MX64 Single Row Sealed Connector Application Specification

REV 6 –Jun 14, 2016

Revision History

Revision Level	Change Information	Publication Date
Rev 1		9-27-04
Rev 2		11-22-05
Rev 2.11		3-17-06
Rev 2.12		9-9-10
Rev 3		4-28-14
Rev 4	Add TE Gen Y and JST AIT terminal information for series 31404	10-26-15
Rev 5	1. Update TE and Molex terminal information for series 31402/34975 2. Add terminal part number for series 31403/34977 3. Add 8 way assembly information	11-18-15
Rev 6	Add Yazaki FLX 0.64mm and TE 0.64mm Side Orientation terminal for 8 way	6-14-16

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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 or customer request. In addition there are 3 different terminal options for individual OEM terminal preferences. These preferences are defined by Series Numbers below.

Molex Series 31402/34975 = TE/Molex "GET"

Molex Series 31403/34977 = Molex MX64

Molex Series 31404 = Yazaki Kaizen 0.64 /Yazaki FLX 0.64 /TE Gen Y 0.64 /TE 0.64 Side Orientation /JST AIT 064

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

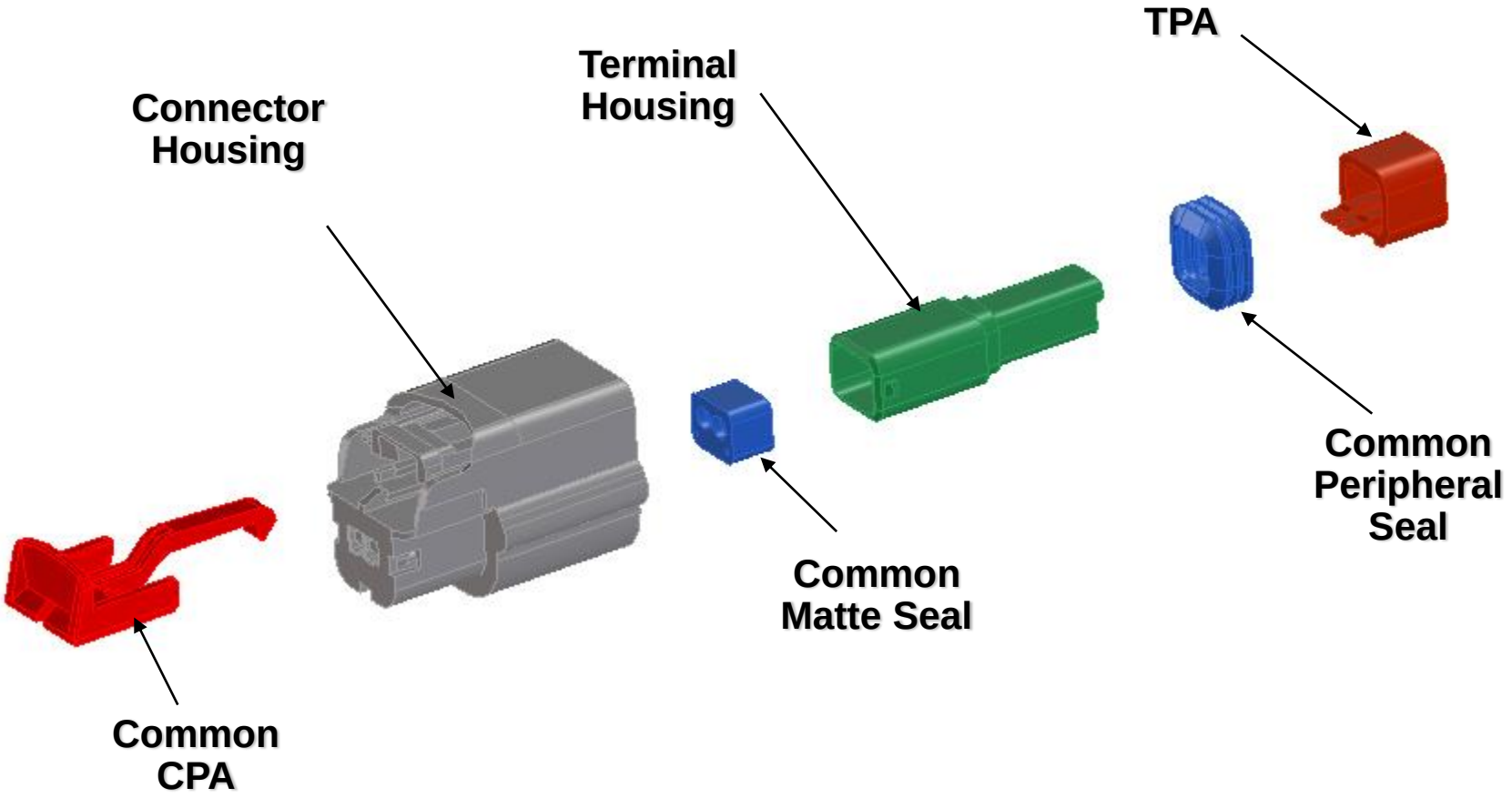




- Connector features
  - Available in circuit sizes
- 2, 3, 4, 5, 6, 8 way
  - Adopted as the new USCAR single row footprint
  - Will accommodate various terminal systems
    - MX64
    - Molex or TE GET
    - Yazaki Kaizen / Yazaki FLX /TE Gen Y /TE Side Orientation /JST AIT
  - 18-22 AWG and .36-.83 mm^2 Metric Wire
  - CPA option
  - 4 polarization options
  - Matte seal design
- Connector housing
  - 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_2-6 way



Section 2:
MX 64™ Connectors

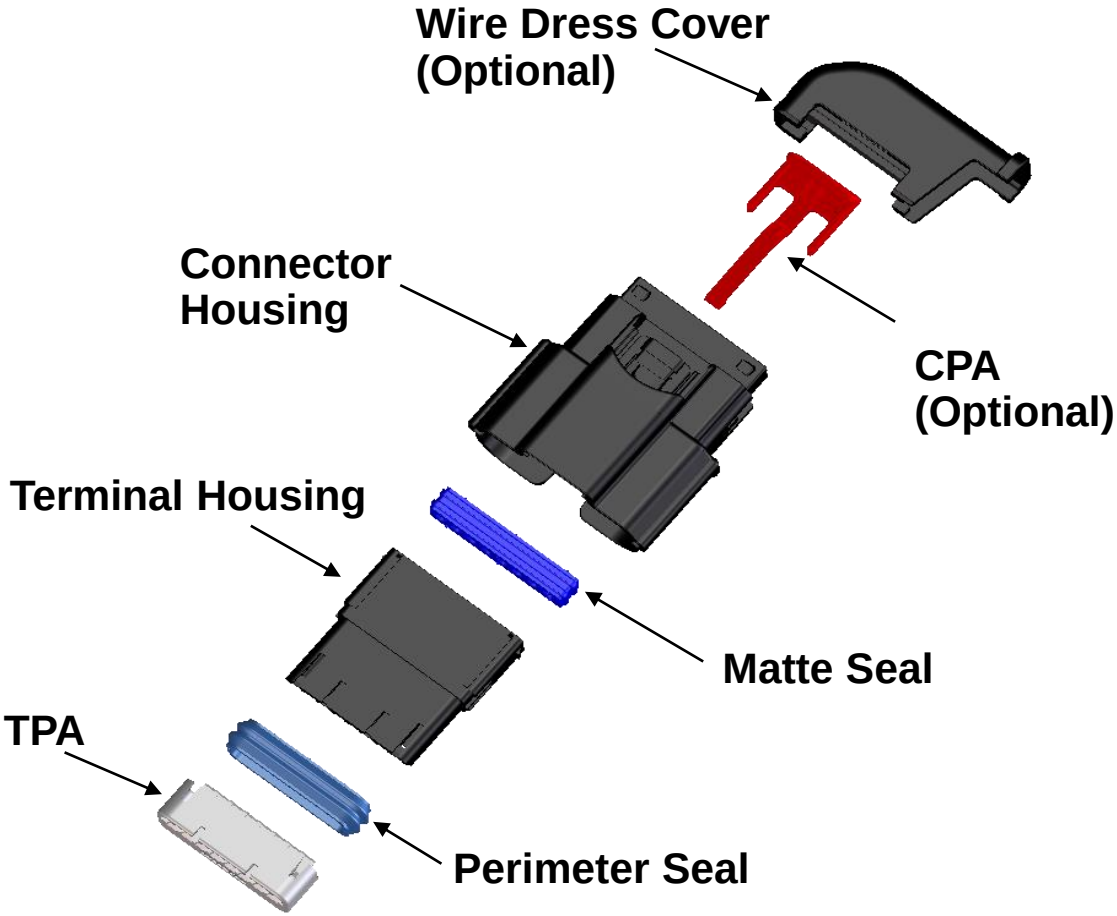
Single Row Sealed _8 way with wire dress cover



Horizontal Direction

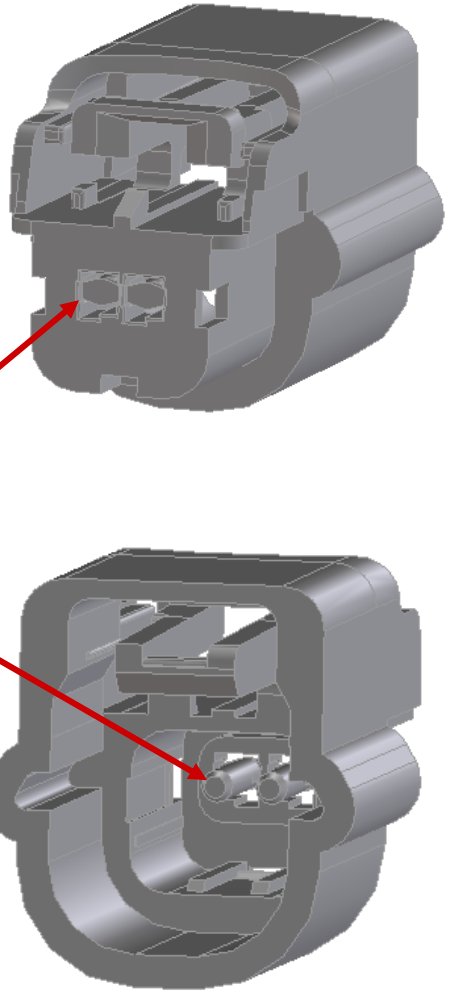


Vertical Direction



Section 2:
MX 64™ Connectors

Single Row Sealed



- **Common connector housing**
  - **Eliminates separate rear seal cover for the TE /Molex GET, Yazaki /TE /JST AIT or the Molex 0.64 terminal**
  - **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

