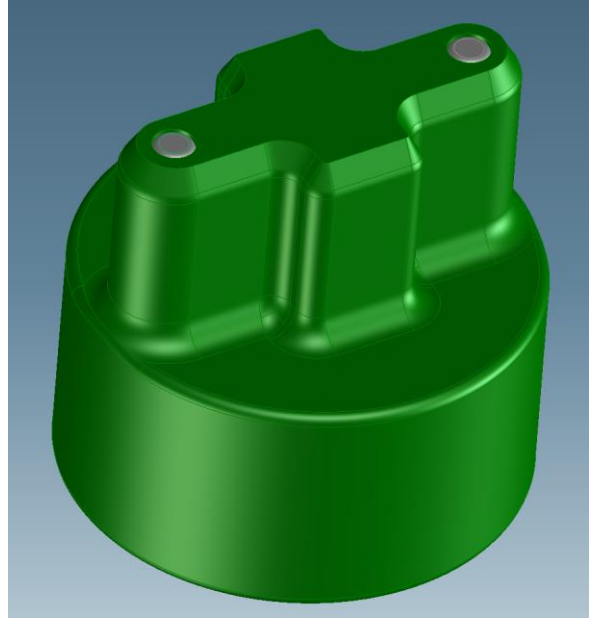


Allison Engineering Lotus Elan Modern Window Motor Kit Installation Instructions

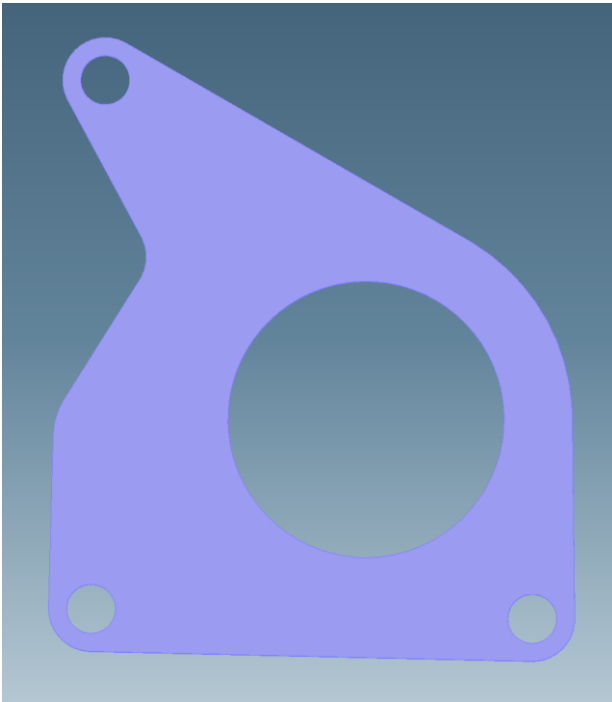
20 July 2021

Custom Parts in the kit

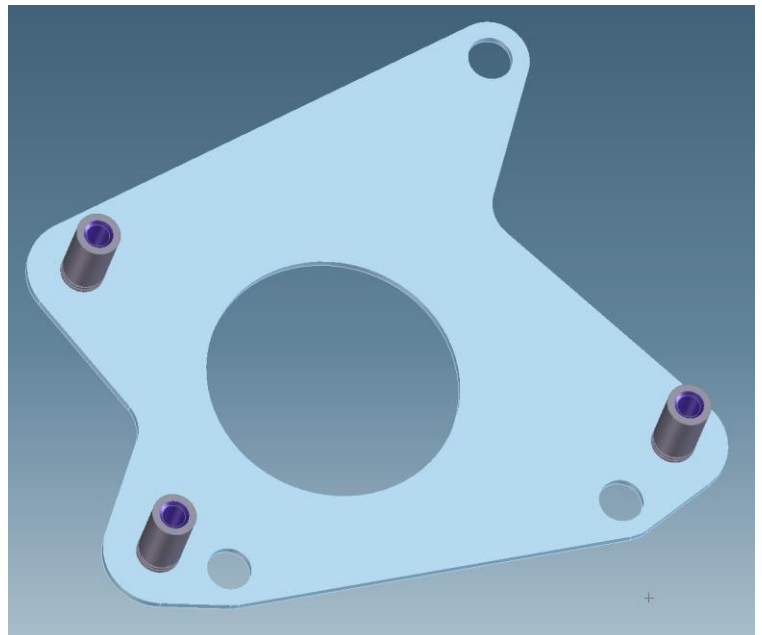
2each Drive Adapter – 3d printed part with 2 dowel pins pressed in



