MX64 Single Row Sealed Connector Reference Manual

REV 1 – Sept 27, 2004

Revision History

Revision Level	Publication Date
DRAFT	
REV 1	9-27-04

Table of Contents

Section 1

Product Introduction

Section 1:
MX 64™ Connectors

This reference manual contains information pertaining to the Molex 0.64mm connection system. The connectors mate to various sensors among General Motors, Ford And Daimler Chrysler products

There are multiple color coded keying options as defined by USCAR. In addition there are 3 different terminal options for individual OEM terminal preferences. These preferences are defined by Series Numbers below.

Molex Series 31402 = Tyco / Molex "GET"

Molex Series 31403 = Molex MX64

Molex Series 31404 = Yazaki Kaisan

For product ordering information, please contact your Molex Inside Sales Representative at (800)786-6539.

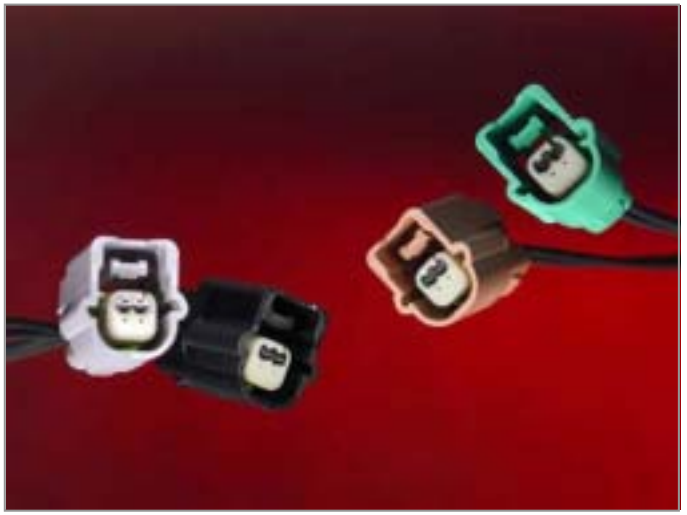
Section 2

Product Summary

Section 2:
MX 64™ Connectors

Single Row Sealed

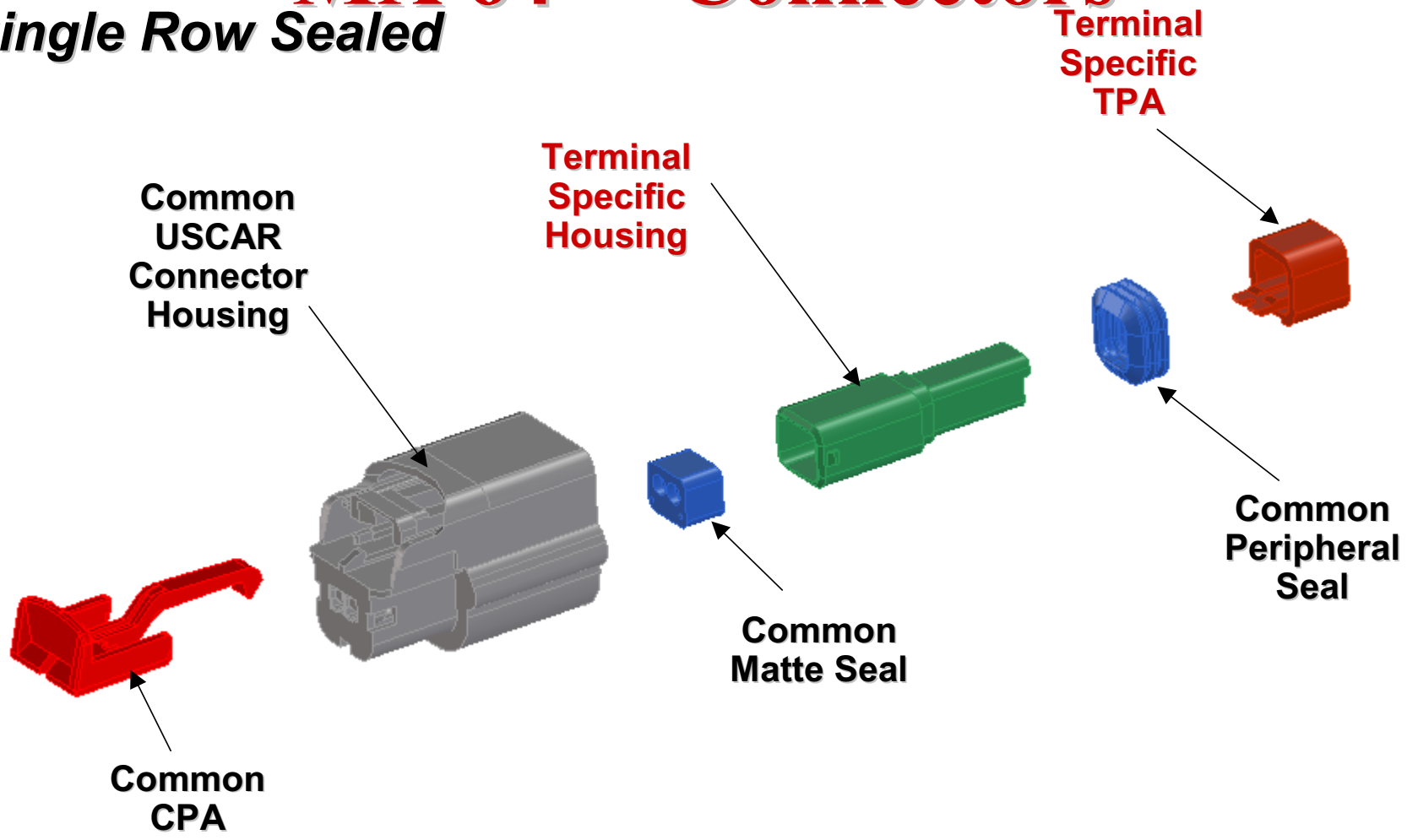
- **Connector features**
  - **Available in circuit sizes**
- **1x2, 1x3, 1x4, 1x5, 1x6, 1x8**
  - **Adopted as the new USCAR single row footprint**
  - **Will accommodate various terminal systems**
    - **MX64**
    - **Molex or Tyco GET**
    - **Yazaki Kaisan**
  - **18-22 AWG and .36-.83 mm² Metric Wire**
  - **CPA option**
  - **4 polarization options**
  - **Matte seal design**



- **Common connector housing**
  - **Can accept any terminal housing design**
  - **Molded circuit pegs can be left in during the Molex assembly process to seal voided circuits**
    - **Eliminates separate rear seal cover**

Section 2:
MX 64™ Connectors

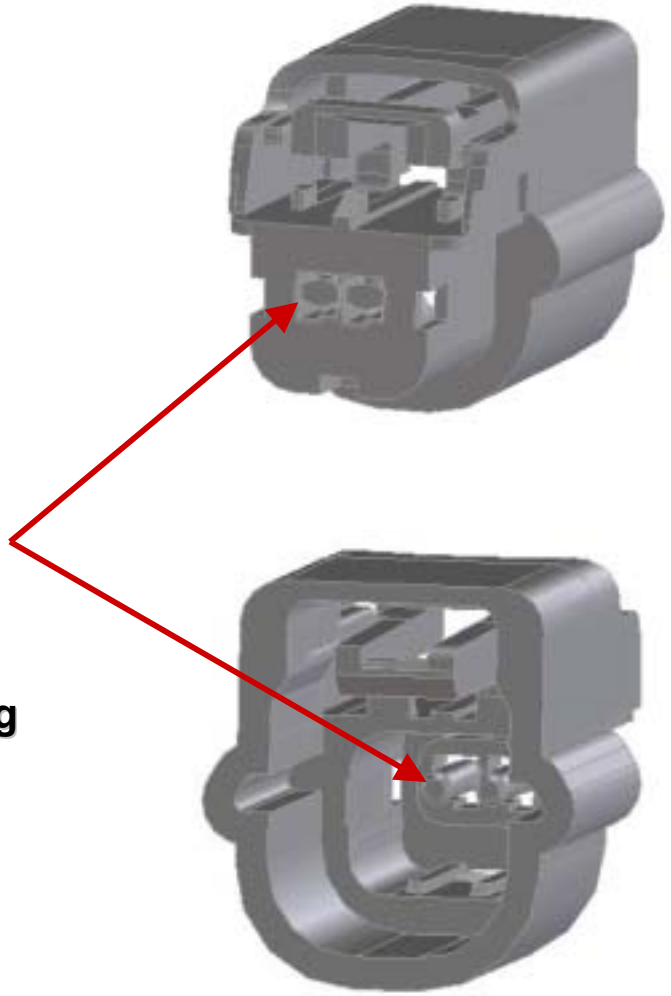
Single Row Sealed



Section 2:
MX 64™ Connectors

Single Row Sealed

- **Common connector housing**
  - **Eliminates separate rear seal cover**
  - **Can accept any terminal housing design**
  - **Molded circuit pegs can be left in during the Molex assembly process to seal voided circuits.**
    - **Allows for customer specific sealing patterns**



