Be sure to mate the connector on the flexible film cable assembly with the printed circuit board before operation.



2. Mate the subminiature D male connector on the end of the cable to the appropriate female connector located on the back panel of the Crimp Quality Monitor. See Figure 3.

**3. OPERATION**

Refer to Crimp Quality Monitor Manual 409-5804 for proper operating instructions.

**NOTE** Recalibrate the monitor after removing and replacing the applicator in the Terminating Unit, and after any adjustments to the applicator. Refer to Customer Manual 409-5804 for Crimp Quality Monitor calibration instructions.

**4. ADJUSTMENTS**

**4.1. Standard Applicator Adjustments**

Refer to the standard applicator instructions referenced on the applicator assembly drawing for:

- Wire Crimp Adjustments
- Insulation Crimp Adjustments
- Terminal Strip Feed Adjustments
- Strip Guide Plate and Feed Pawl Adjustment
- Strip Guide Adjustment

TERMINATING UNIT	PART NUMBER	MANUAL
AMP-O-LECTRIC* Model KII Machine (Manual Adjust)	852070	409-5792
AMP-O-LECTRIC Model KIIA Machine (Auto Adjust)	852070	409-5792
Model TII Terminating Unit (Manual Adjust) for the AMPOMATOR* IV-A Machine	852680	409-5756
Model TIIA Terminating Unit (Auto Adjust) for the AMPOMATOR IV-A Machine	852680	409-5756
Model TII Terminating Unit (Manual Adjust) for the AMPOMATOR CLS II, LM Machines	853500	409-5755
Model TIIA Terminating Unit (Auto Adjust) for the AMPOMATOR CLS II, and LM Machine	853500	409-5755
Model TII Terminating Unit (Manual Adjust) for AMPOMATOR CLS III Machine	854395	409-5817
Model TIIA Terminating Unit (Auto Adjust) for AMPOMATOR CLS III Machine	854395	409-5817

Note: Call Tyco Electronics Service Products Business for additional terminating units.  
Figure 2