2each Motor Spacer Plate



1each Left & Right Motor Plate with standoffs (right shown)



Assemble the window motor

Window Motor Information:

2014-2020 Chev Sonic or Aveo rear door motors

Elan left side motor: GM PN 9591-9457 (Sonic right rear motor)

Dorman 742-088

Elan right side motor: GM PN 9591-9458 (Sonic left rear motor)

Dorman 742-087

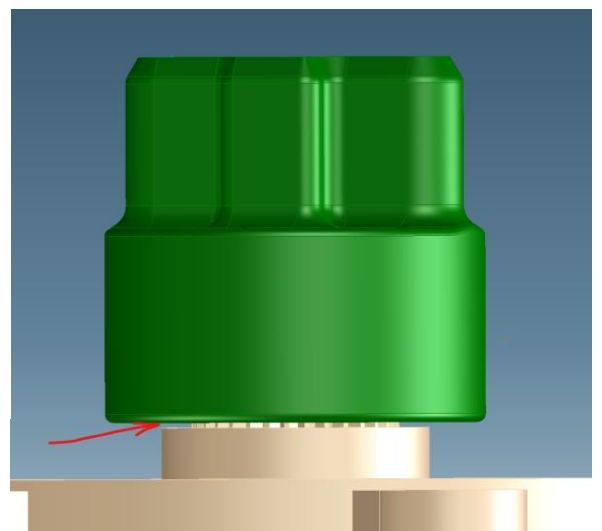
1. Drill out the 3 screw holes shown below in the plastic housing to 13/64" or 5.2mm. **Do not over size them.** The standoffs that the motor rests on are only 0.280" in diameter.
2. Carefully line up the splines on the window motor drive and the inside splines in the drive adapter and push the drive adapter fully onto the spline drive on the window motor by hand. The gap between the drive adapter and the flange on the motor spline drive (shown below, red arrow) should be 0 up to 0.08" / 2mm. Do not hammer or use a press to install the drive adapter. That could break the drive adapter. If it doesn't fit, check the parts to ensure there isn't something in the splines.



Weights for reference:

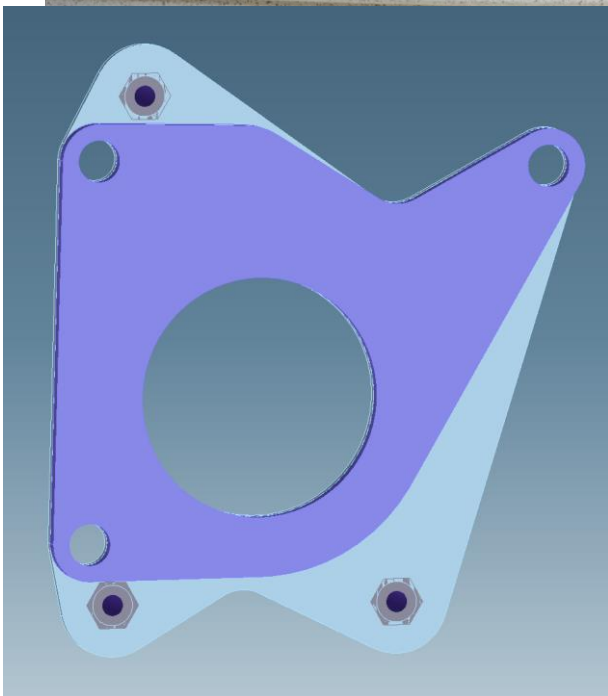
Original Lotus motor = 1380 grams

Modern motor = 570 grams



Attach the mounting brackets

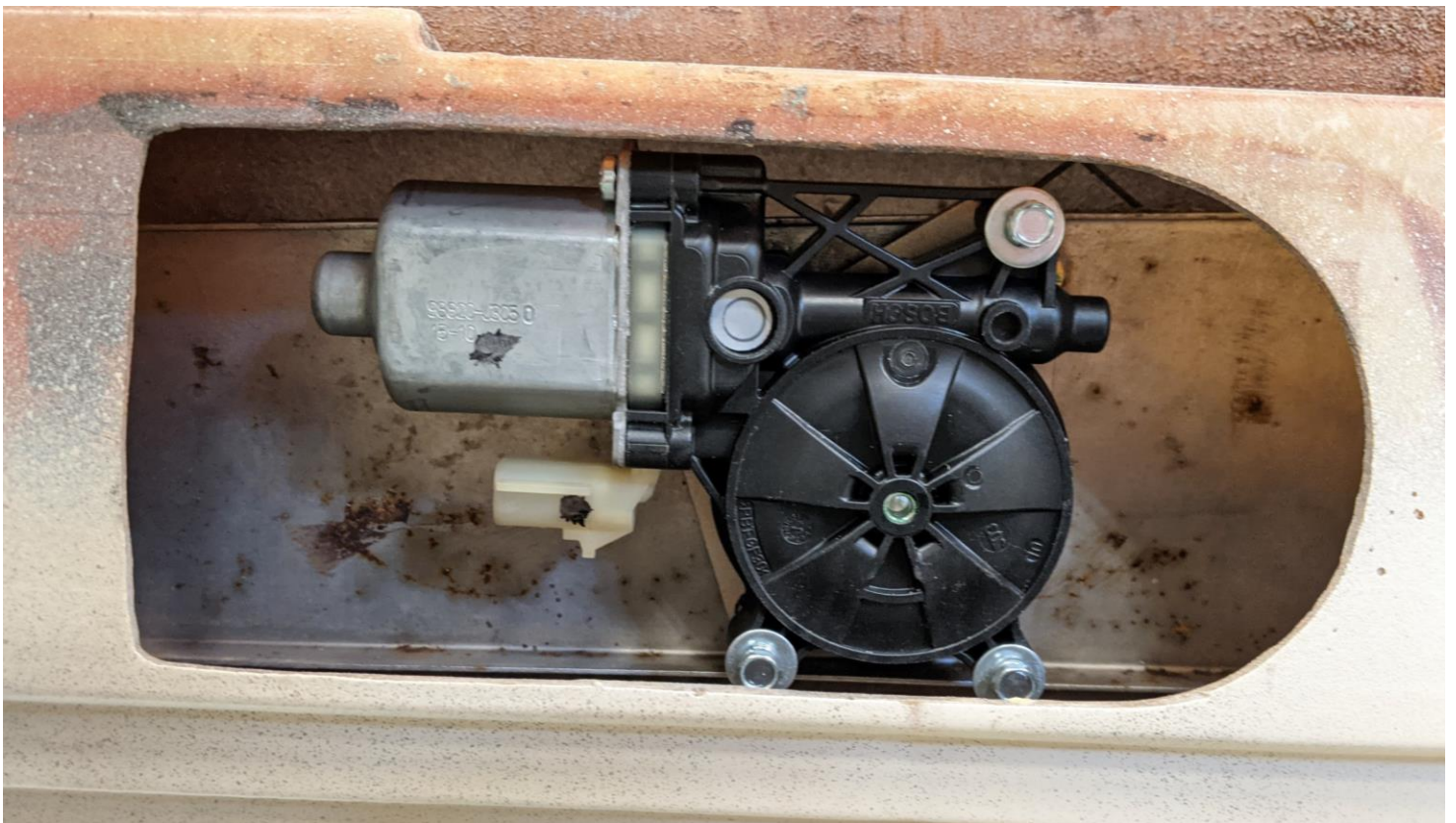
1. Attach 1 spacer plate and the appropriate motor plate onto the stock Lotus window frame in the car. The spacer goes against the window frame. The right side is shown in the photo below
2. Attached with 3 each $\frac{1}{4}$ -28 x $\frac{1}{2}$ " or $\frac{5}{8}$ " long hex head screws with your choice of locking hardware. NOTE: the bolt under the motor (upper left in the photo below) gets close to the motor, do not use a tall head style screw or thick washers