Section 2:
MX 64™ Connectors
Product Identification

MOLEX
PART
NUMBER

DATE CODE

XX XXX

DAY of the year
001 to 365

YEAR (last 2 digits)

Section 2:
MX 64™ Connectors
Part # legend single row sealed Female

3140X-X X X X

Seal Cover Configurations 0,1,2,3,4,5,6,7,8,9

CPA OPTION (0,1)
- 0 = Without CPA
- 1 = With CPA

Polarization Options (1,2,3,4)
- 1= USCAR Option A (BLACK)
- 2= USCAR Option B (GRAY)
- 3= USCAR Option C (BROWN)
- 4= USCAR Option D (GREEN)
- 5 = USCAR OPTION B, COLOR: BLACK
- 6 = USCAR OPTION C, COLOR: BLACK
- 7 = USCAR OPTION D, COLOR: BLACK

Circuit SIZE 2,3,4,5,6,8

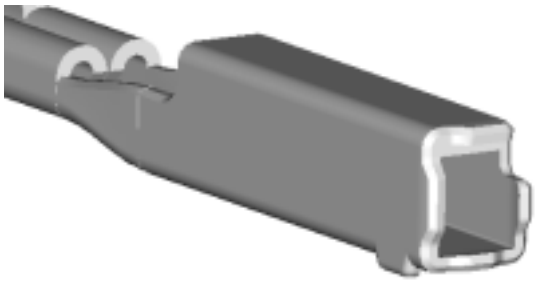
Terminal System 2,3,4
- 2 = Tyco/Molex "GET"
- 3 = MOLEX 0.64mm
- 4 = Yazaki Kaisan

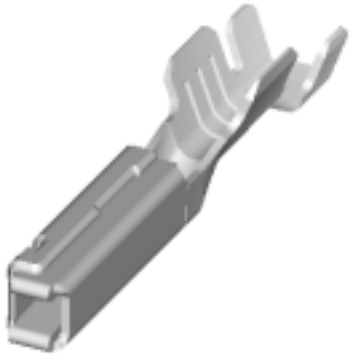
Section 2:
MX 64™ Connectors

Molex MX64 0.64mm

Tyco/Molex “GET” 0.064mm

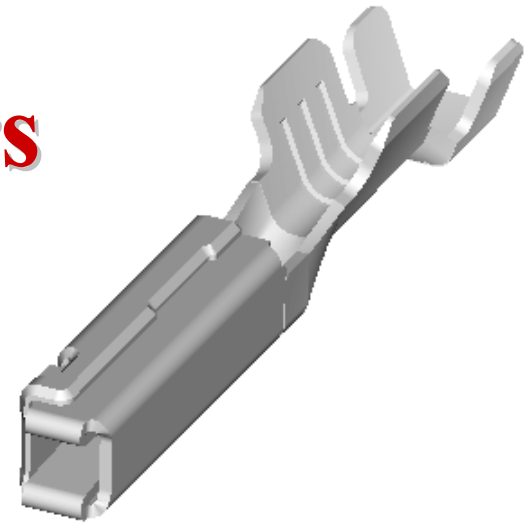
Yazaki Kaisan 0.64mm





Section 2:
MX 64™ Connectors

Tyco/Molex GET 0.64mm
Female Terminal



Series 31402 Terminal Part Numbers

Ford Part Number

18 & 20 AWG

TIN # 3F2T-14474-RA

GOLD # 1L2T-14474-CA

22 AWG

TIN # 3F2T-14474-SA

GOLD #1L2T-14474-DA

Tyco Part Number

18 & 20 AWG

TIN # 1393366-1

GOLD # 1393364-1

22 AWG

TIN # 1393367-1

GOLD # 1393364-1

Molex Part Number

18 & 20 AWG

TIN # 342300004

GOLD # N/A

22 AWG

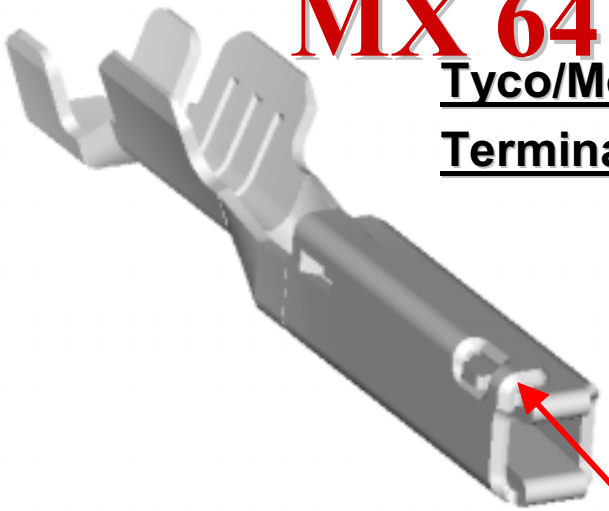
TIN # 342300002

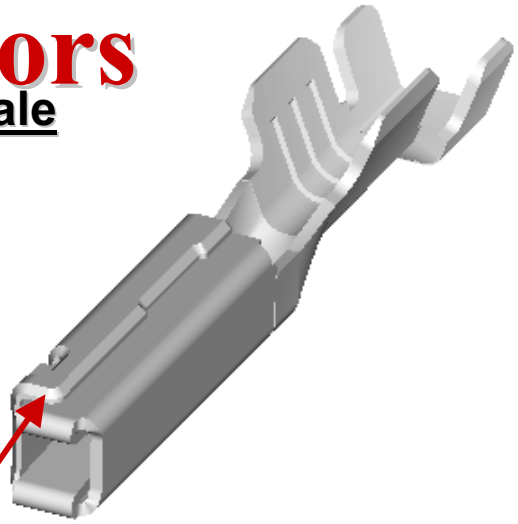
GOLD # N/A

Section 2:

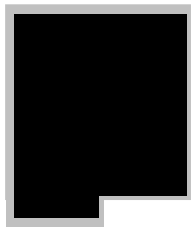
MX 64™ Connectors

Tyco/Molex GET 0.64mm Female Terminal Series 31402

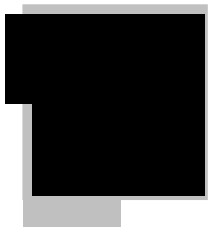




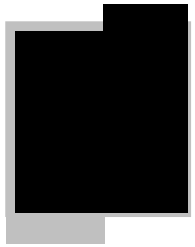
Orientation Tab



Correct Orientation



90 Misorientation Lock-out



180 Misorientation Lock-out

Terminal Insertion Orientation to Grommet Seal Cover

Section 2:
MX 64™ Connectors

Molex 0.64mm Female Terminal Series 31403

Series 31403 Terminal Part Numbers

MOLEX Part Number

18 & 20 AWG

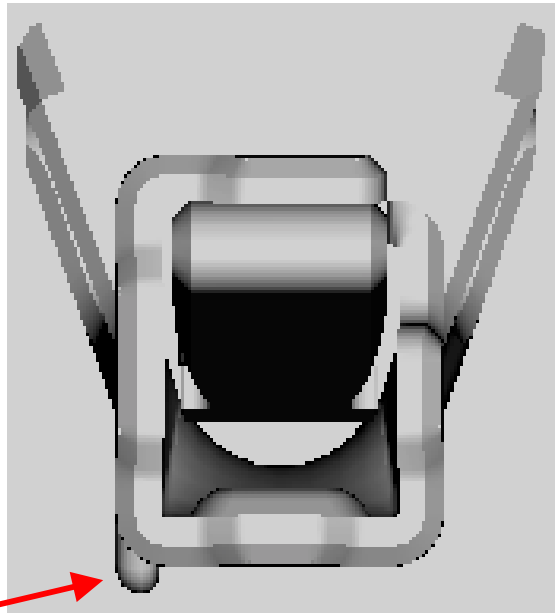
TIN # 33468-0003

GOLD # 33467-0005

22 AWG

TIN # 33468-0001

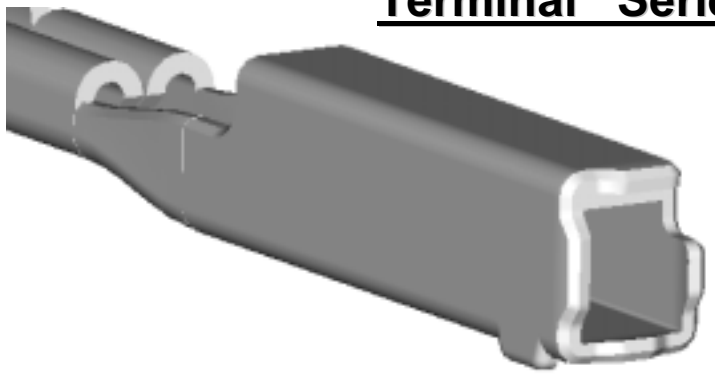
GOLD # 33467-0003

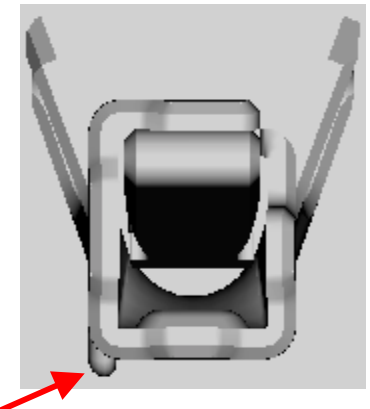


Orientation Tab

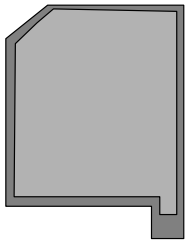
Section 2:
MX 64™ Connectors

Molex 0.64mm Female Terminal Series 31403

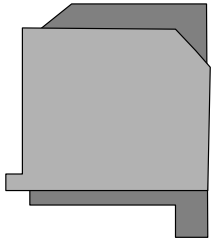




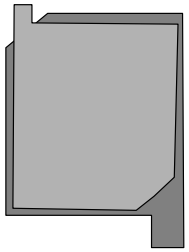
Orientation Tab



Correct Orientation



90° Misorientation Lock-out



180° Misorientation Lock-out

Terminal Insertion Orientation to Grommet Seal Cover

Section 2:
MX 64™ Connectors

Yazaki Kaisan 0.64mm Female Terminal Series 31404

Series 31404 Terminal Part Numbers

Yazaki Kaisan 0.64mm

18 AWG

TIN # 7116-4619-02

AU # 7116-4619-08

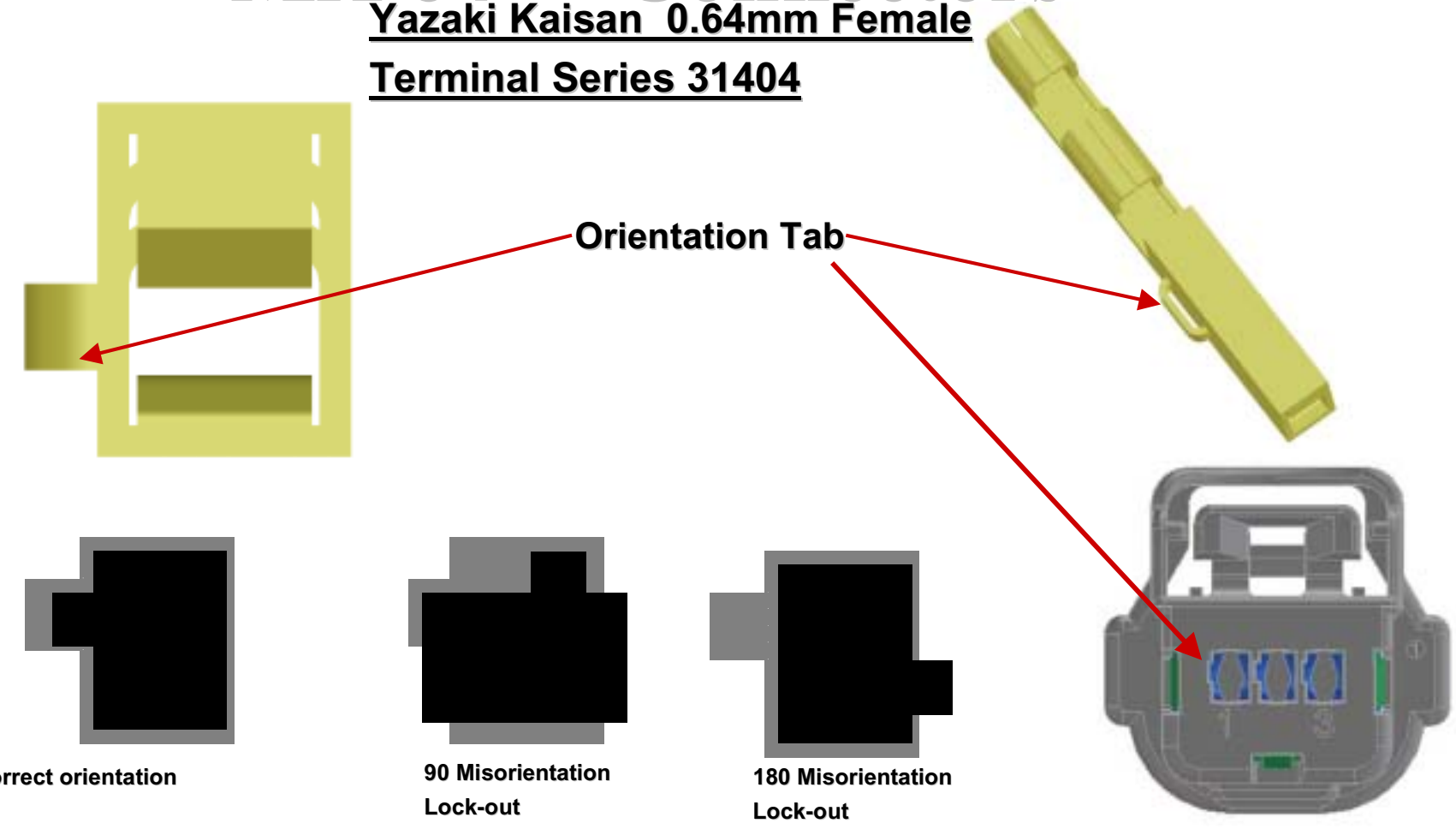
20 & 22 AWG

TIN # 7116-4618-02

AU # 7116-4618-08

Section 2:
MX 64™ Connectors

Yazaki Kaisan 0.64mm Female
Terminal Series 31404



Terminal Insertion Orientation to Grommet Seal Cover

Section 3

Harness Assembly Instructions

Section 3: Harness Assembly Instructions

A. TPA shown in “As-Shipped” position (FIG. 3-1)

- TPA shown “LOCKED” position (FIG. 3-2)
- TPA to remain in pre-lock position (as shipped) until all circuits are loaded (Fig. 3-1)