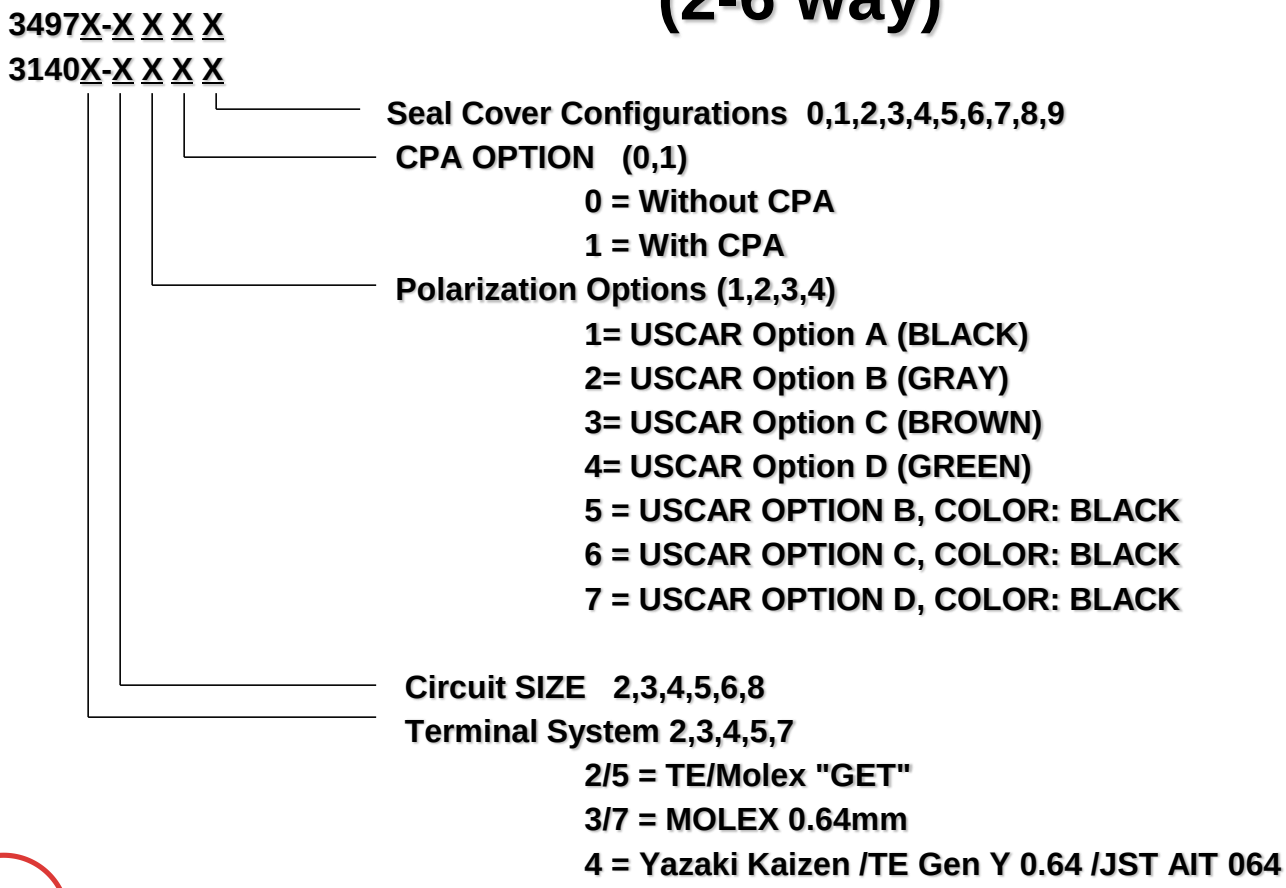
XX XXX

DAY of the year
001 to 365

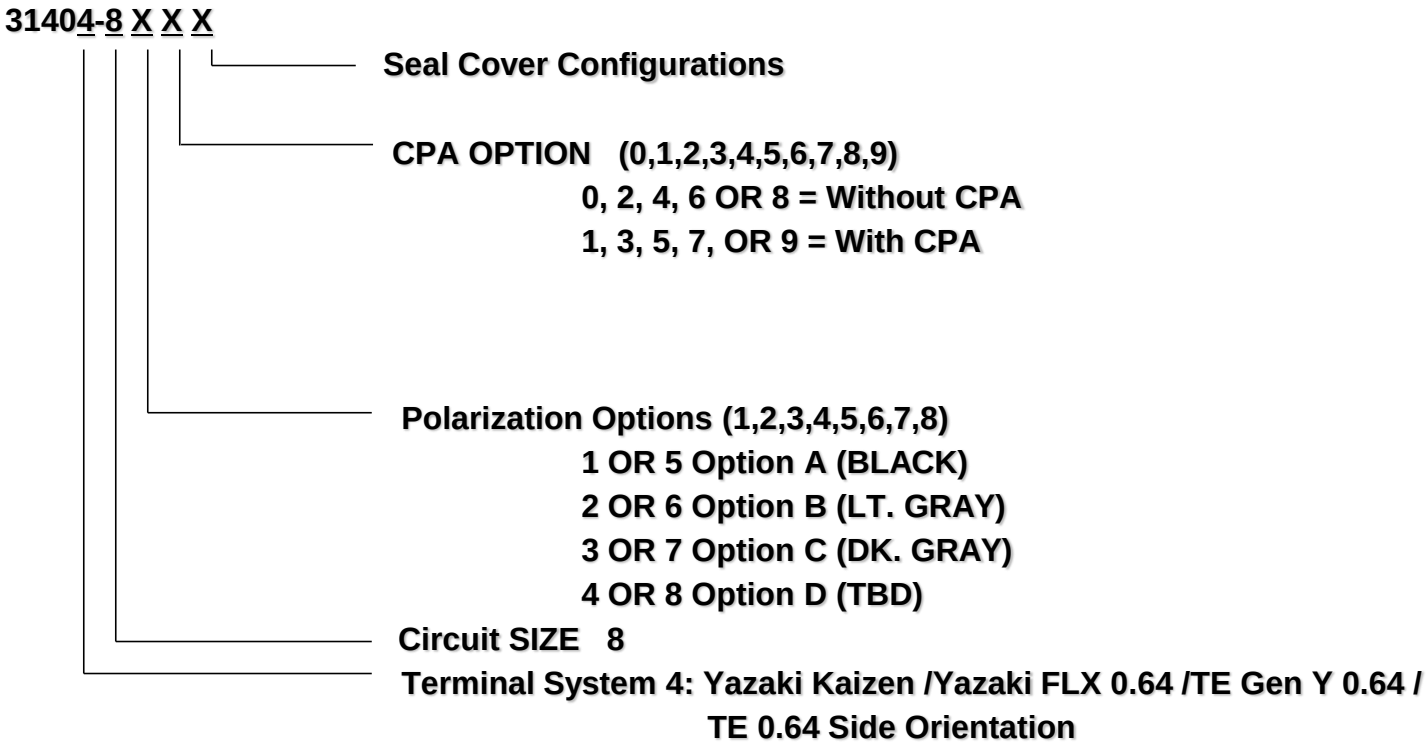
YEAR (last 2 digits)

Note: Product Identification may appear on either side of connector housing.

Section 2:
MX 64™ Connectors
Part # legend single row sealed Female
(2-6 way)



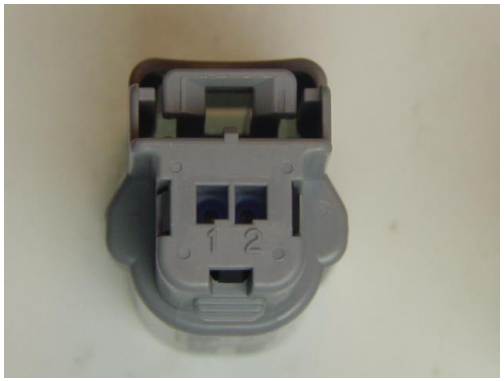
Section 2:
MX 64™ Connectors
Part # legend single row sealed Female
(8 Way)



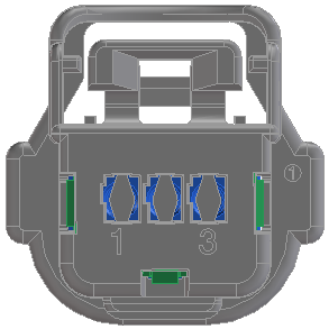
Section 2:
MX 64™ Connectors



Molex MX64 0.64mm

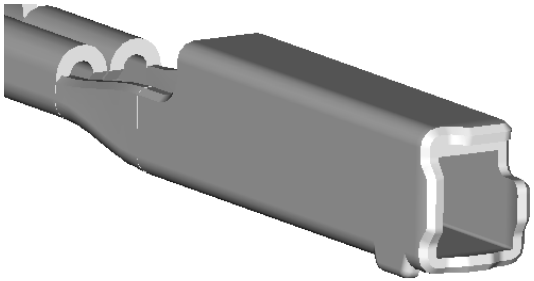


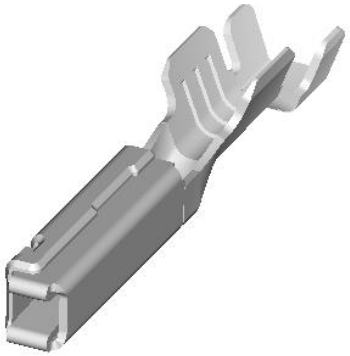
TE/Molex “GET” 0.64mm



Yazaki Kaizen/Yazaki FLX 0.64

TE Gen Y 0.64/TE 0.64 Side Orientation /JST AIT 0.64mm

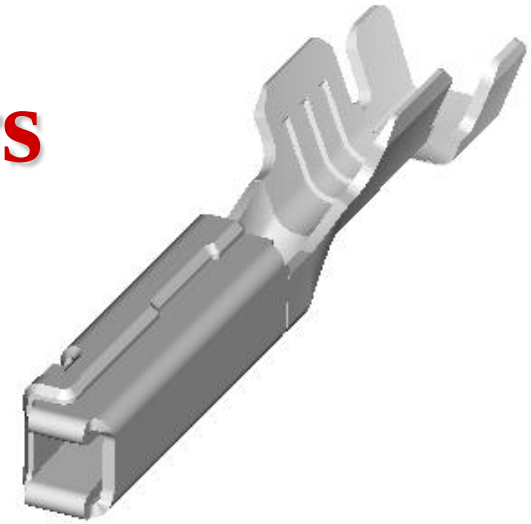






Section 2:
MX 64™ Connectors

TE/Molex GET 0.64mm
Female Terminal



Series 31402/34975 Terminal Part Numbers

Ford Part Number

18 & 20 AWG (0.5-0.75mm²)

TIN # 3F2T-14474-RA

GOLD # 1L2T-14474-CA

22 AWG (0.35mm²)

TIN # 3F2T-14474-SA

GOLD #1L2T-14474-DA

TE Part Number

18 & 20 AWG (0.5-0.75mm²)

TIN # 1393366-1

GOLD # 1393365-1

22 AWG (0.35mm²)

TIN # 1393367-1

GOLD # 1393364-1

Molex Part Number

18 & 20 AWG (0.5-0.75mm²)