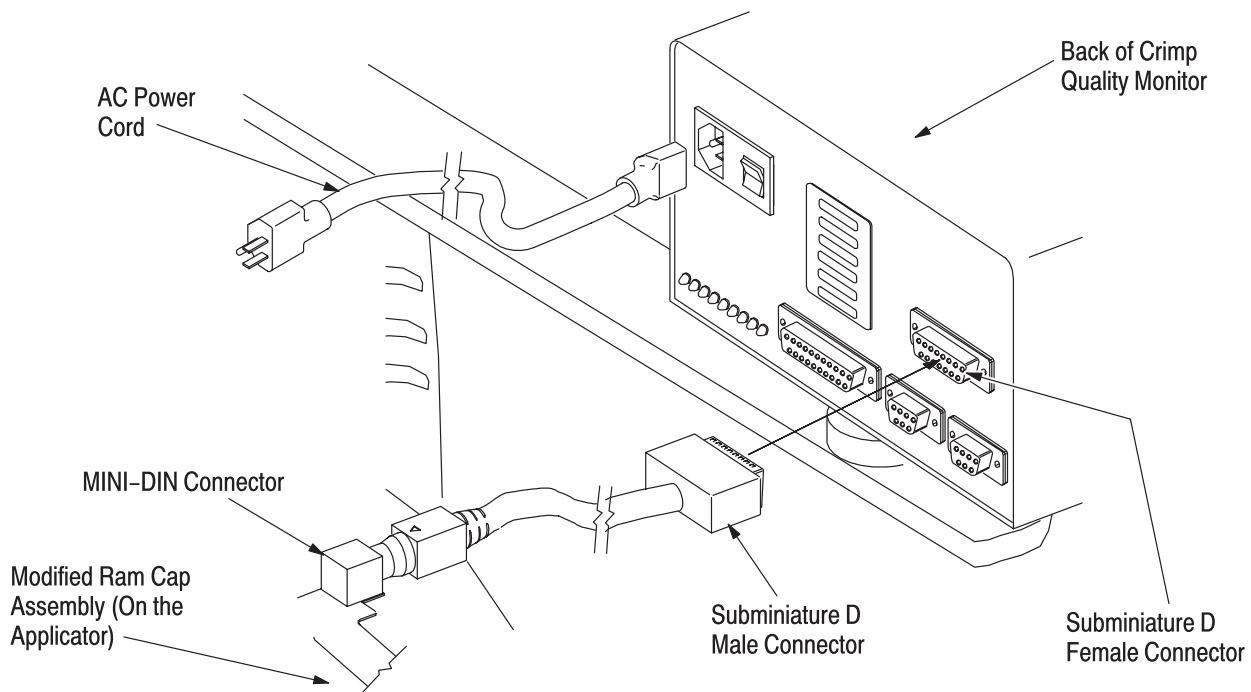


Figure 3

## 4.2. Height Sensor Switch Adjustment

### NOTE



*THIS ADJUSTMENT IS SET PRIOR TO SHIPMENT. FURTHER ADJUSTMENT SHOULD BE MADE ONLY BY QUALIFIED PERSONNEL UNDER THE GUIDANCE OF TYCO ELECTRONICS SERVICE PRODUCT BUSINESS.*

### 1. DISCONNECT MACHINE POWER.

### DANGER



*Be SURE the machine power is disconnected for these procedures.*

2. Install the applicator in the terminating unit and set up the applicator for the smallest wire crimp.
3. Bring the machine ram down until the applicator ram is in the **bottom-dead-center** position.
4. Check the Crimp Quality Monitor DIAGNOSTICS SENSOR screen for a Height reading of 900 – 1100. If the monitor screen does not indicate 900 – 1100, adjust as follows:
  - a. Remove two button head cap screws securing the applicator identification (data) plate. See Figure 4.
  - b. *Loosen* two pan head screws securing the sensor switch.
  - c. Watching the monitor diagnostics sensor screen, move the switch “up” to decrease the

height sensor reading; “down” to increase the height sensor reading until the height sensor reading is between 900 – 1100.

d. Tighten the pan head screws securing the sensor switch.

e. Replace the applicator data plate and secure with two button head screws.

5. Hand-cycle the machine to the **top-dead-center** position and connect power.

## 5. INSPECTION/MAINTENANCE

### 5.1. Daily Inspection/Maintenance

It is recommended that each operator be made aware of and responsible for the following daily maintenance steps.

1. Keep ram and ram path well lubricated. See applicator instruction sheet.
2. Ensure that foreign objects or material are not contacting the ram during any portion of the termination process.
3. Check the Height Sensor reading (Crimp Quality Monitor SENSOR DIAGNOSTICS menu) to be sure that the height sensor reading is in the proper range. Adjust if necessary according to Paragraph 4.2.
4. Inspect all wiring for any damaged cables or unmated connectors.
5. Clean all crimping areas in accordance with the instructions for the Heavy Duty Miniature Applicator.