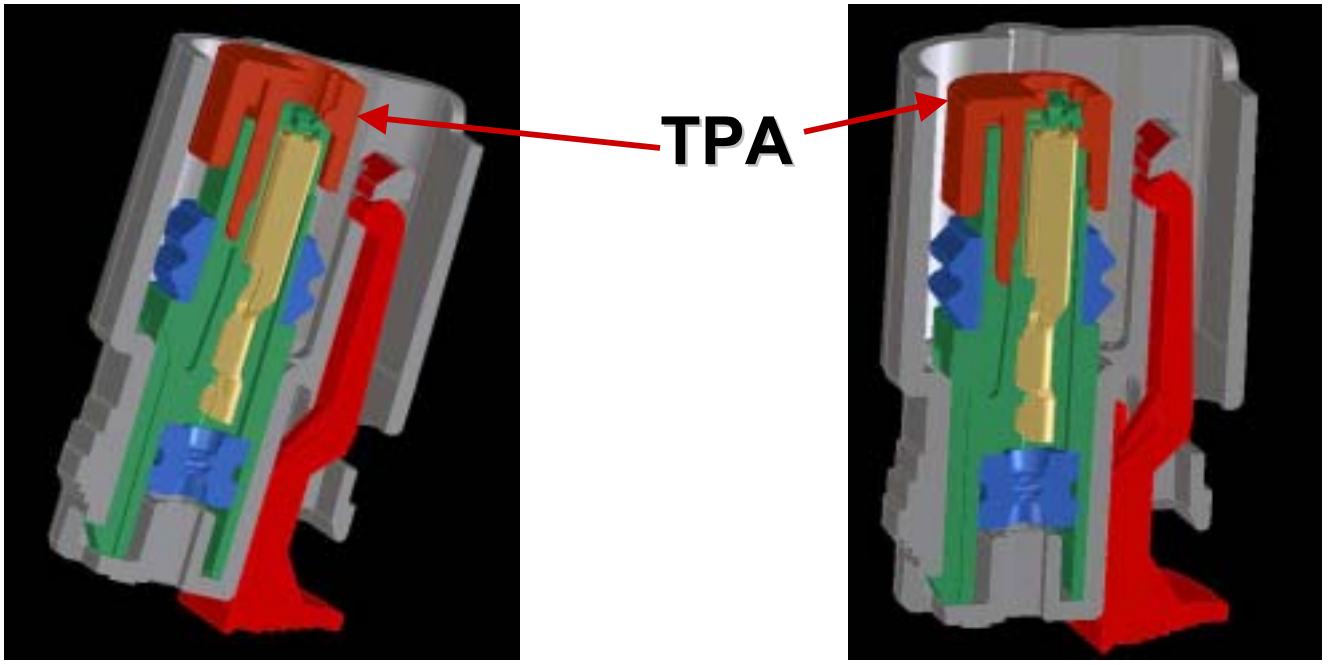


Fig. 3-1 Fig. 3-2

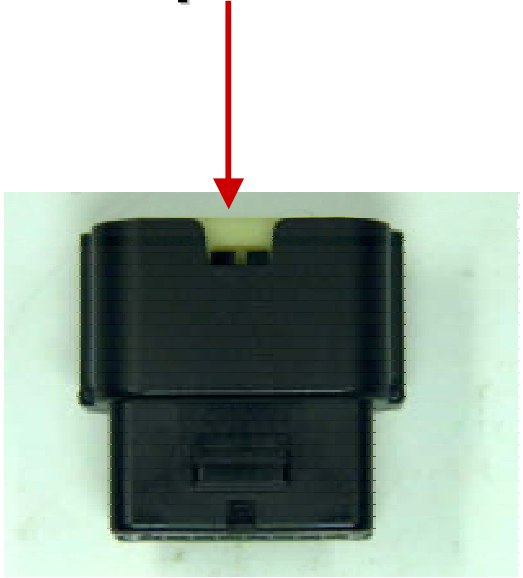
Section Views of TPA in “Pre-Lock”and “Lock” Positions

Section 3: Harness Assembly Instructions

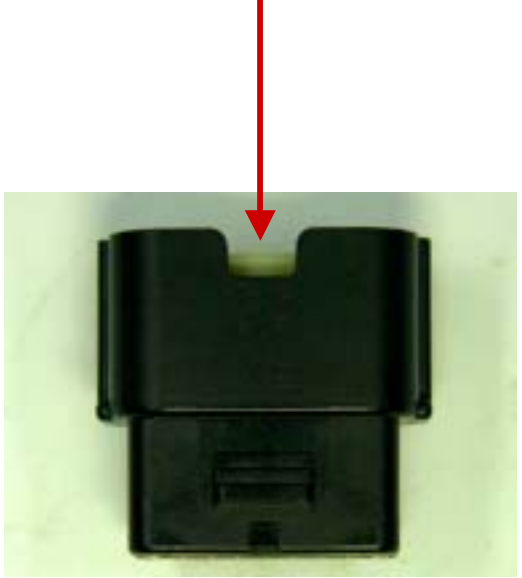
TPA must be in prelock position to install terminals!

AS SHIPPED

TPA in prelock



TPA locked



Section 3: Harness Assembly Instructions 2-3 way connectors

- TPA must be in pre-lock position to install terminals!
- If TPA is locked you must move it to the pre-lock position by carefully lifting up on the upper side of the TPA using a 3.5 mm flat blade screw driver. This must be done as shown in FIG. 3-6
- DO NOT PRY ON THE LATCH SIDE OF THE CONNECTOR This will damage the TPA and connector!

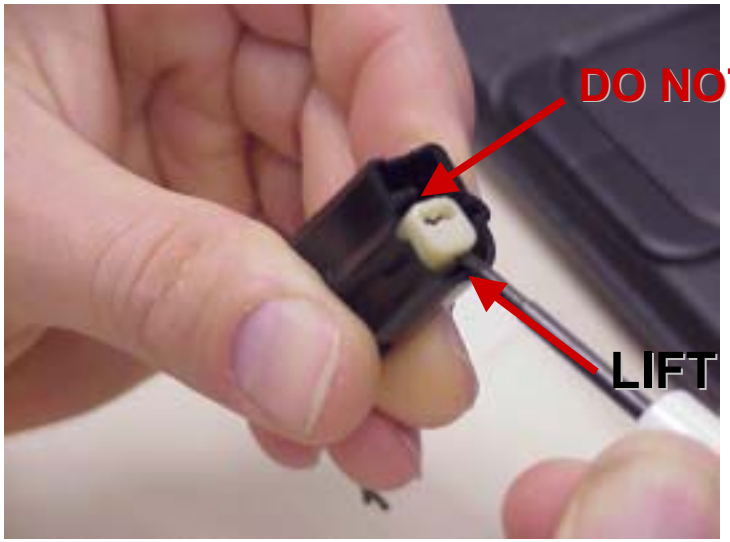


FIG. 3-6

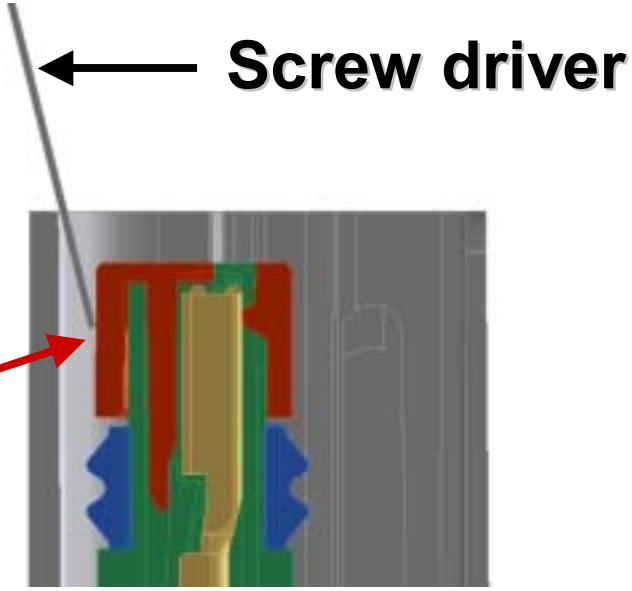
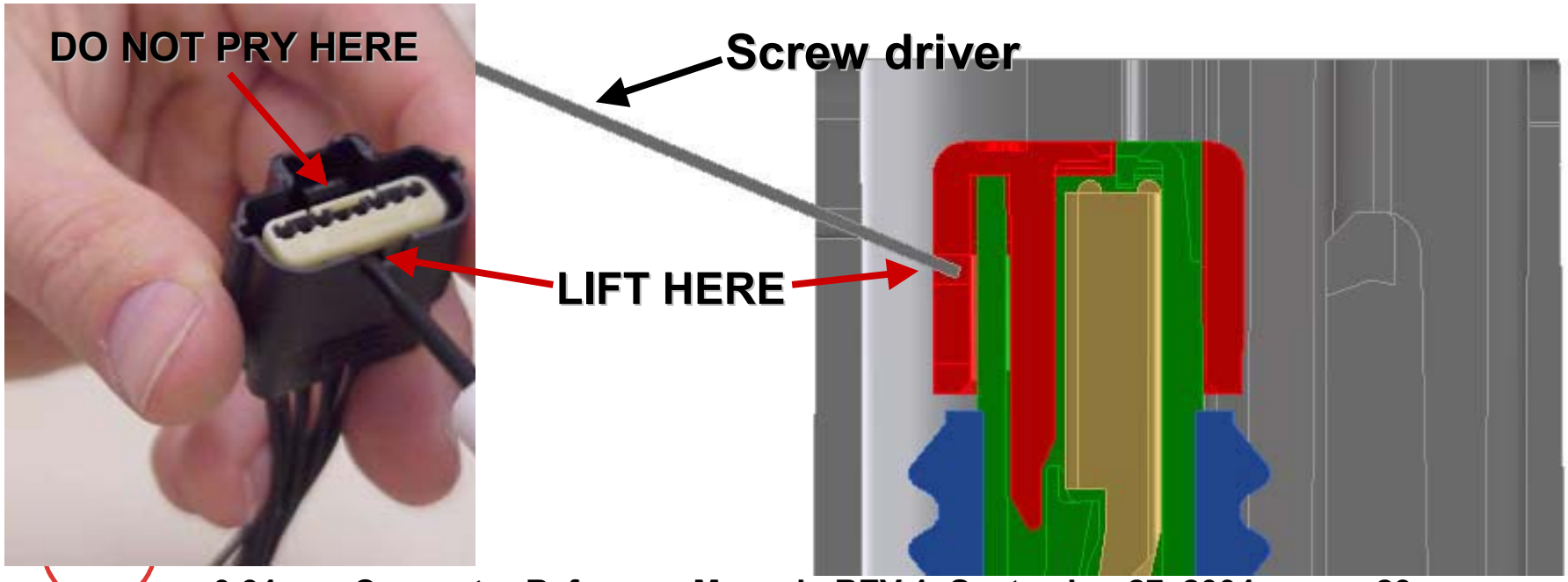


FIG. 3-7

Section 3: Harness Assembly Instructions 4-8 way connectors

- TPA must be in prelock position to install terminals!
- If TPA is locked you must move it to the pre-lock position by carefully lifting up on the upper side of the TPA by inserting a 3.5 mm flat blade screw driver into the TPA access window as shown
- DO NOT PRY ON THE LATCH SIDE OF THE CONNECTOR .This will damage the TPA and connector!