TIN # 342300003

GOLD # N/A

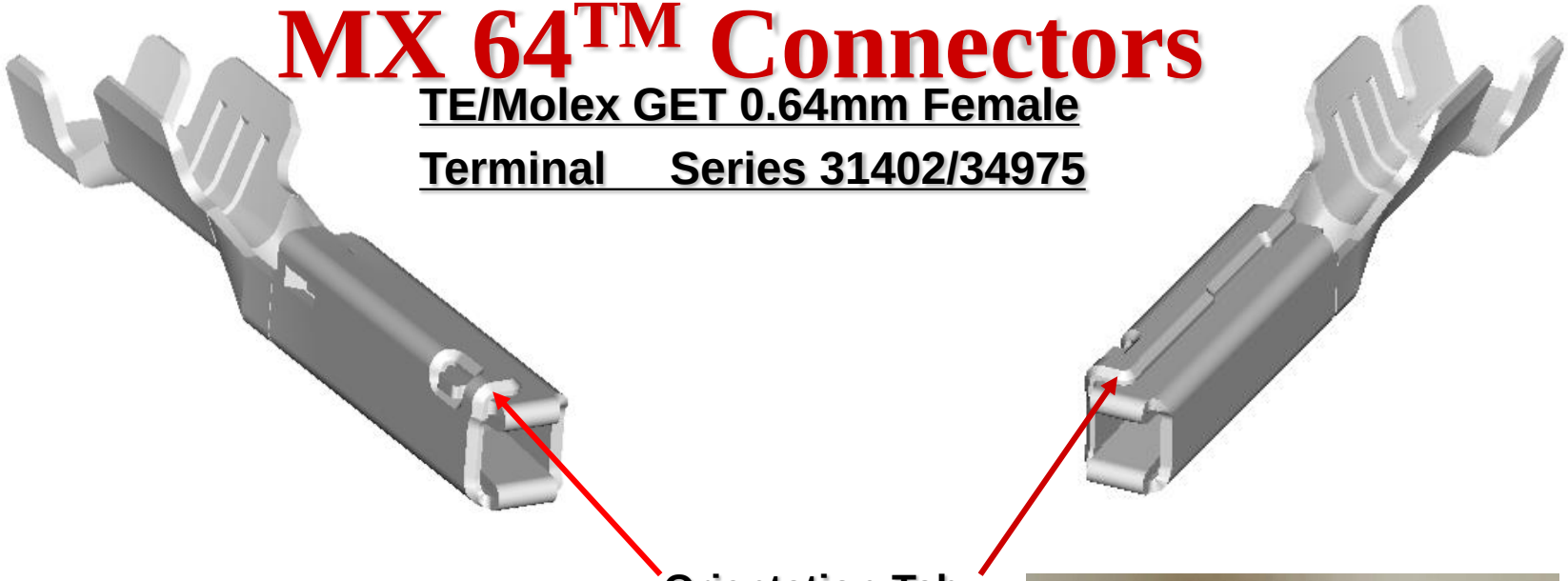
22 AWG (0.35mm²)

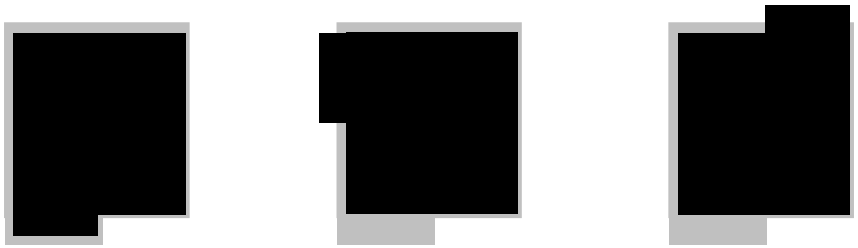
TIN # 342300001

GOLD # N/A

Section 2:
MX 64™ Connectors

TE/Molex GET 0.64mm Female Terminal Series 31402/34975

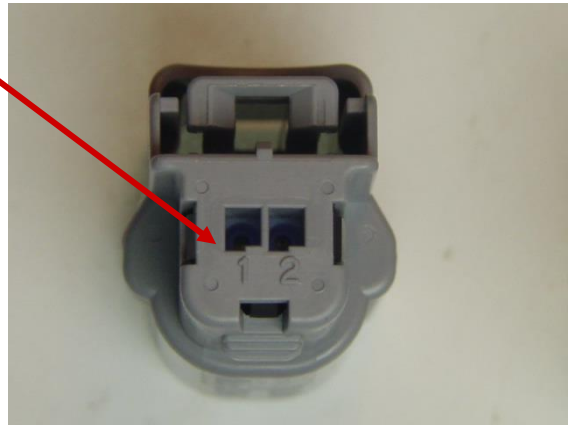




Correct Orientation

90 Misorientation Lock-out

180 Misorientation Lock-out



Terminal Insertion Orientation to Grommet Seal Cover

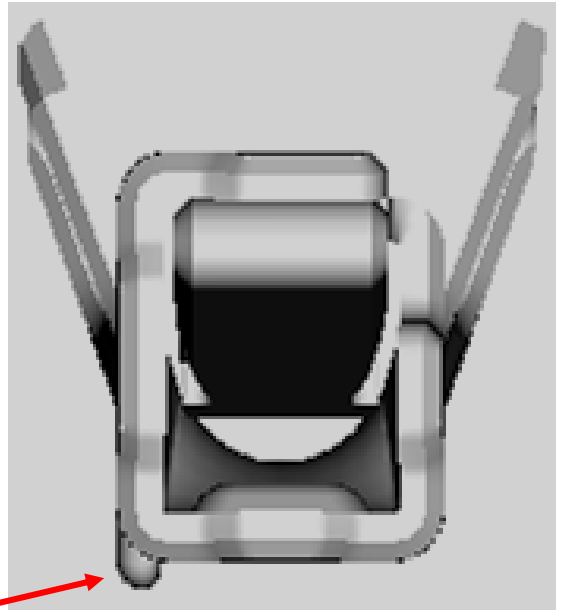
Section 2:
MX 64™ Connectors

Molex 0.64mm Female Terminal
Series 31403/34977

Series 31403/34977 Terminal Part Numbers

MOLEX Part Number

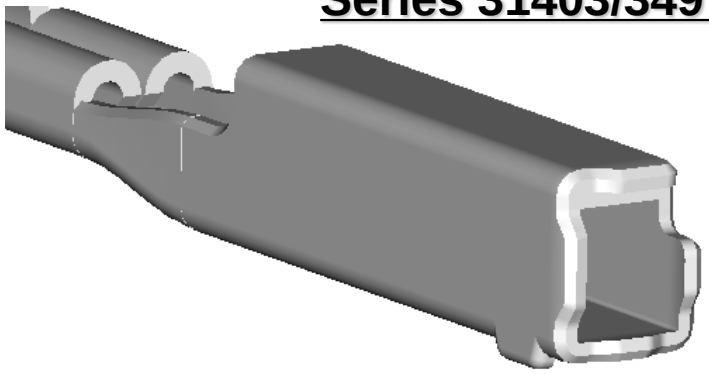
18 & 20 AWG	0.5-0.75mm²
TIN # 33468-0003	TIN # 33468-0024
GOLD # 33467-0005	GOLD # 33467-0024
22 AWG	0.35mm²
TIN # 33468-0001	TIN # 33468-0022
GOLD # 33467-0003	GOLD # 33467-0022

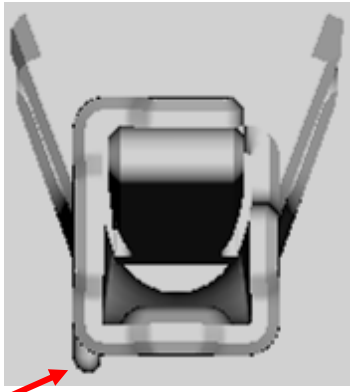


Orientation Tab

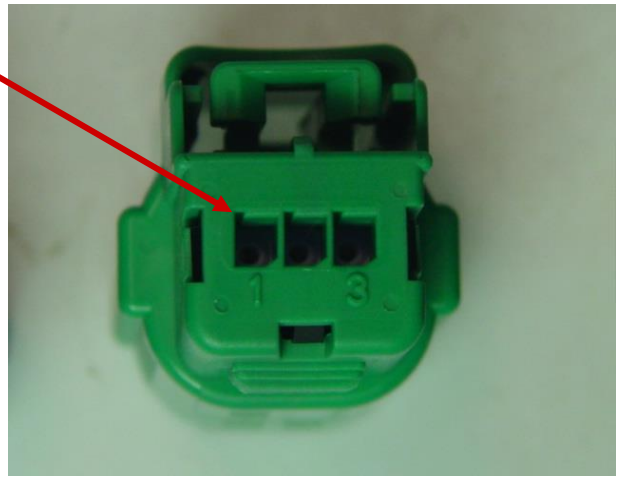
Section 2:
MX 64™ Connectors

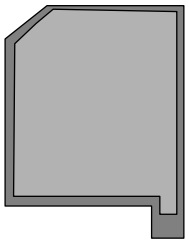
Molex 0.64mm Female Terminal
Series 31403/34977



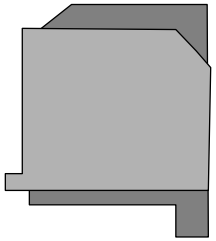


Orientation Tab

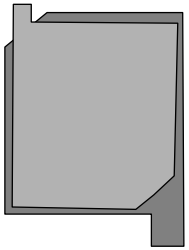




Correct Orientation



90° Misorientation
Lock-out



180° Misorientation
Lock-out

Terminal Insertion Orientation to Grommet Seal Cover

Section 2:

MX 64™ Connectors

Yazaki Kaizen/ Yazaki FLX/ TE Gen Y/ TE Side Orientation/ JST AIT 0.64mm Female Terminal Series 31404



Series 31404 Terminal Part Numbers

Yazaki Kaizen 0.64mm

18 AWG
TIN # 7116-4619-02
GOLD # 7116-4619-08
20 & 22 AWG
TIN # 7116-4618-02
GOLD # 7116-4618-08

TE Gen Y 0.64mm

18 AWG (0.75mm²)
TIN # 2035170-2
SILVER # 2035124-2
20 & 22 AWG (0.35-0.5mm²)
TIN # 2035170-1
SILVER # 2035124-1

JST AIT 0.64mm

18 AWG (0.75-0.85mm²)
TIN # SAIT-A02T-M064
GOLD # SAIT-A02GF-M064
20 & 22 AWG (0.3-0.5mm²)
TIN # SAIT-A03T-M064
GOLD # SAIT-A03GF-M064