**MODIFIED RAM  
CAP ASSEMBLY**

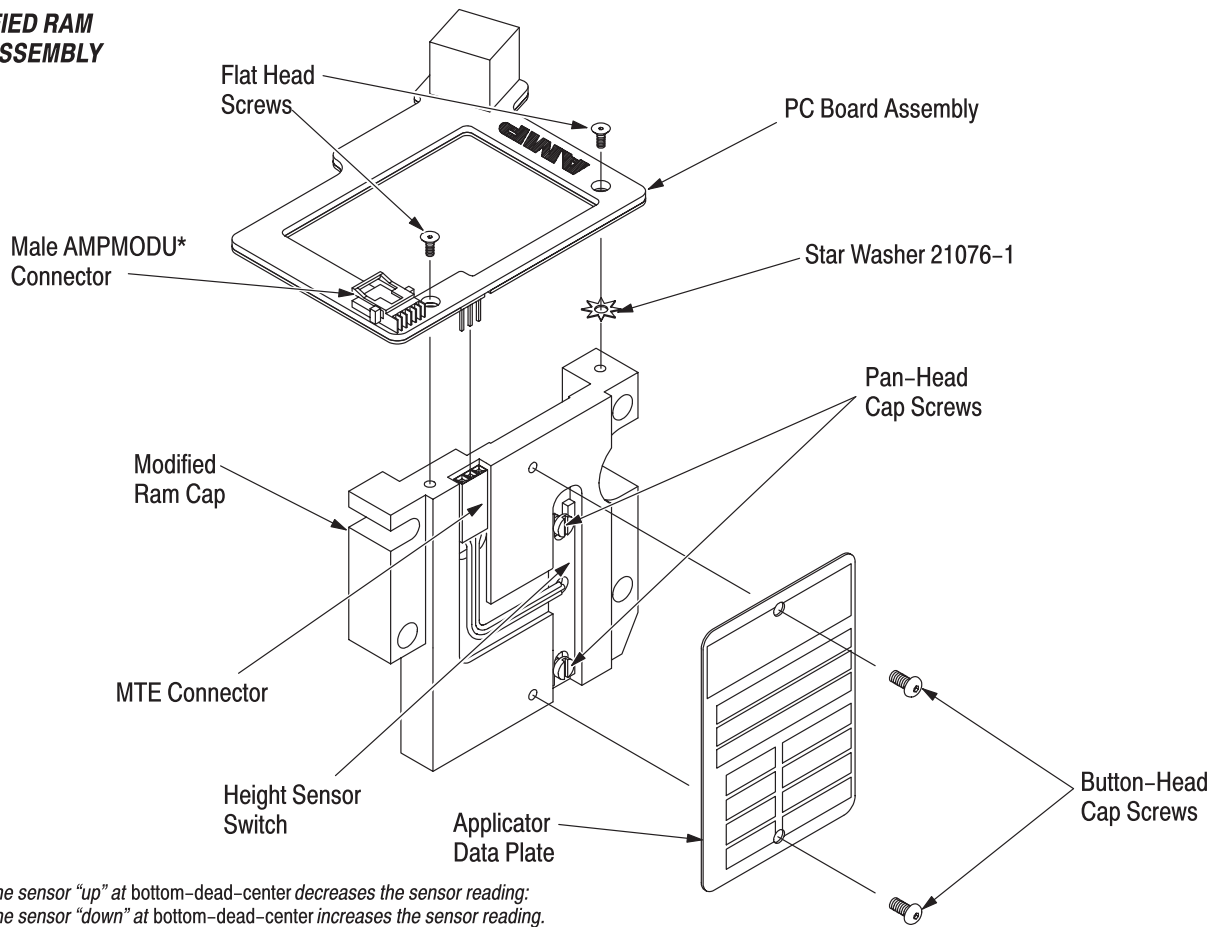


Figure 4



*Immersing the applicator in degreaser will damage the sensors.*

**5.2. Periodic Inspection/Maintenance**

Regular inspection should be performed by Quality Control personnel. A record of scheduled inspections should remain with the applicator and/or be supplied to supervisory personnel responsible for the applicators. Though recommendations call for at least one inspection a month, the inspection frequency should be based on the amount of use, working conditions, operator training and skill, and established company standards. These inspections should be performed in the following sequence.

1. Make sure all screws, die components, cables, and connectors are in place.
2. Check all parts for wear. Remove and replace worn components.
3. Inspect the crimp area for flattened, cracked, worn, or broken areas. If damage is evident, the

† Trademark of Velcro U.S.A., Inc.

tooling must be repaired before returning it to service. See Section 6, REPAIR/REPLACEMENT.

**6. REPAIR/REPLACEMENT**



*Do not remove or perform any maintenance on components not explicitly called for in this instruction sheet. Damage could be done to the entire Crimp Quality Monitor system.*

**6.1. Ram Tooling Replacement**

**A. Removal**

1. DISCONNECT ALL POWER to the terminating unit and to the Crimp Quality Monitor.
2. Disconnect cable at MINI-DIN connector.
3. Disconnect flexible film cable assembly from the modified ram cap assembly at VELCRO† material.
4. Unlock and disconnect the AMPMODU male connector located on the end of the flexible film cable assembly from the female connector on the modified cap assembly.
5. Remove the applicator from the terminating unit. Refer to the standard Heavy Duty Miniature

Applicator instructions listed on the applicator assembly drawing.

6. Release the feed finger and slide the ram out of the housing.



Do not damage or dislodge any wiring or foam filling attached to the ram body. Doing so may damage delicate sensors.

7. Loosen the setscrew from the ram block. See Figure 5.

8. Remove crimper bolt to remove tooling.

### B. Replacement



Do not damage or dislodge any wiring or foam filling attached to the ram body. Doing so may damage delicate sensors.

1. Replace tooling using applicator assembly drawings.
2. *LOOSELY* secure the crimper tooling to the ram using the crimper bolt.
3. Fold two thicknesses of paper over the anvil.
4. Release the applicator feed finger and slide the ram into the applicator housing over top of the anvil.