Section 3: Harness Assembly Instructions

B. 0.64mm Terminal Installation (continued)

- With TPA still in pre-lock position, orient terminal to rear of connector.
- Grip the wire, (Fig. 3-10) and insert through appropriate circuit opening (Fig. 3-11). If resistance is encountered, retract the terminal and adjust the angle of insertion. Continue inserting the terminal until it stops and locks on the lock finger with an audible click.

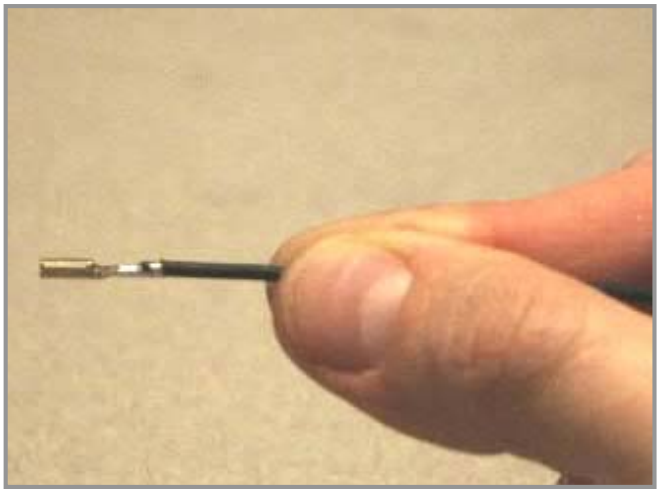


Fig. 3-10

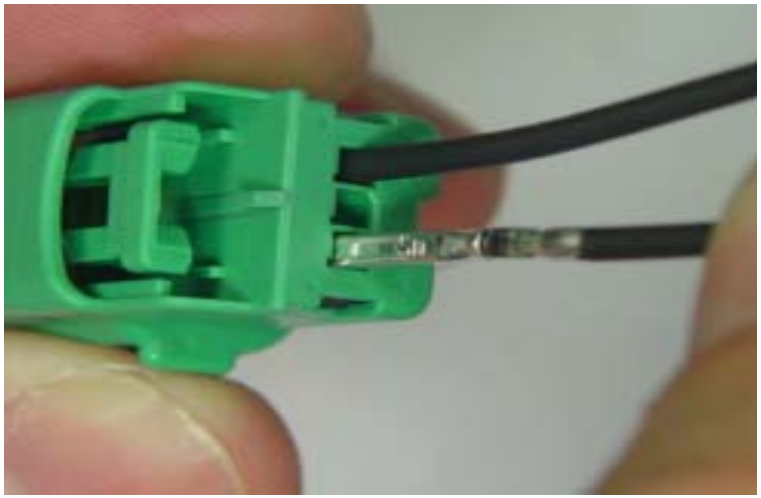
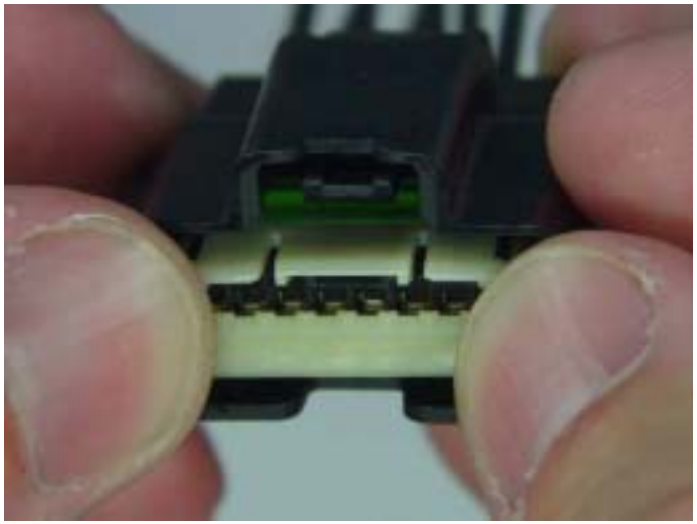


Fig. 3-11

Section 3: Harness Assembly Instructions

D. Seating TPA with the 0.64mm Terminal

- With the terminals fully installed, the TPA can be seated into its final lock position by applying an even force (Fig. 3-12) until it comes to a stop and you hear an audible click from the locking finger locking in place. If the TPA resists it may be detecting a partially installed terminal. Pull the TPA back into its pre-lock position and make sure all terminals are fully installed. Upon completion, the TPA can be seated.



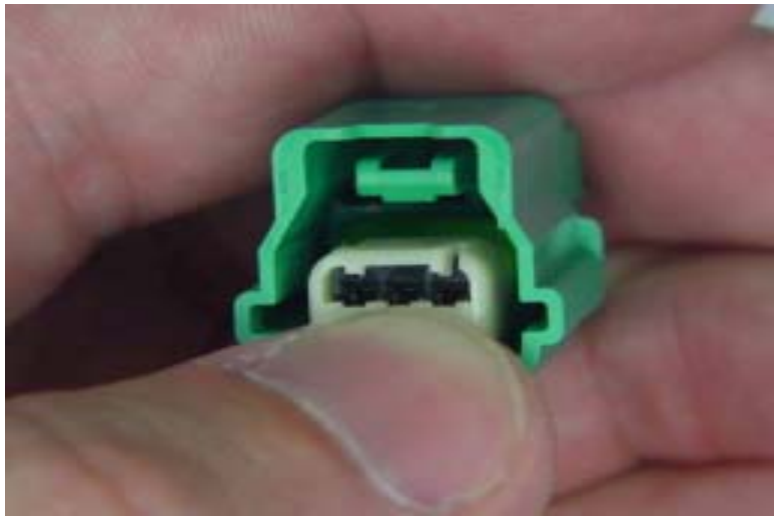
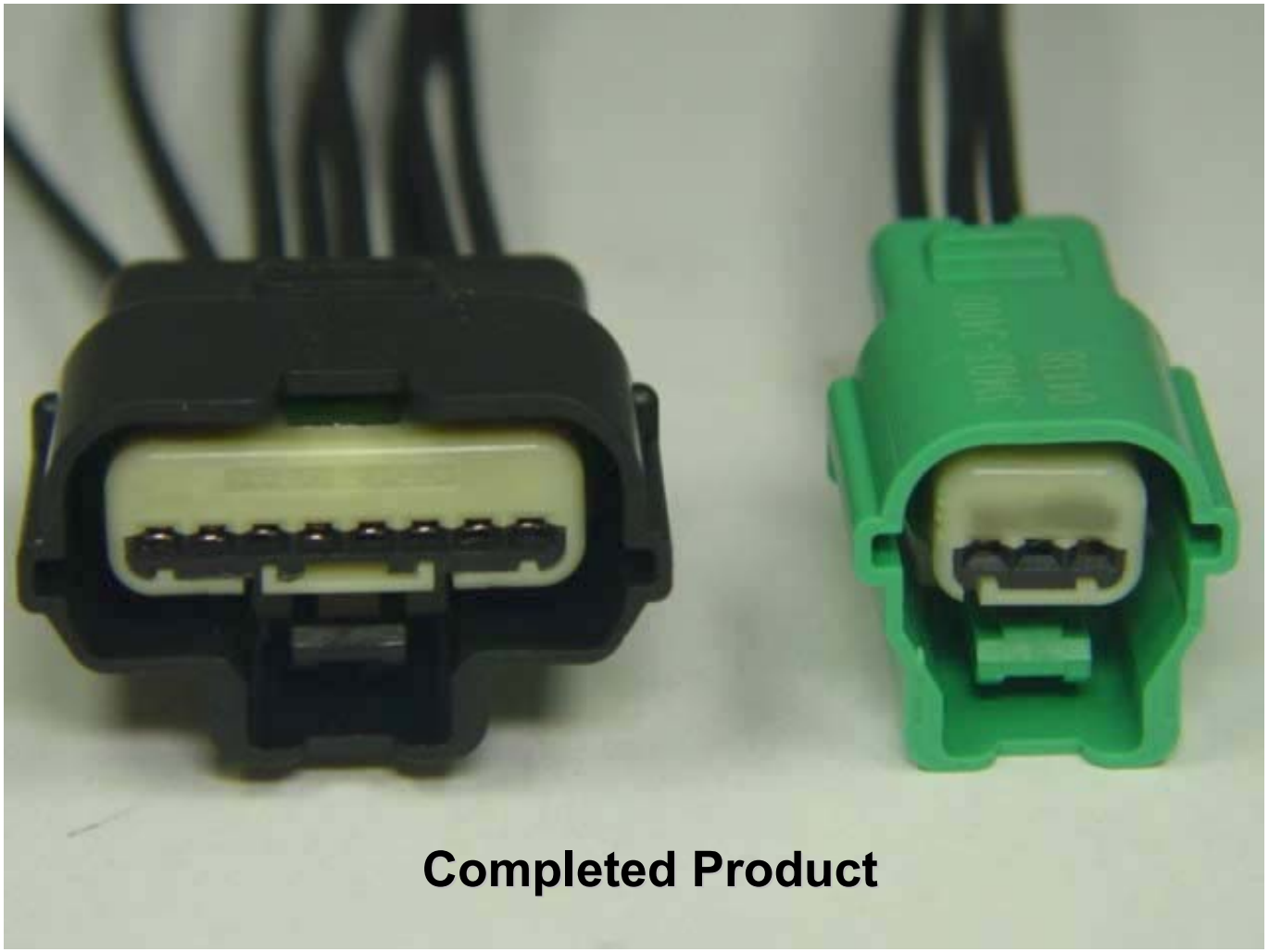