Yazaki FLX 0.64mm

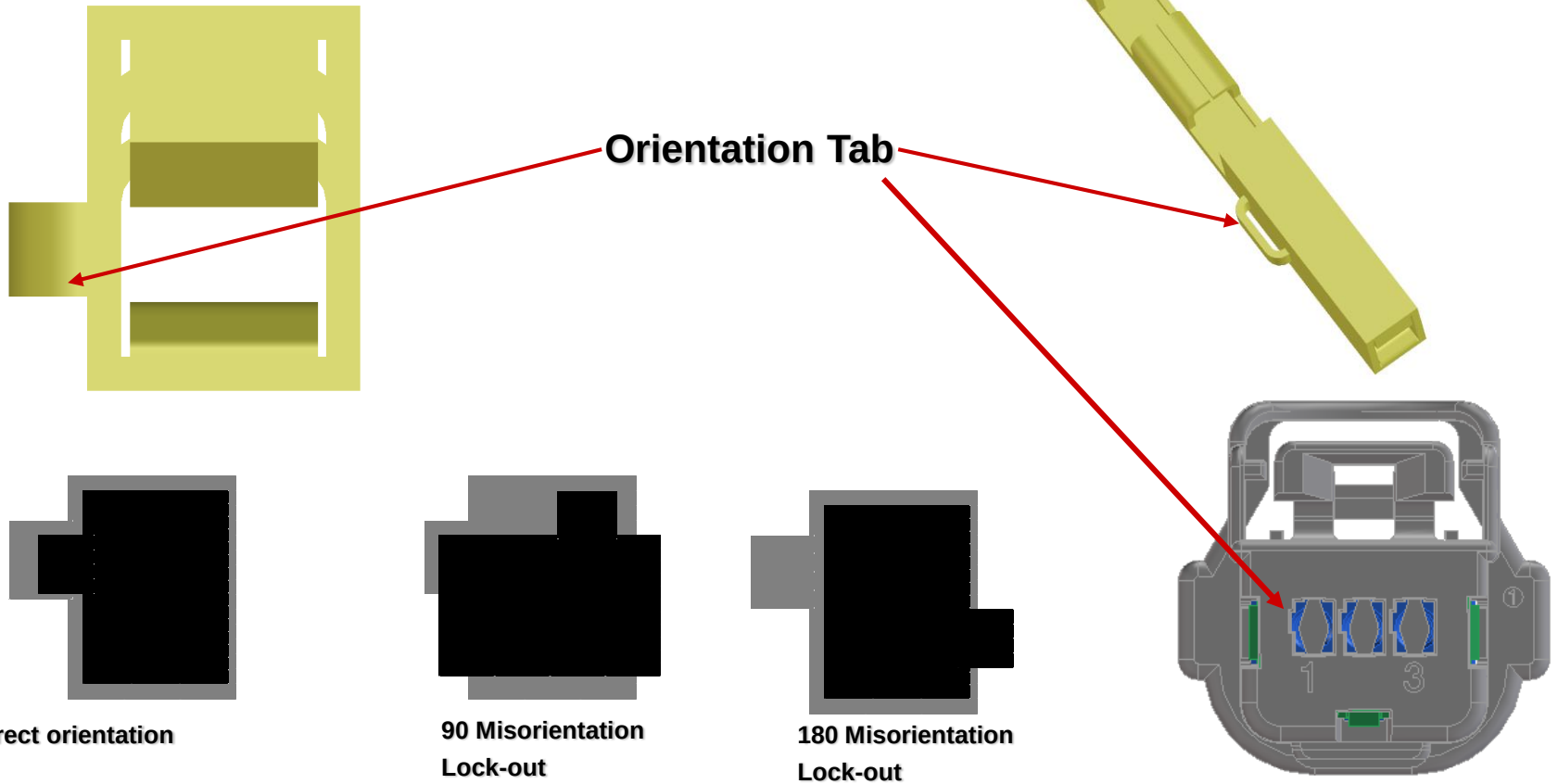
0.75mm²
TIN # 7116-7278-02
0.35-0.5mm²
TIN # 7116-7277-02

TE 0.64mm Side Orientation

18 AWG (0.75mm²)
SILVER # 2138699-2
20 & 22 AWG (0.35-0.5mm²)
SILVER # 2138699-1

Section 2:
MX 64™ Connectors

Yazaki Kaizen/ Yazaki FLX/ TE Gen Y/ TE Side Orientation/ JST AIT 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)

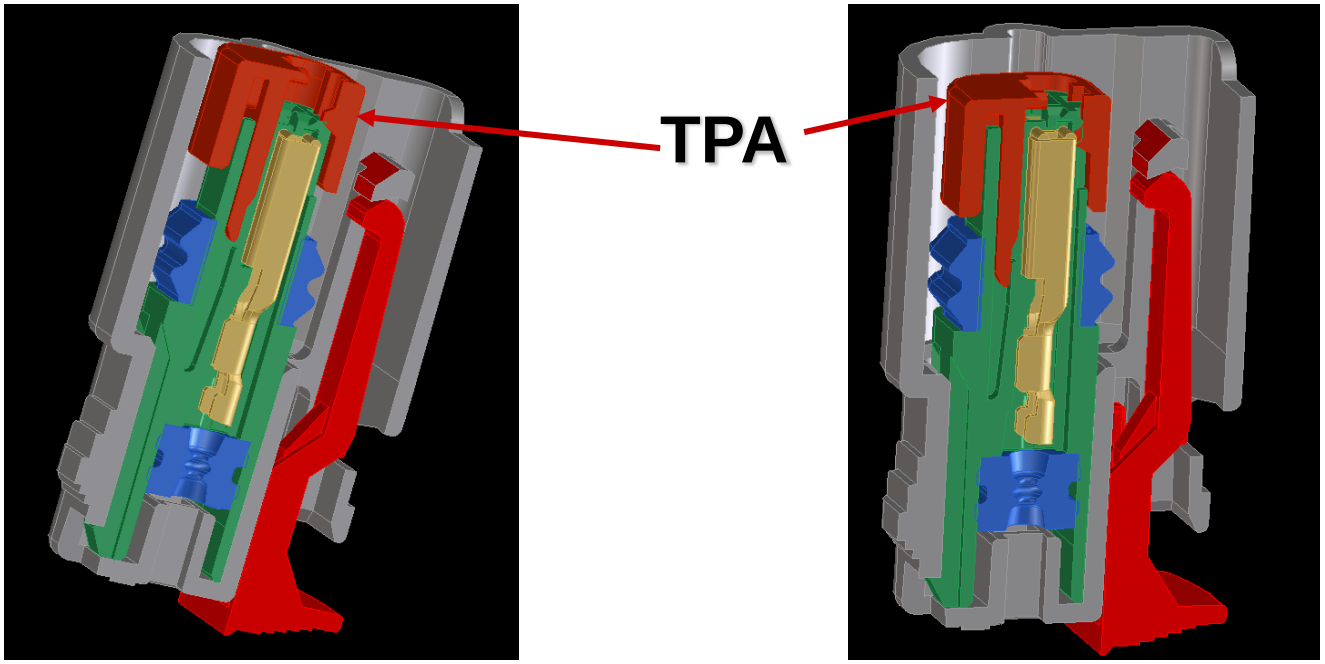


Fig. 3-1 Fig. 3-2

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

Section 3: Harness Assembly Instructions

TPA must be in pre-lock position to install terminals!

AS SHIPPED

TPA in prelock



Fig. 3-3

TPA locked

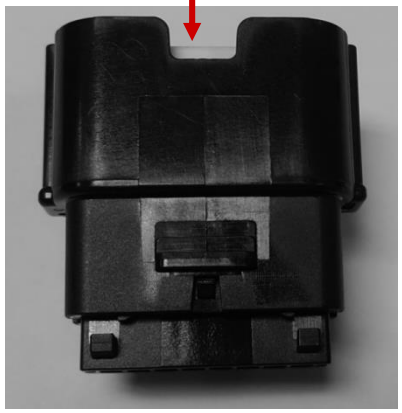


Fig. 3-4

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. 3-5
- DO NOT PRY ON THE LATCH SIDE OF THE CONNECTOR This will damage the TPA and connector!

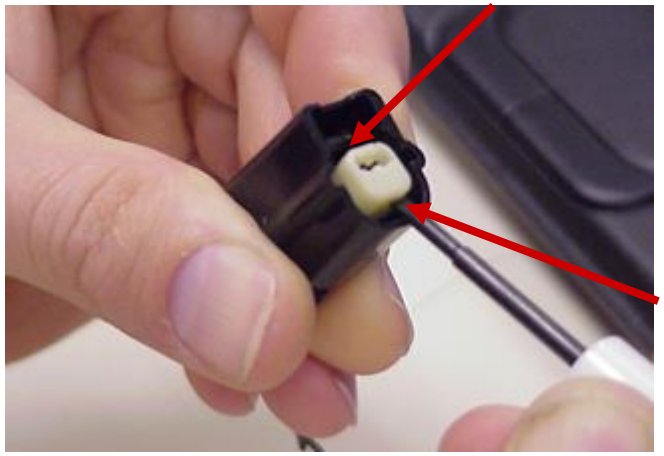


FIG. 3-5

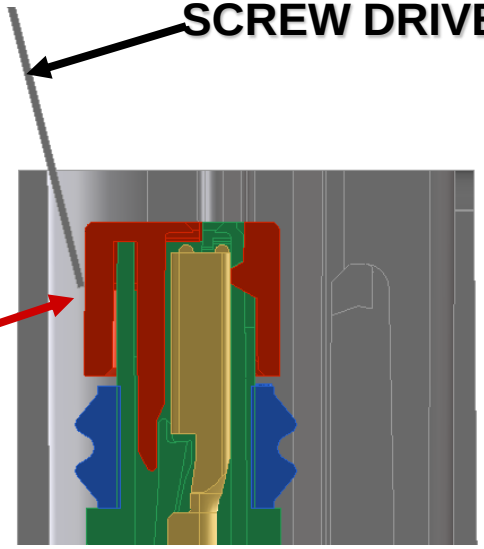


FIG. 3-6

Section 3: Harness Assembly Instructions 4-8 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 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!



Fig. 3-7

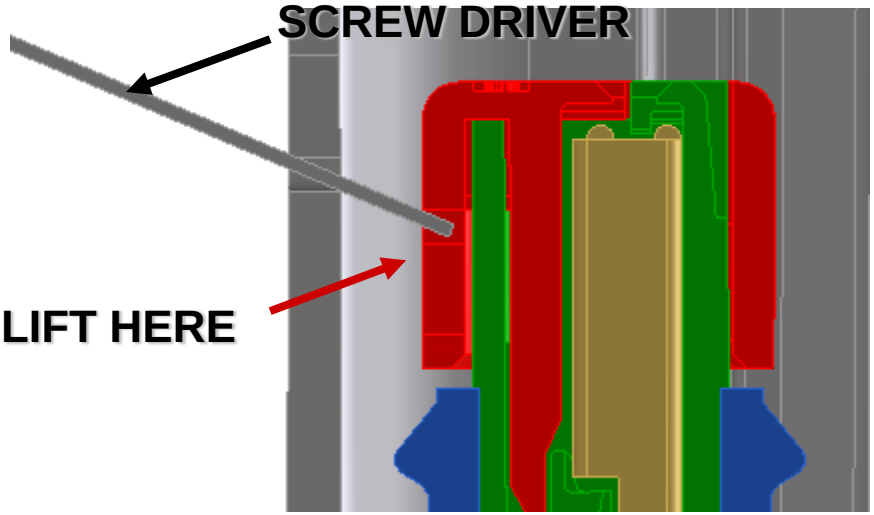


Fig. 3-8

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. 3-9) and insert through appropriate circuit opening (Fig. 3-10). 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, then pull the wire to ensure terminal is locked. (PUSH CLICK PULL)