5. Tighten the crimper bolt as follows:

*Low Force Applicator: (Contains Belleville Washer and RED Heat-Shrink on Ram)*

- a. Tighten the crimper bolt until it touches the Belleville washer.



BE SURE there are no gaps between the ram and the crimper tooling.

- b. Tighten the crimper bolt an additional 1/8 to 1/4 turn *only*.



Tightening the bolt more than 1/4 turn can damage the Belleville washer.

*Standard Force Applicator: (Contains BLACK Heat-Shrink on the Ram — no Belleville Washer)*

Tighten the crimper bolt to  $6.8 \pm 1.1$  Newton •meters [60  $\pm$  10 inch pounds.]

6. Release the feed-finger and slide ram out of the applicator.
7. Tighten the socket setscrew (Figure 5) on the back of the ram.

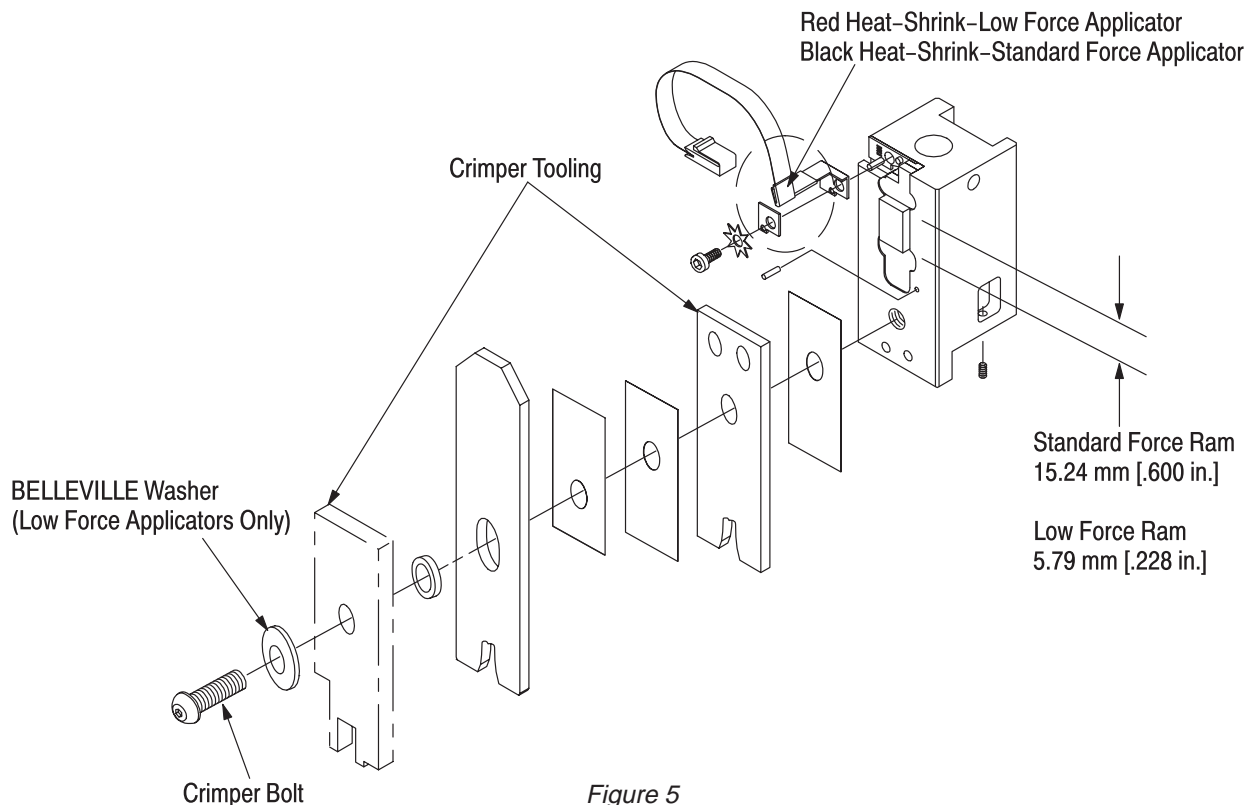


Figure 5



**6.2. Replacement of Ram Flexible Film Cable (FFC) Assembly**

1. DISCONNECT ALL POWER to the terminating unit and disconnect MINI-DIN connector from the applicator.
2. Remove that applicator from the terminating unit.
3. Remove the ram from the applicator.
4. Loosen the socket-head cap screw shown in Figure 6.
5. Remove the existing cable assembly.
6. Clean the contact area on the ram printed circuit board using a clean, dry, lint-free cloth.

correctly oriented, the pin on the ram should extend through the loop assembly and into the plate washer.