Fig. 3-12 A&B

Section 3: Harness Assembly Instructions



Completed Product

Section 4

Connector Mating Instructions

Section 4: Connector Mating Instructions

A. Connector polarization options & color identification

USCAR Option A (BLACK)

USCAR Option B (GRAY)

USCAR Option C (BROWN)

USCAR Option D (GREEN)

Special request Option B,C& D (BLACK)

For updated polarization options consult.
HTTP://WWW.USCARTEAMS.ORG

Section 4: Connector Mating Instructions

B. Connector mating

- Correctly orient the connector (align keying features) onto the mating connector (Fig. 4-1) Then evenly push the connector onto the mating connector until it locks with an audible click. (Fig. 4-2).

Fig. 4-1

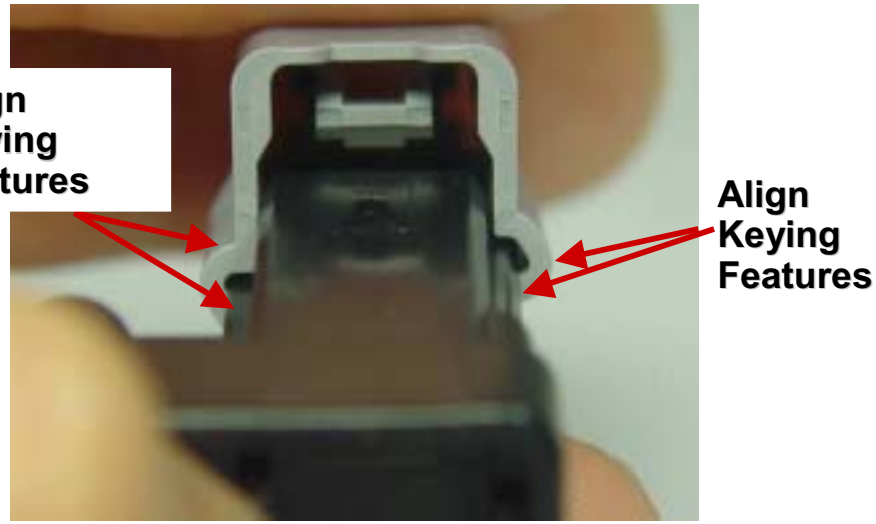
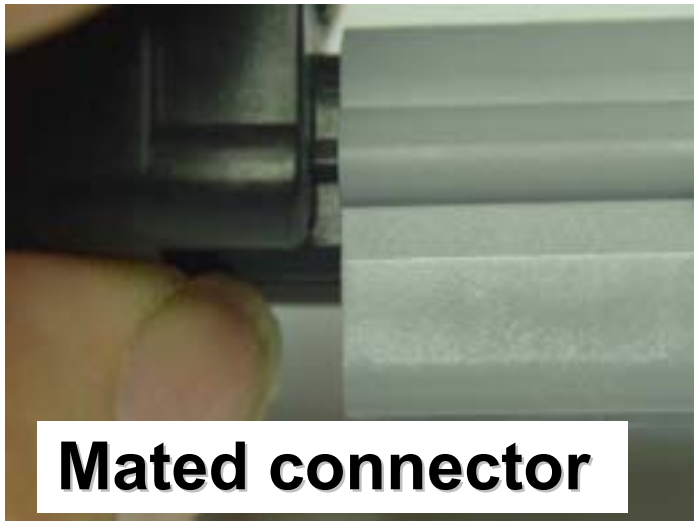


Fig. 4-2



Section 4: Connector Mating Instructions

C. Optional Connector Position Assurance (CPA)

- With the connector mated the CPA can now be engaged. Push the CPA toward the mating surface until it clicks into its locked position (Fig. 4-3).

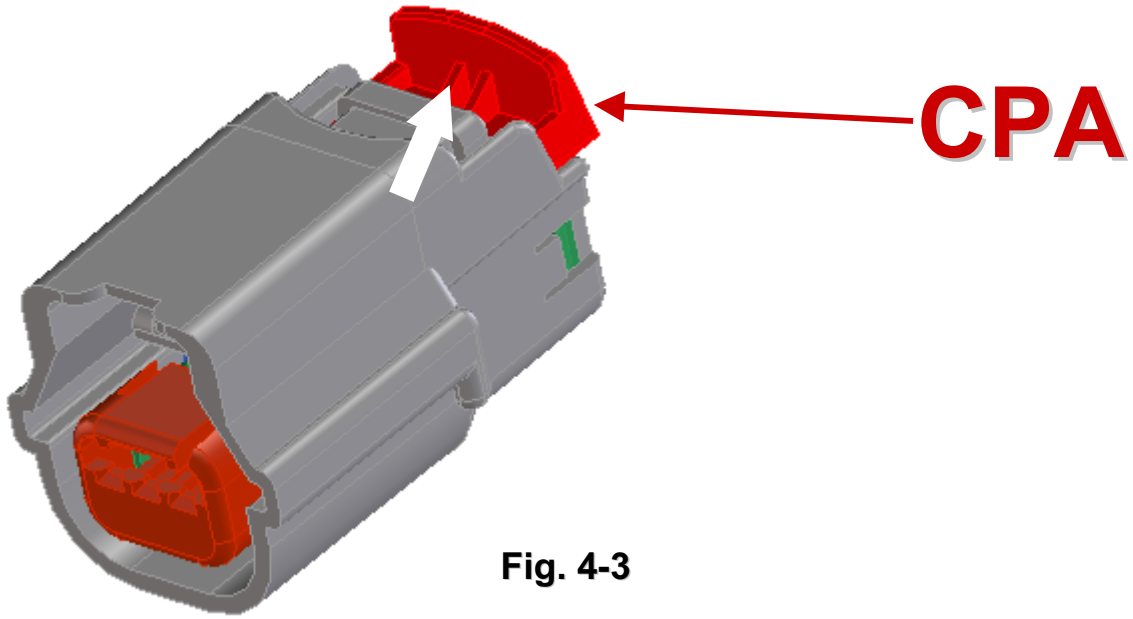


Fig. 4-3

Section 5

Service Instructions

Section 5: Service Instructions

A. Connector removal from sensor

- To un-mate the connector from the sensor, push the CPA (if equipped) away from mating surface (Fig. 5-1) Then depress the latch on the top of the connector so the lock releases.
- Grip the connector and evenly pull straight away from the sensor. (Fig. 5-2)