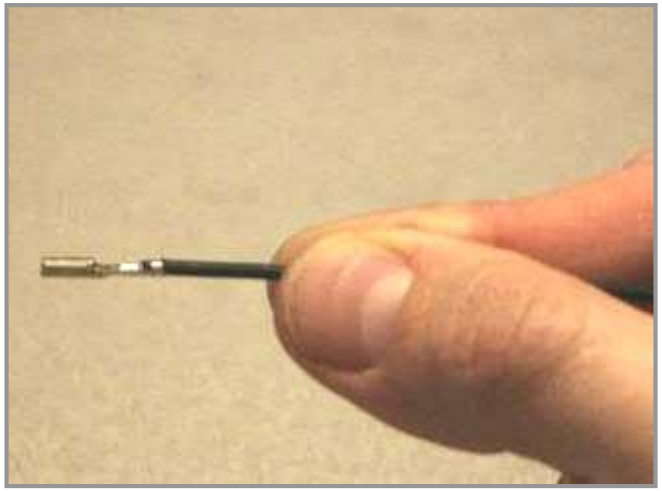


Fig. 3-9

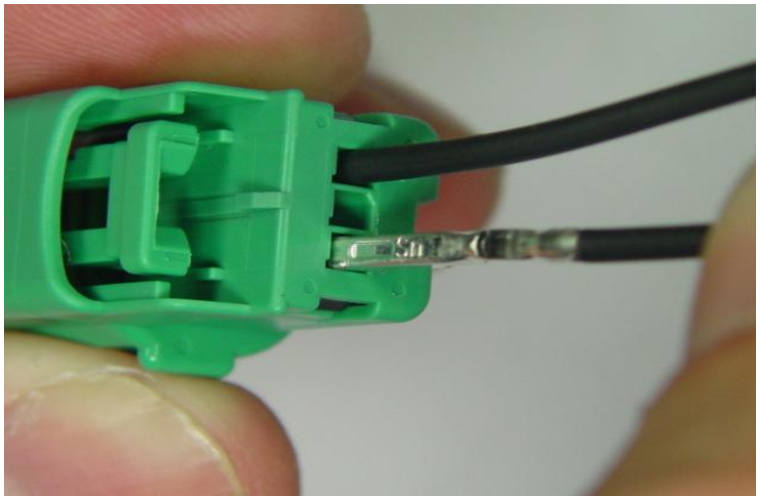
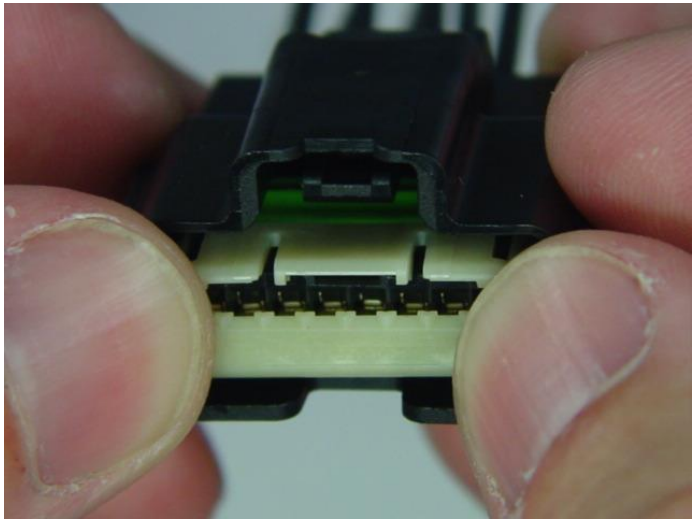


Fig. 3-10

Section 3: Harness Assembly Instructions

C. 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. 3-11) 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.



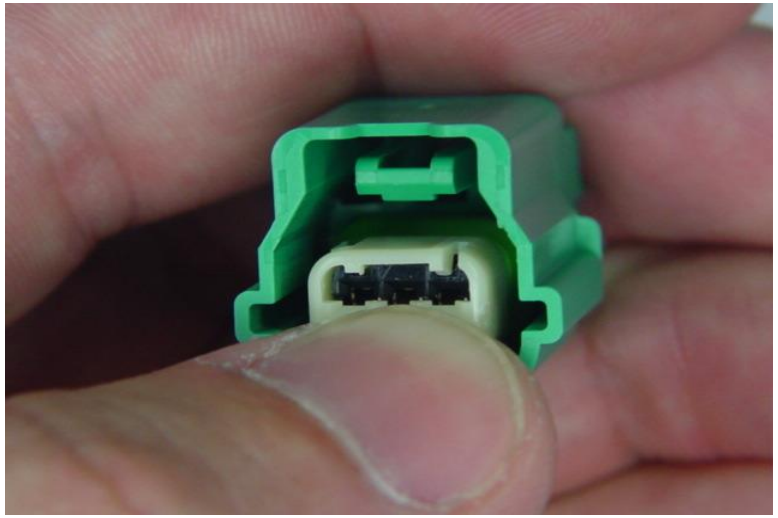
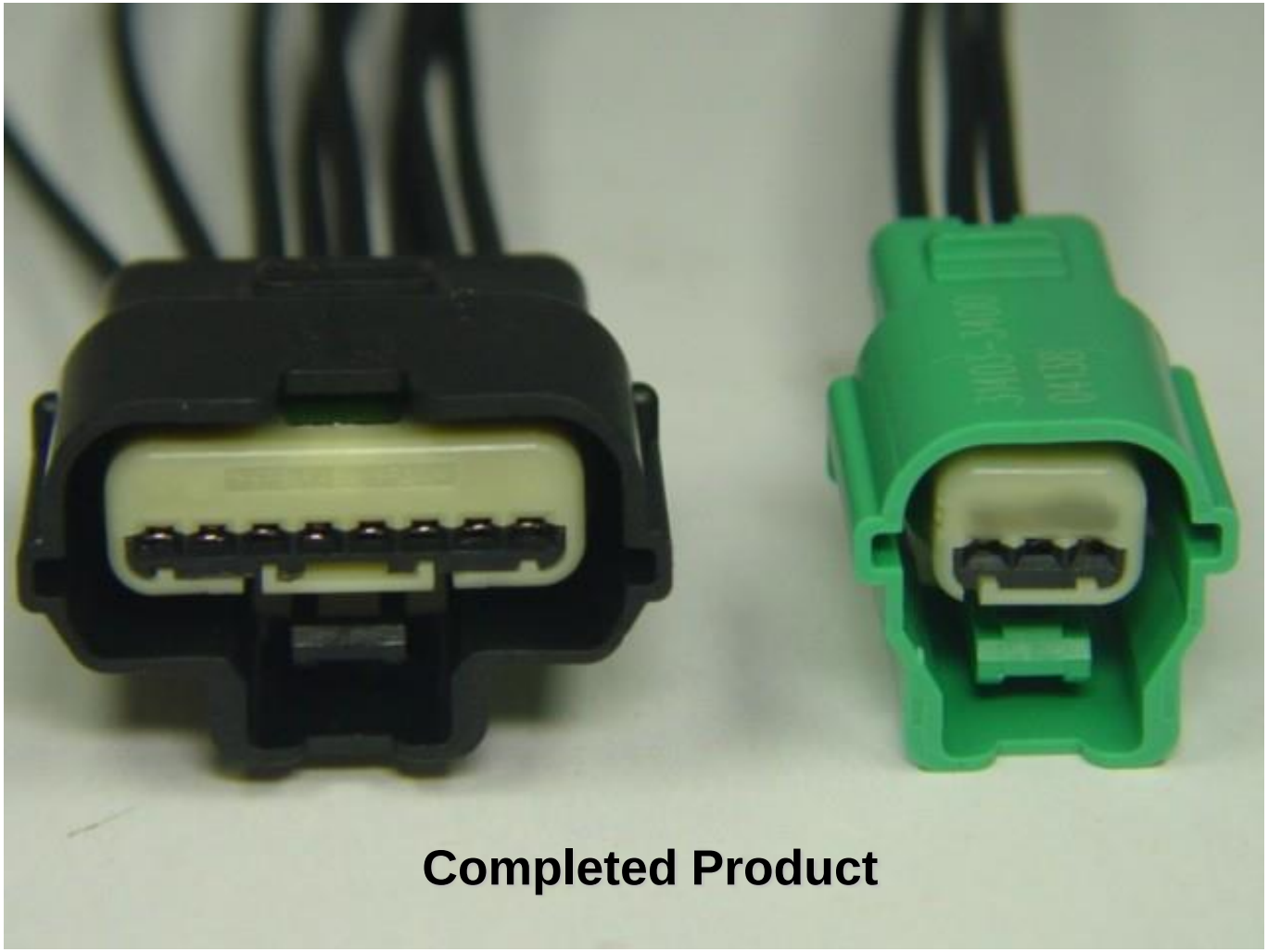


Fig. 3-11 A&B

Section 3: Harness Assembly Instructions



Completed Product

Section 3A: 8 way Wire Dress Cover assembly Instructions

- **Wire Dress Cover (WDC) Installation**
  - Step1: Bend the wire toward the required direction (Fig.3A-1)
  - Step2: Put the WDR to the position that showed in fig.3A-2 , then Push it to the stopped position along Dir._1 (Fig. 3A-2). Don't assembly like Fig.3A-5
  - Step3: Push WDC along Dir._2 to the final lock positon with an audible click (Fig. 3A-3). then slightly pull WDC along Dir._3 to ensure it is locked (Fig.3A-4)



Fig. 3A-1

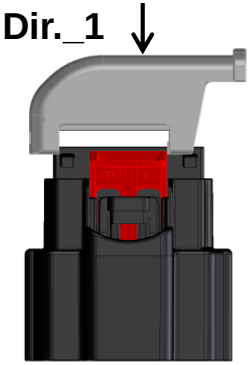


Fig. 3A-2

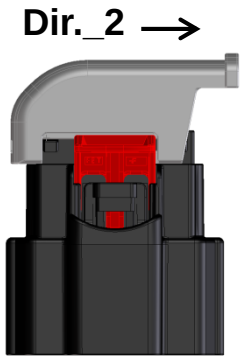


Fig. 3A-3

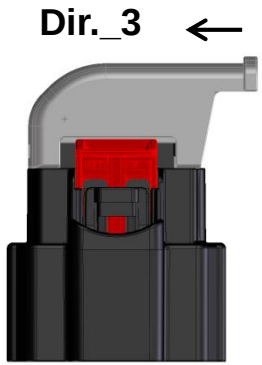


Fig. 3A-4

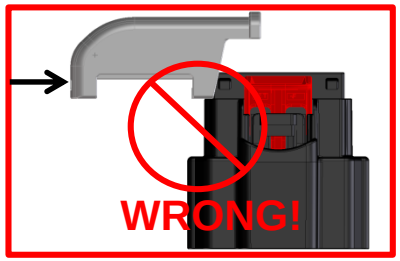


Fig. 3A-5

PUSH CLICK PULL

Section 4

Connector Mating Instructions

Section 4: Connector Mating Instructions

A. Connector polarization options & color identification

- 2, 3, 4, 5, 6 way
  - USCAR Option A (BLACK)
  - USCAR Option B (GRAY)
  - USCAR Option C (BROWN)
  - USCAR Option D (GREEN)

- 8 way
  - Option A (BLACK)
  - Option B (LIGHT GREY)
  - Option C (DARK GREY)