8. Tighten the socket head cap screw approximately 1.36 to 2.04 N•m [12 to 18 in.-lbs].

9. Insert the ram into the applicator.

10. Attach the VELCRO loop fastener to the flexible film cable so that it mates with the hook fastener on the applicator printed circuit board assembly.

11. Reconnect the FFC connector.

12. Verify the proper sensor output (0 to 300 bits) using the DIAGNOSTIC/SENSOR mode of the Crimp Quality Monitor. Hand cycle a crimp in this mode for further verification.

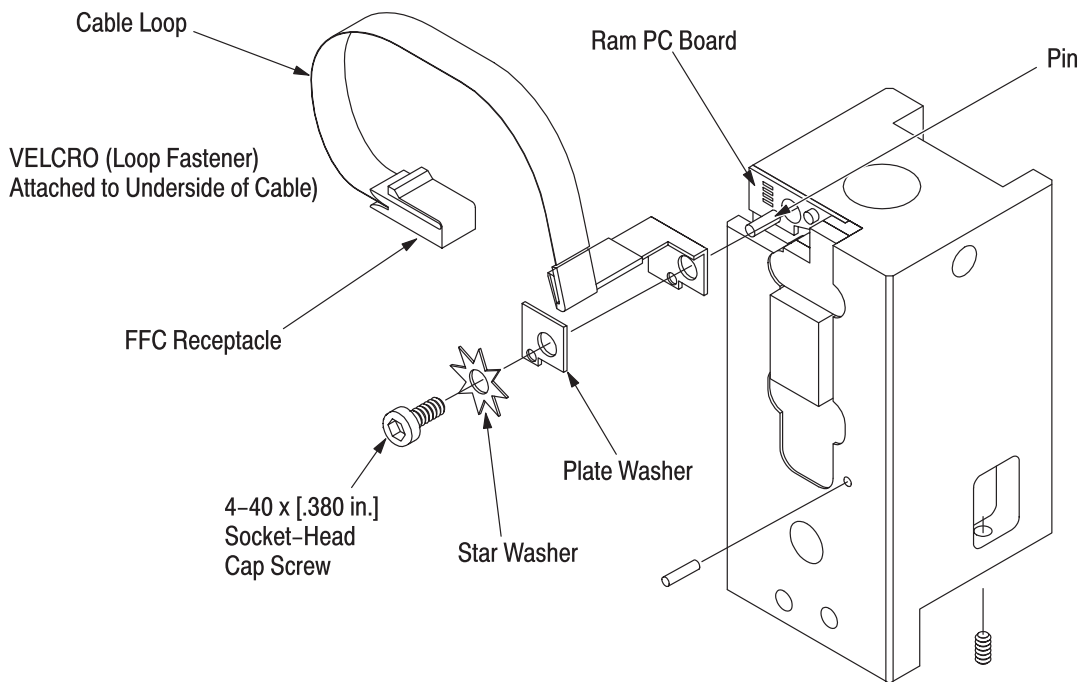


**CAUTION** Do not wipe the contact area of the cable assembly. The contact area is covered with a contact lubricant to prevent corrosion.



**NOTE** Refer to Customer Manual 409-5804 for Crimp Quality Monitor information.

7. Assemble the screw, washers, and new cable assembly to the ram as shown in Figure 6. When



PART NUMBER	FFC LOOP ASSEMBLY DESCRIPTION
354440-1	Standard Force Crimp Quality Monitor – Heavy Duty Mini Applicator
354440-2	Low Force Crimp Quality Monitor – Heavy Duty Mini Applicator
354440-3	Standard Force Crimp Quality Monitor – Stripper-Crimper Applicator
354440-4	Low Force Crimp Quality Monitor – Stripper-Crimper Applicator

Figure 6

**6.3. Replacement of Applicator Printed Circuit Board Assembly Part No. 856698-1**

1. DISCONNECT ALL POWER to the terminating unit and to the Crimp Quality Monitor.
2. Disconnect cable at MINI-DIN connector.
3. Disconnect flexible film cable assembly from the modified ram cap assembly at VELCRO material.
4. Unlock and disconnect the AMPMODU female connector located on the end of the flexible film cable assembly from the male connector on the modified ram cap assembly.
5. Remove the applicator from the terminating unit. Refer to the standard Heavy Duty Miniature Applicator instructions listed on the applicator assembly drawing.
6. Release the feed finger and slide the ram out of the housing.