Fig. 5-1

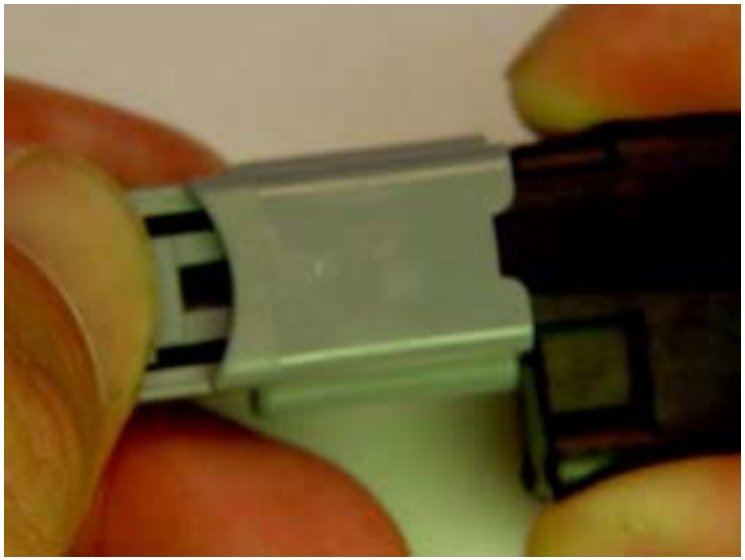
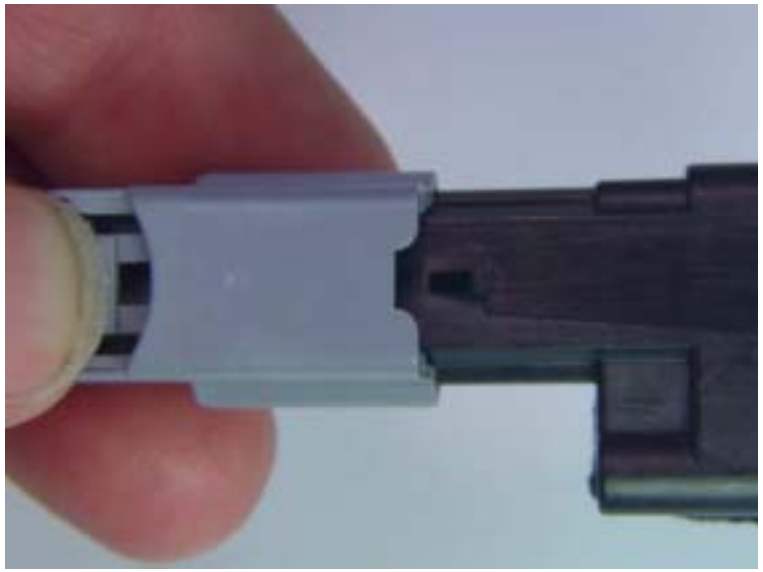


Fig. 5-2



Section 5: Service Instructions

B. TPA Servicing

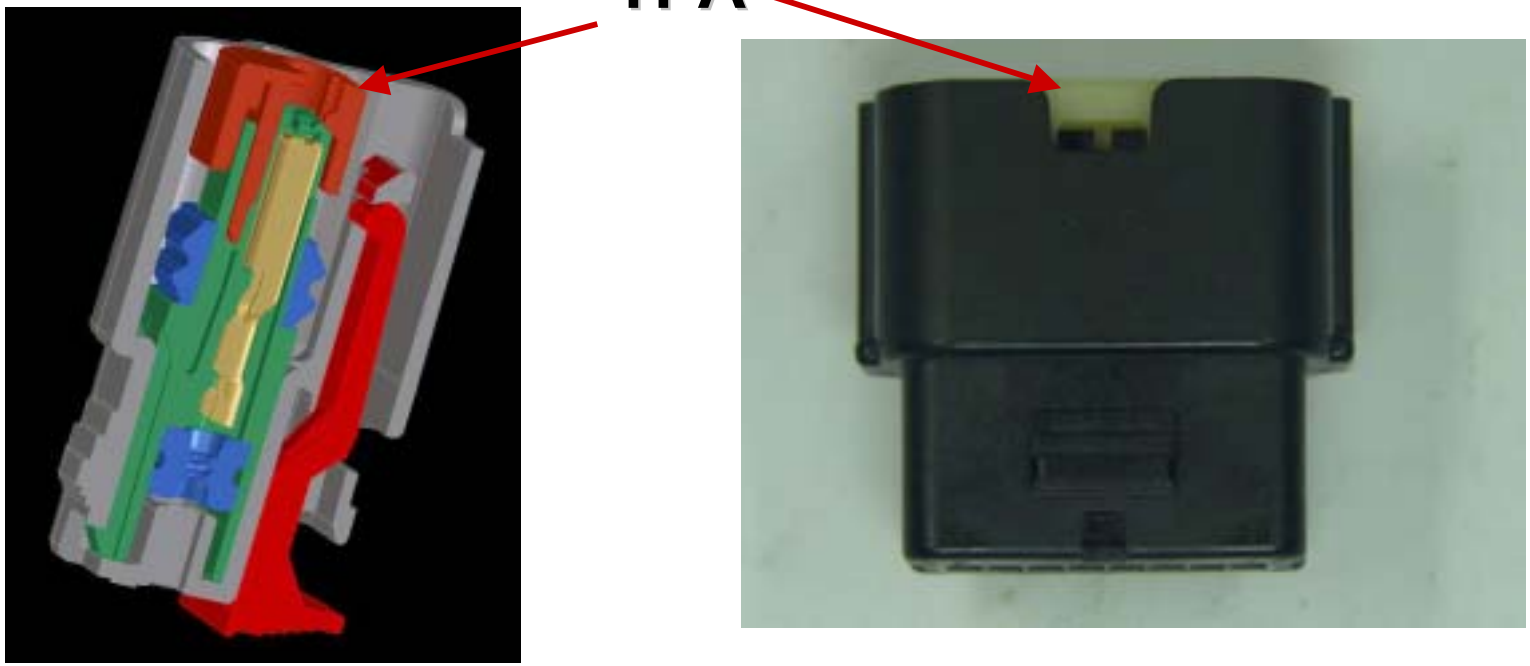
- Step 1: To add additional circuits move the TPA from locked to pre-lock as shown in section 3. Stop pulling when pre-lock is reached.
- Step 2: To remove circuits that have been populated you must remove the TPA from the connector by raising it into pre-lock and then continue raising until the TPA has been removed.

Fig. 5-3 Step 1: Pry Up TPA

Fig. 5-4

Section 5: Service Instructions

B. TPA Servicing (continued)

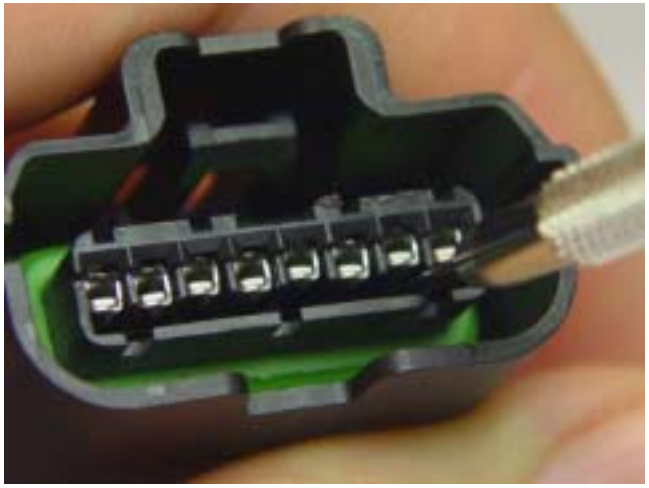


Views of TPA in “Pre-Lock” Position

Section 5: Service Instructions

E. 0.64mm Terminal Removal

- **After removing the TPA, Push up on the wire and carefully displace the locking finger using 1mm blade screwdriver. Once the locking finger has been displaced gently pull on the wire to remove the terminal.**
- **Do not use excessive force. Excessive force can damage the lock finger.**
- **Once the required terminals have been removed, Replace the TPA and lock if terminal population is complete.**