Special request Option refer to related drawing

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

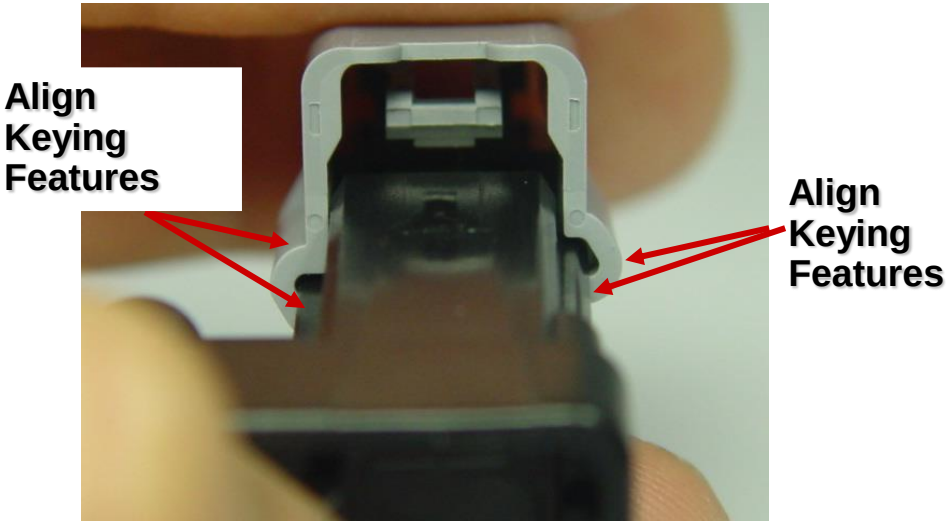
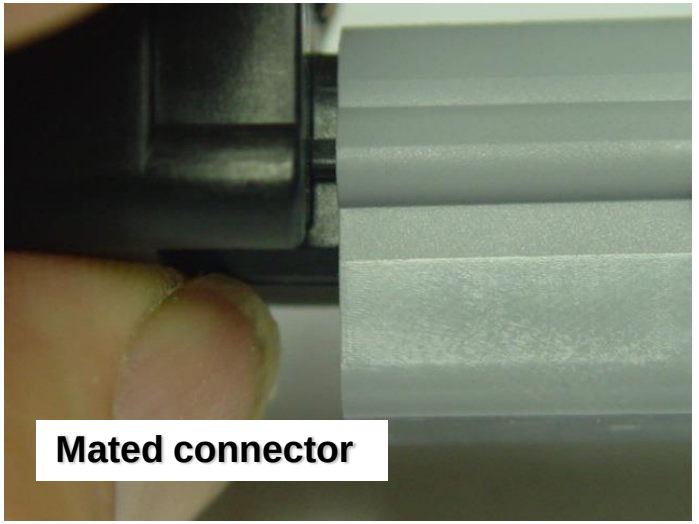


Fig. 4-2



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).

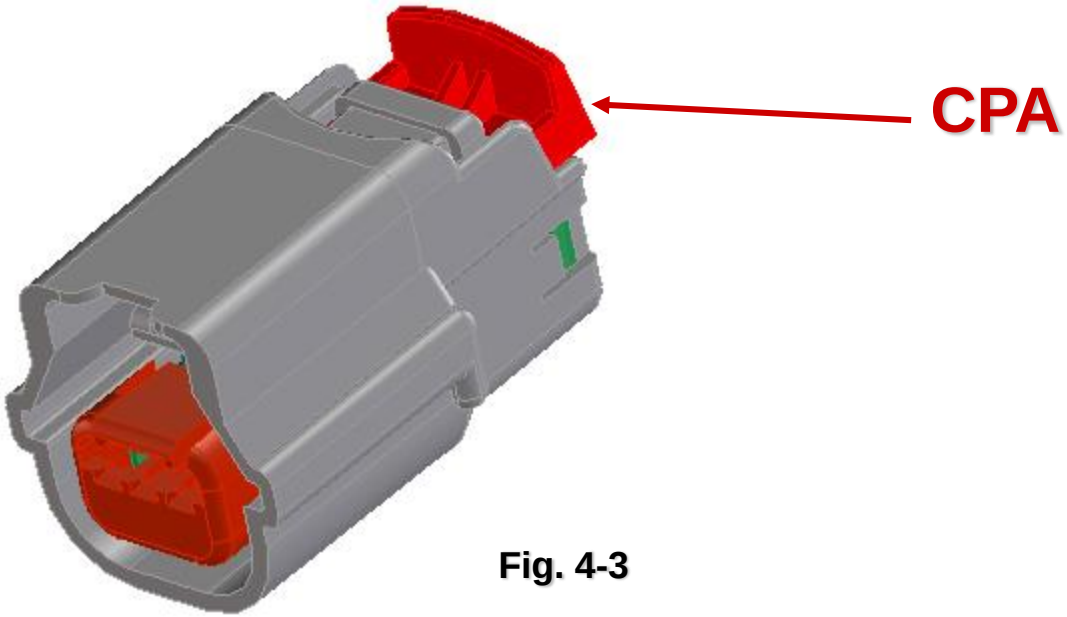


Fig. 4-3

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

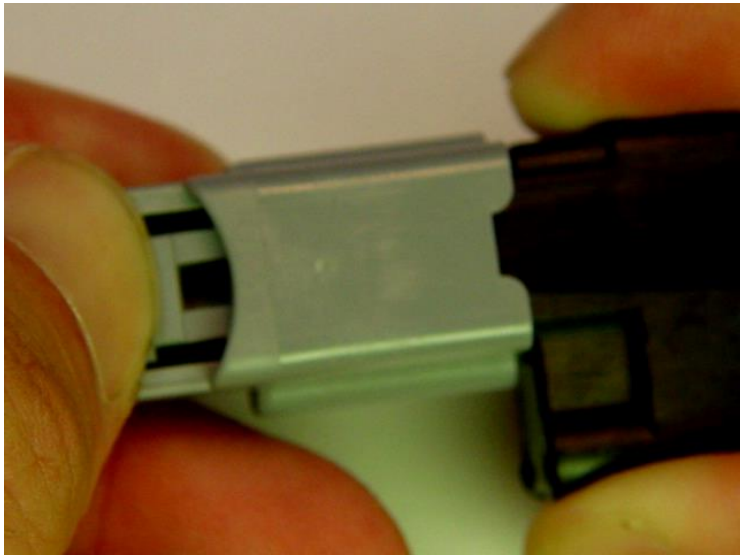
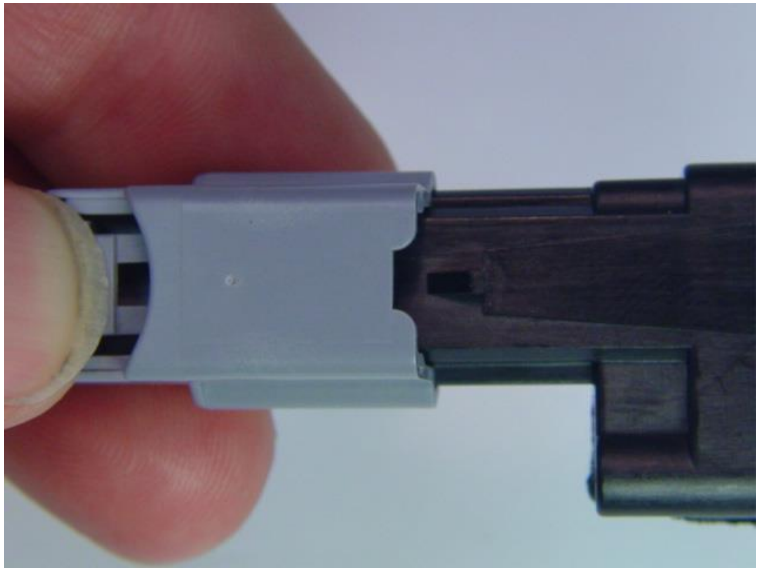


Fig. 5-2



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.

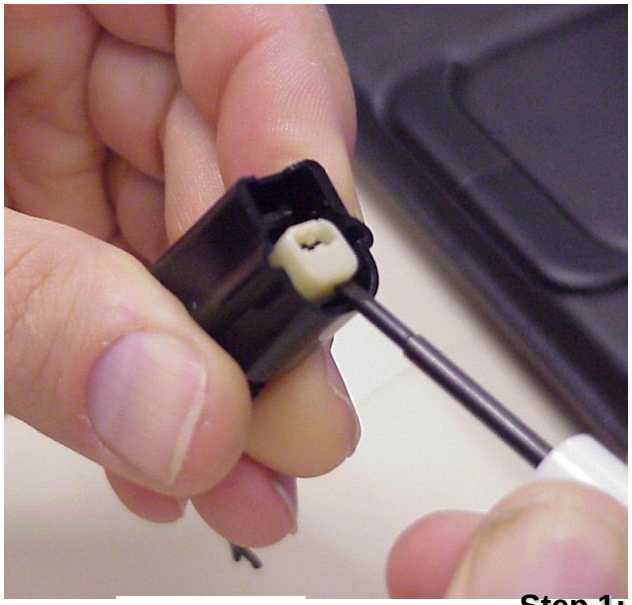


Fig. 5-3

Step 1: Pry Up TPA

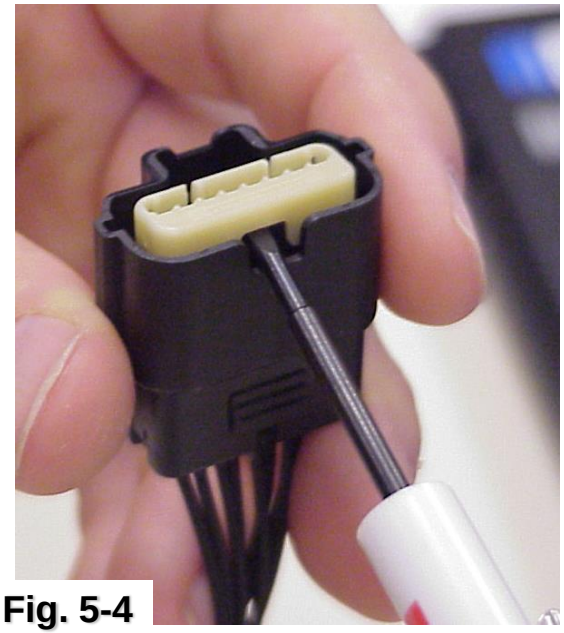
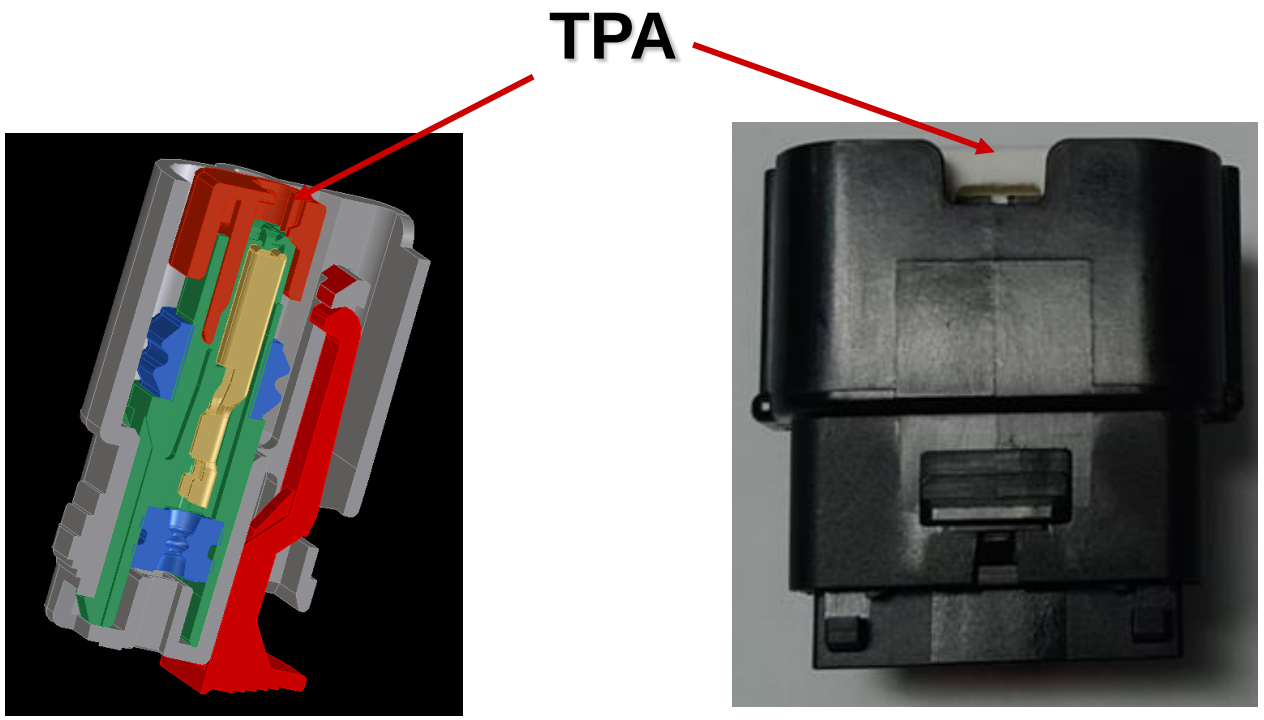