*Do not damage or dislodge any wiring or foam filling attached to the ram body. Doing so may damage delicate sensors.*

7. Remove data plate by removing button-head cap screws securing the data plate to the applicator housing. See Figure 4.
8. Remove the flat head cap screws securing the printed circuit board assembly to the ram cap, carefully disconnect the three-position MTE connector from the printed circuit board, and lift off the printed circuit board assembly.



*Be sure to retain star washer (Part Number 21076-1).*

9. Carefully connect the three-position MTE connector to the new printed circuit board.
10. Position the printed circuit board assembly on the modified ram cap and secure with flat head screws.



*Washer (Part Number 21076-1) must be properly located to achieve proper grounding.*

11. Re-install the applicator data plate and replace the ram in the applicator housing.
12. Connect the flexible film cable assembly to the modified ram cap assembly.
13. Connect cable at MINI-DIN connector.

**6.4. Troubleshooting/Repair of Applicator Sensor Wiring**

The Crimp Quality Monitor requires continuous electrical flow through the force and position sensors on the applicator in order to acquire the necessary data points to analyze a crimp. If the electrical path is broken by a damaged connector or wire, the monitor will not be able to analyze the data in order to calibrate or report the crimp status.



*The following error messages could indicate a broken electrical path:*

- “NOT ENOUGH VALID POINTS” (Calibrate Mode)
- “INVALID CRIMP” (Run Mode)

To check the sensor wiring, proceed as follows:

1. Select DIAGNOSTICS from the Crimp Quality Monitor main menu.
2. Select 2-SENSORS from the DIAGNOSTICS menu.
3. Hand-cycle a crimp and observe FORCE and HEIGHT readings.
  - a. The force should start at a value between 0 and 300 and gradually increase to a value less than 4095 at bottom-dead-center and then gradually return to approximately the same starting value.
  - b. The height should start at a value between 2000 and 3000 and increase to a maximum less than 4095, then decrease to a minimum between 900 and 1100 at bottom-dead-center.



*The height sensor value should not go below 900 during this cycle. If necessary, refer to Section 4.2 for height-sensor adjustment.*

4. If the sensor values indicate a problem, test the cable between the Crimp Quality Monitor and the applicator (Sensor Cable Part No. 764639-1) with an ohmmeter for continuity per the values below; or replace the sensor cable and repeat Steps 1, 2, and 3.

SUBMINIATURE D CONNECTOR	MINI-DIN CONNECTOR
Position No. 7	Position No. 1
2	2
8	3
11	4
1	5
6	6
3	7
4	8
5	shield

## 6.5. Crimp Quality Monitor Applicator Return Procedure

**NOTE**

Keep the original shipping crate for returning the applicator to Tyco Electronics. **PACK THE APPLICATOR CAREFULLY.**

Crimp Quality Monitor Applicators can be returned to Tyco Electronics for evaluation and repair. Send the applicator to:

CUSTOMER REPAIR (01-12)  
TYCO ELECTRONICS CORPORATION  
1523 NORTH 4TH STREET  
HARRISBURG, PA 17102-1604

To insure prompt repair and return, all applicators returned should include a packing slip including:

1. Purchase order number for repair (if out of warranty).
2. Customer account number.
3. Customer contact (name and telephone).

4. Return shipping instructions.

**NOTE**

Customers will be contacted for approval of charges prior to billing and shipment. There will be a basic charge to assess any applicator, whether repaired or not (once the applicator is out of warranty).

## 6.6. Parts Replacement/Ordering Information

Refer to the applicator assembly drawings shipped with the applicator for **Recommended Spare Parts**. Order parts from:

CUSTOMER SERVICE (38-35)  
TYCO ELECTRONICS CORPORATION  
P.O. BOX 3608  
HARRISBURG, PA 17105-3608

## 7. REVISION SUMMARY

- Updated document to corporate requirements
- New format