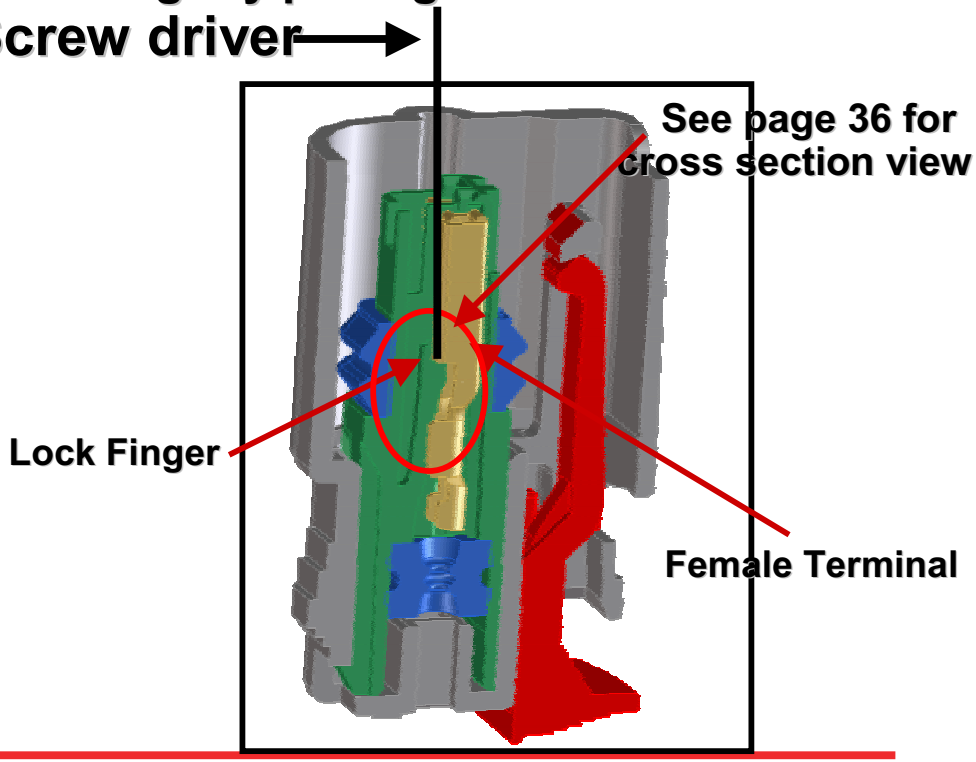


Section 5: Service Instructions

G. 0.64mm Terminal Removal (continued)

- Do not use excessive force. Excessive force can damage the lock finger.
- Deflect the top of locking finger to unlock it from the terminal. Apply light pressure on lock finger while lightly pulling terminal wire.

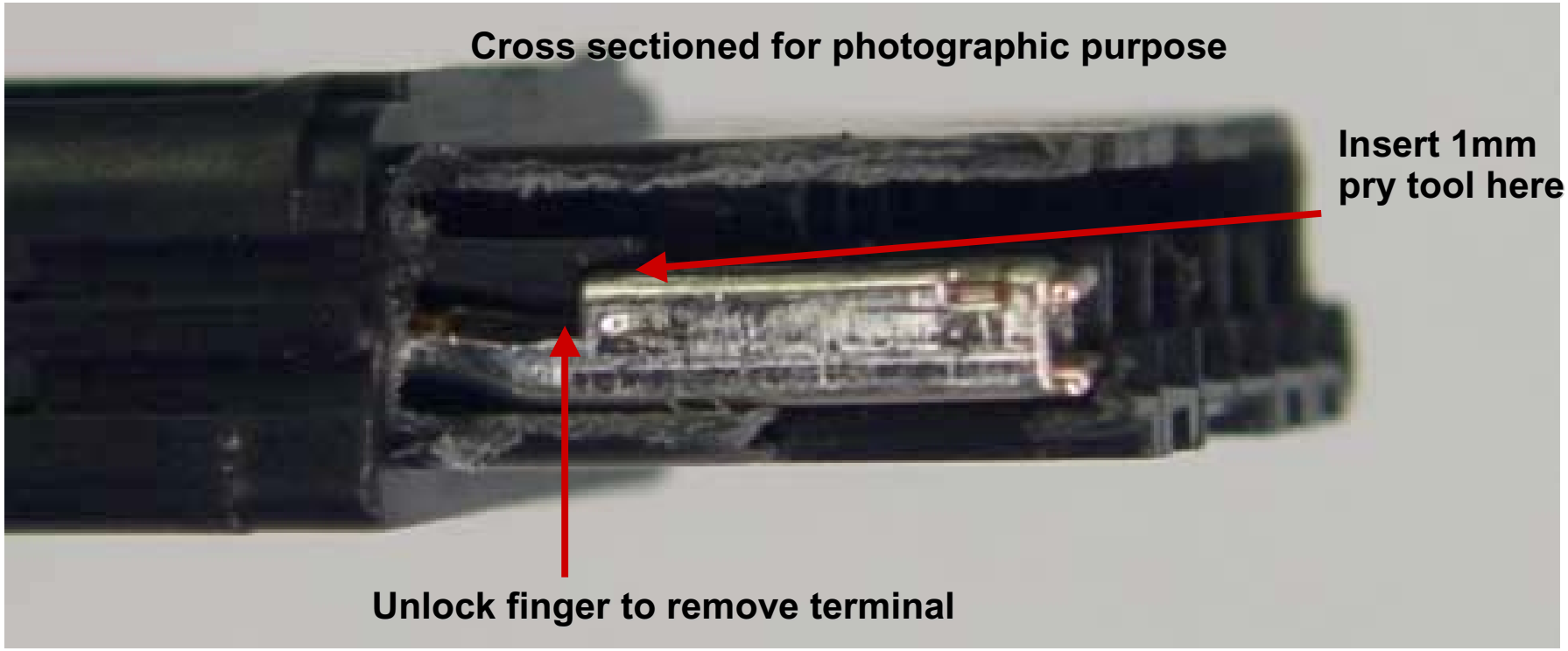
Fig. 5-9



Section 5: Service Instructions

F. 0.64mm Terminal Removal (continued)

n Carefully displace the locking finger by prying the lock finger up to unlock it from the terminal. Use care not to over deflect the lock finger to avoid damage.



Section 5: Service Instructions

F. 0.64mm Terminal Removal (continued)

- Once the terminal lock finger is disengaged, pull on the wire (Fig. 5-12) to release the terminal.

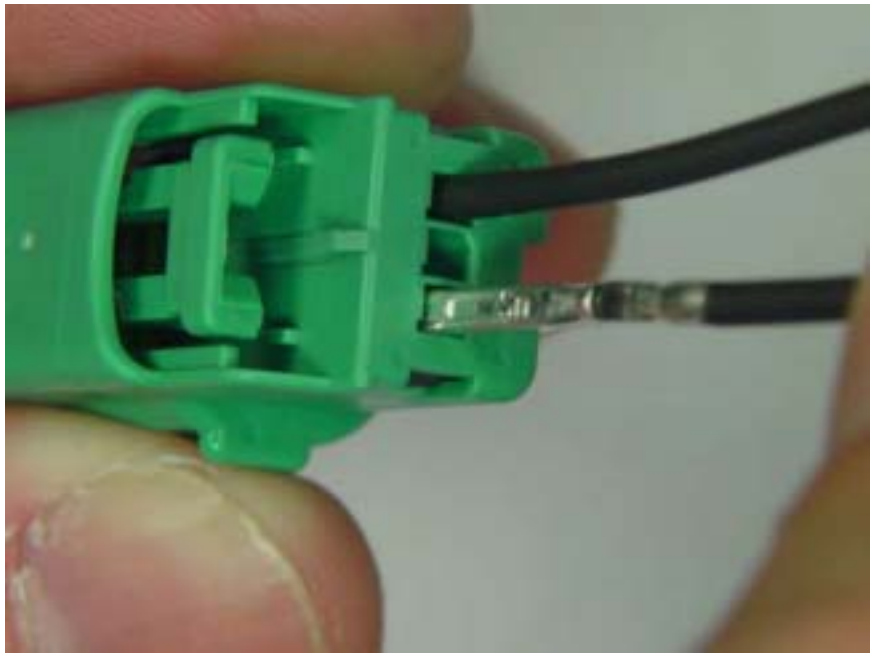


Fig. 5-12

Section 5: Service Instructions

G. MX0.64 Terminal Crimping

- If the 0.64mm terminal needs to be replaced, a new one can be hand crimped using the Molex Crimp Tool Number 63811-4200. Contact Molex for terminal drawings, hand crimp instructions and crimp height requirements.

H. Tyco/Molex "GET" Terminal Crimping

- If the Tyco/Molex "GET" terminal needs to be replaced, a new one can be hand crimped using the Molex crimp tool number . 63811-4500 for the wire range: 0.22-0.35 mm2 & 22 awg. And 63811-4600 for the wire range: 0.50-0.75 mm2 & 20-18 awg. Contact Molex for terminal drawings, hand crimp instructions and crimp height requirements.

I. Yazaki Kaisan terminal crimping

- If the Yazaki Kaisan terminal needs to be replaced please consult Yazaki for crimp tool information.

Section 6: Testing of terminals

When testing the connector for continuity it is imperative that you do not damage the terminals.

Pogo pins should be checked for damage or sticking several times a shift to assure Containment if an issue is found.

First a visual inspection of all the pins for damage should be performed.

Next a testing block should depress all the pogo pins up into the barrel. If there is a bent or sticking pin it should get stuck up in the barrel and must be replaced.

Probing Damage can occur :

If a sharp ended probe is inserted into the contact of the connector it may damage the plating and increase contact resistance.

If an oversize diameter probe is inserted into the terminal this will over deflect the beam in the terminal and create an environment for intermittent connections and increased contact resistance.

If a probe is inserted into the connector on an angle or off center it may damage the terminal and/or connector.