Fig. 5-4

Section 5: Service Instructions

B. TPA Servicing (continued)



Views of TPA in “Pre-Lock” Position

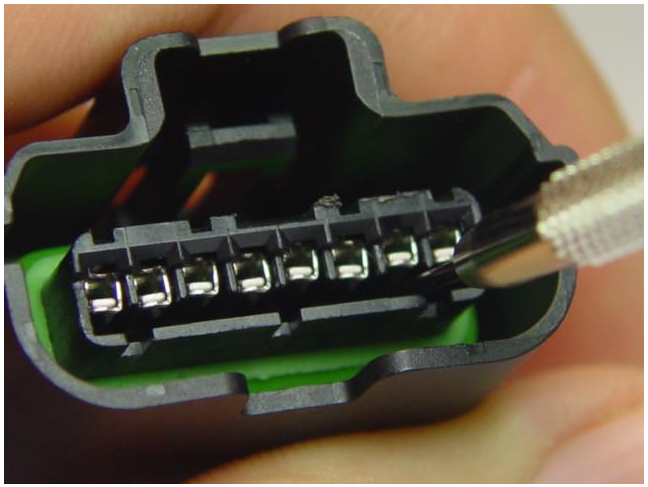
Section 5: Service Instructions

C. 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.



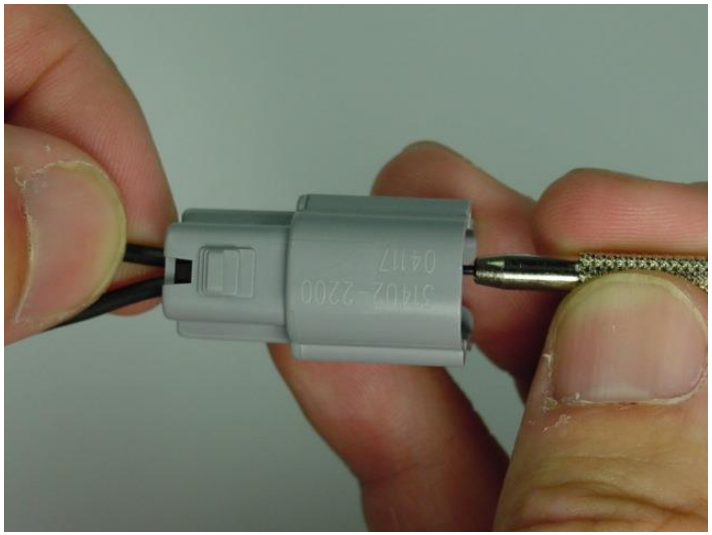




Section 5: Service Instructions

D. 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.



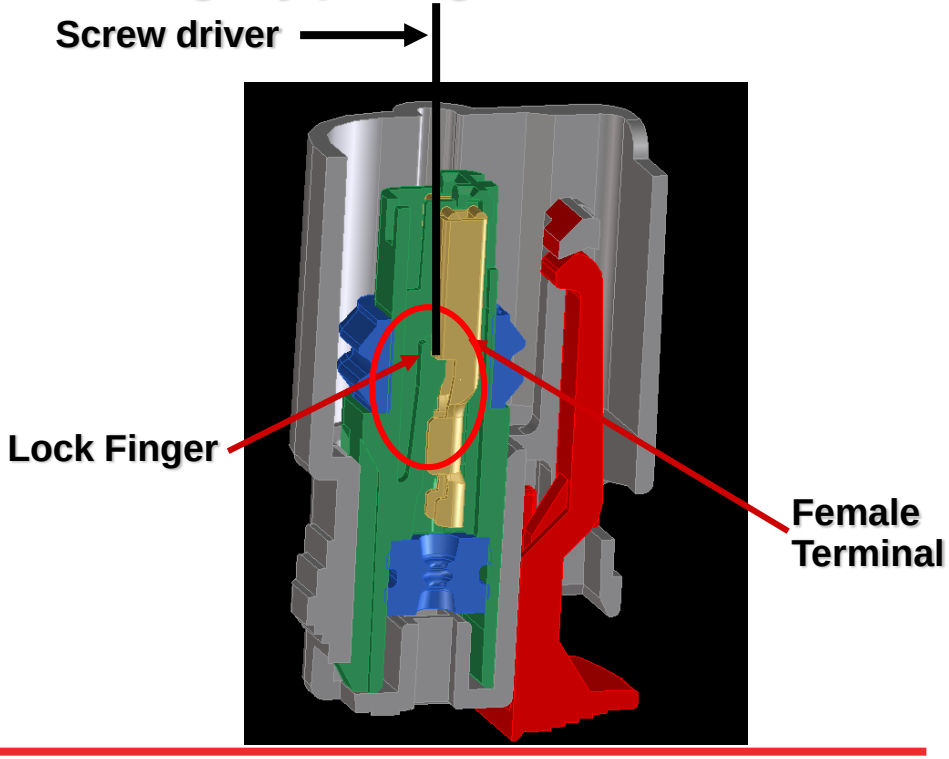
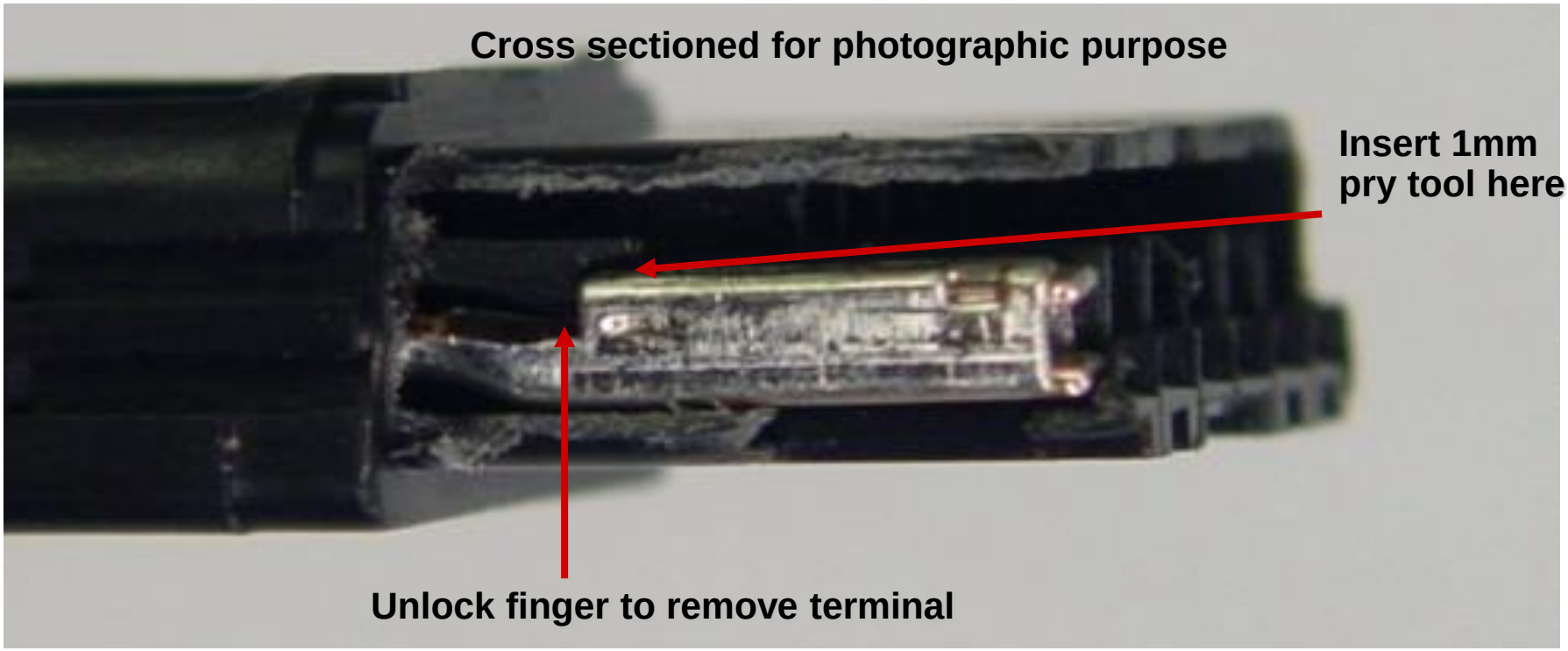


Fig. 5-9

Section 5: Service Instructions

E. 0.64mm Terminal Removal (continued)

- 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.

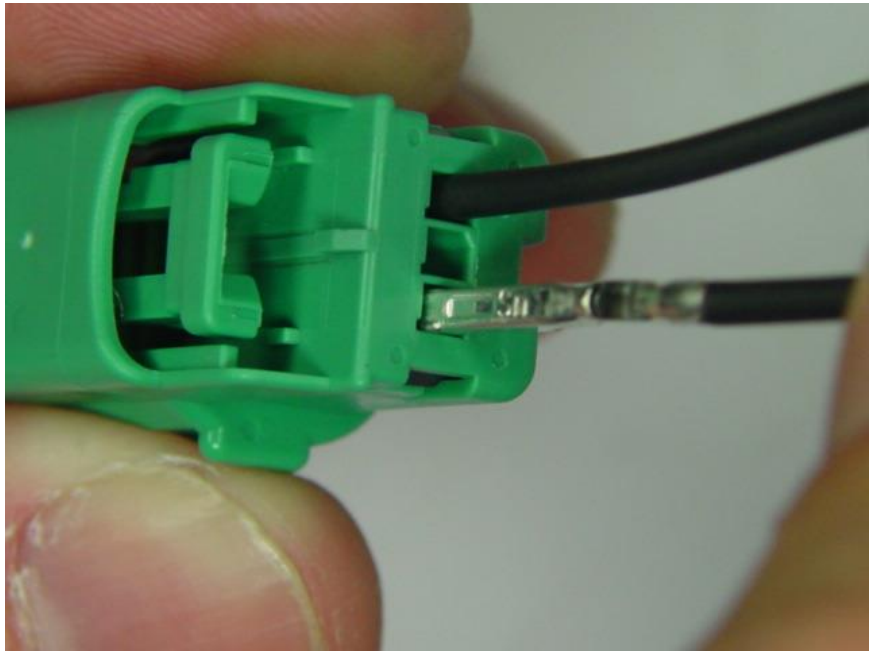


Fig. 5-12

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. TE/Molex "GET" Terminal Crimping

- If the TE/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 Kaizen/ Yazaki FLX/ TE Gen Y/ TE Side Orientation/ JST AIT terminal crimping

- If the Yazaki Kaizen/ Yazaki FLX/ TE Gen Y/ TE Side Orientation/ JST AIT terminal needs to be replaced please consult Yazaki/TE/JST for crimp tool information.

Section 5A: 8 way WDC Service Instructions

- **WDC Removal**
  - Carefully Push down and displace the lock finger using 1.5mm flat blade screw driver. Apply light pressure on lock finger while lightly Push WDC with the thumb (Fig. 5A-4). Once the locking finger has been displaced gently, push the WDC to remove it along Dir._4. (Fig. 5A-6)
  - Remove the WDC gently along Dir._5. (Fig. 5A-7)
  - Do not use excessive force. Excessive force can damage the lock finger. (Fig. 5A-5)



Fig. 5A-4

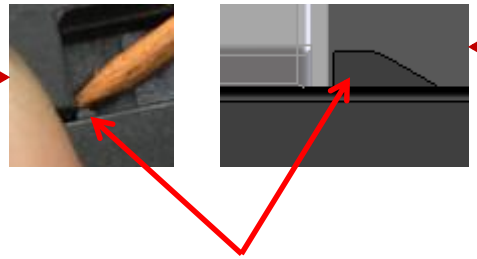


Fig. 5A-5

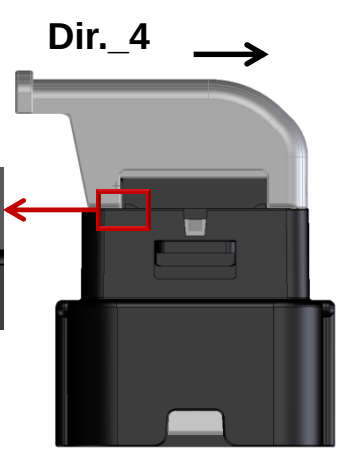


Fig. 5A-6

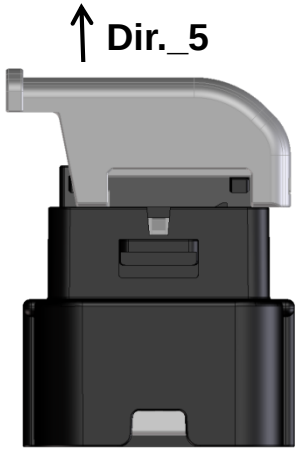


Fig. 5A-7

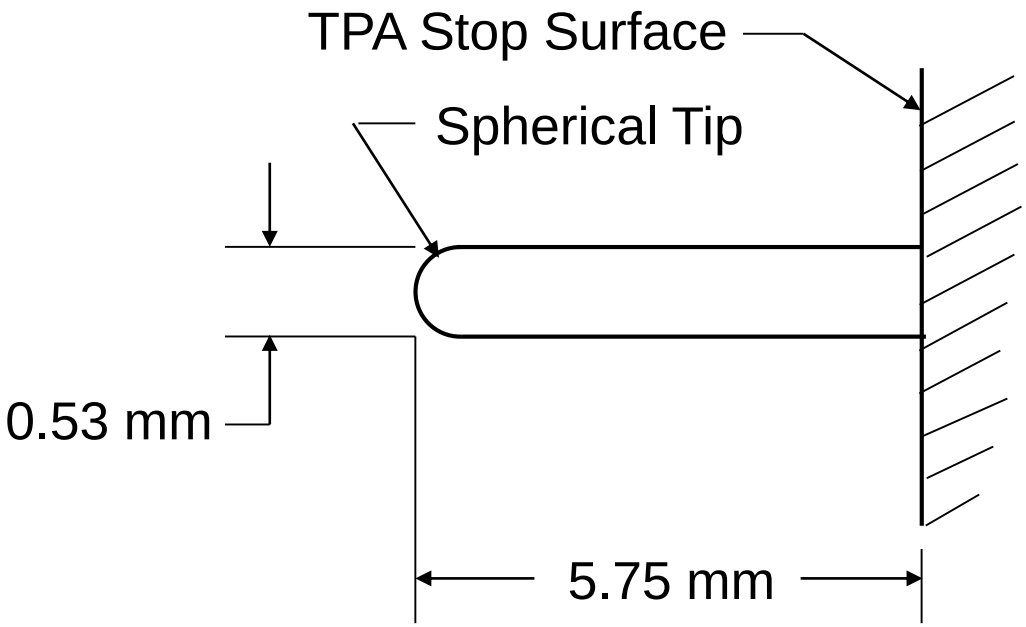
Section 6

Electrical Continuity Checking

Section 6: Electrical Continuity Checking

A. Pogo Pin Recommendation -MX 0.64mm Terminal

- **Pogo Pin Specification – See next page.**



Section 6: Electrical Continuity Checking

A. Pogo Pin Recommendation - 0.64mm Terminal (continued)

Probe Pin Details (0.64mm terminal)
Manufacturer: Lone Star Industrial
Part number: LS040RS-ELW-277-N-4.7
Pin diameter: 0.020" (0.53 mm)
Tip shape: Spherical
Tel: (915) 779-7255

Ordering Example: LS040RS-ELW-277-N-4.7
Plunger Plating - Spring Force

TECHNICAL DATA

Minimum Centers:	.075 (1.91)
Working Travel:	.070 (1.78)
Current Rating:	3 Amps

MATERIALS G N

Plunger:	Heat Treated BeCu, Gold or Nickel Plated.
Barrel:	Brass, Gold Plated.
Spring:	Stainless Steel or Music Wire.
Seal Ball:	Chrome Steel.
Receptacle:	Nickel Silver, Gold Plated.

SPRING FORCE	OZ. (GRM) at .070 (1.78) Travel	PRELOAD
Standard	4.7 (133)	1.4 (40)

Dimensions in inches (millimeters)



POGO PIN

Section 6: Electrical Continuity Checking

B. Recommendations

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:

- **First, a visual inspection of all the pins for damage should be performed.**
- **Next, a testing block should be used to depress all the pogo pins up into the barrel. If there is a bent or sticking pin, it should remain stuck in the barrel of the pogo pin. A damaged or stuck pin should be replaced before any additional testing is performed.**

Section 6: Electrical Continuity Checking

B. Recommendations (continued)

Probing damage can occur…

- If a sharp-ended probe is inserted into the terminal. This may damage the plating and increase contact resistance.
- If an oversized diameter probe is inserted into the terminal. This will overstress the beam in the terminal, creating an environment for intermittent contact and/or increased electrical resistance.
- If a probe is inserted into the terminal at an angle or off center. This may damage the terminal and/or the connector.

Section 6: Electrical Continuity Checking

C. Manual Probing of the Connector

- If the connector must be probed off-line, please use:
  - GM probe tool # J-35616-64A for the 0.64mm terminal (Fig. 6-1).
- Insert the probe through the terminal opening as shown in Fig. 6-2.

Fig. 6-1

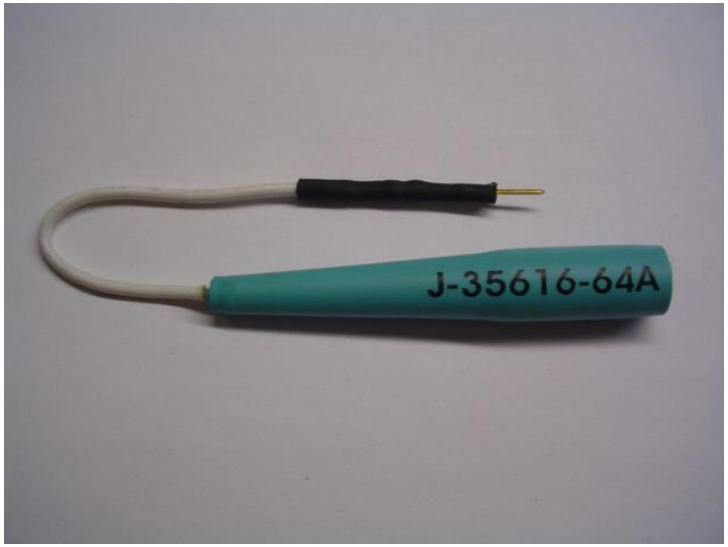
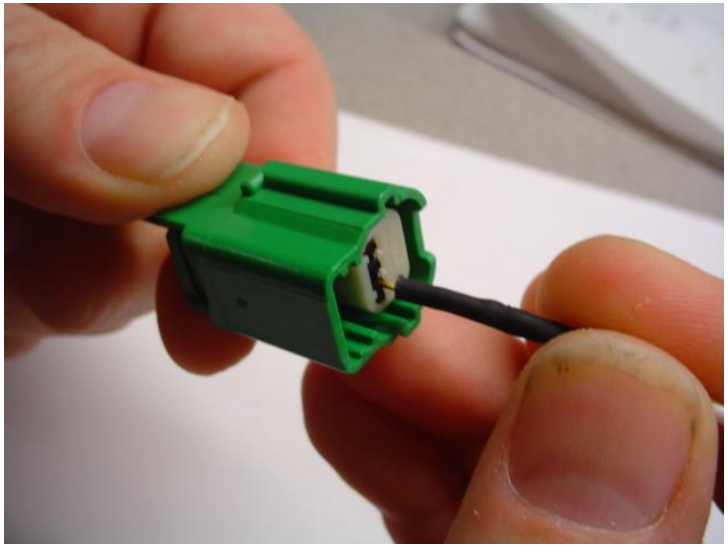


Fig. 6-2

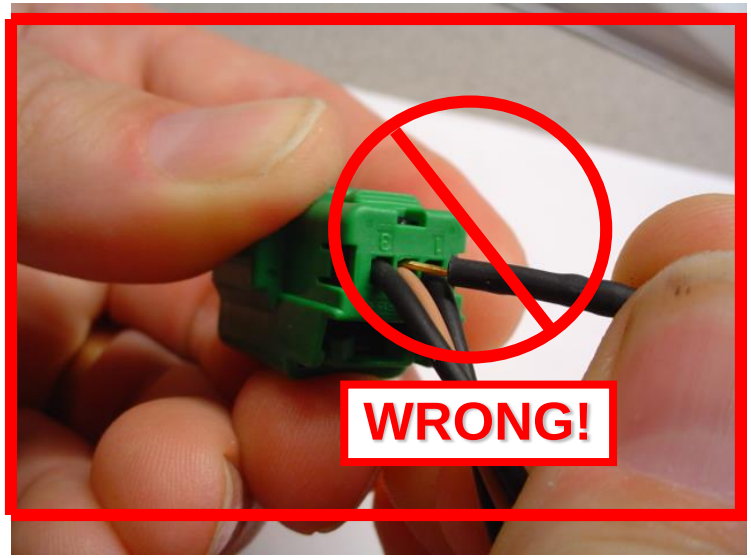


Section 6: Electrical Continuity Checking

C. Manual Probing of the Connector

Manual probing damage can occur…

- If a probe is inserted into the back of the connector. This may damage the wire seal, creating an environment for fluid ingress.



- If the wire insulation is pierced or chafed. This may create a leak-path for fluid ingress and/or wire corrosion.