Right plates shown from the window frame side

Attach the motor

1. Attach the appropriate window motor to the motor plate. The right side is shown in the photo below. The motor gearbox rests on the top of the 10-32 standoffs. You will need to wind the window up/down to line up the drive adapter on the motor to the cable drum. You only need to get it close, you can use the motor to twist the mechanism to get the holes to line up correctly.
2. Attached with 3 each #10-32 x 7/8" or 1" long hex head screws with your choice of locking hardware. NOTE: the standoffs on the motor plates are a blind style so a screw that is too long will bottom out and not fully tighten. Also the standoffs are stainless steel, so I recommend that you use zinc plated hardware or if stainless hardware is used, better to add a anti-seize compound to the threads so they don't gall.

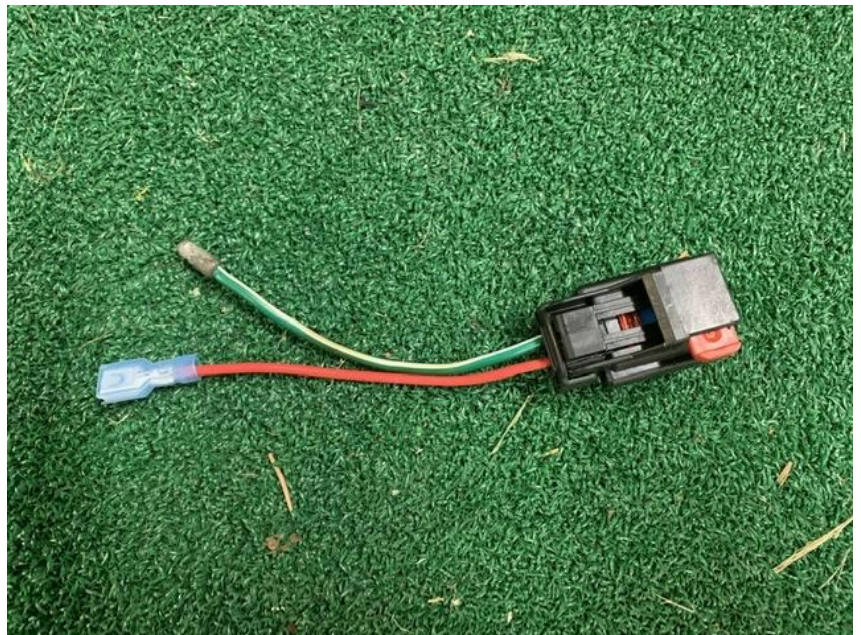
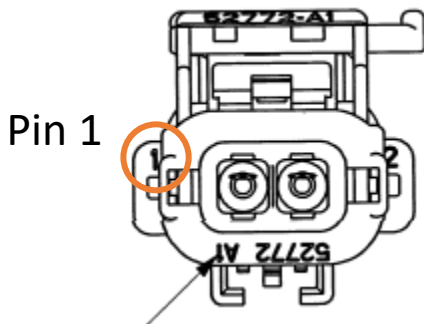


Wiring the motor

1. Your choice to make a short adapter harness (example shown below bottom right) so you aren't modifying the stock wire harness or you can cut off the stock connectors and wire directly to the new motor connector
2. Shown below (bottom left) is a picture showing which color wire connects with which pin the 2 pin connector.
3. Wiring is the same for both doors
4. Extra ground wire is not required to be connected

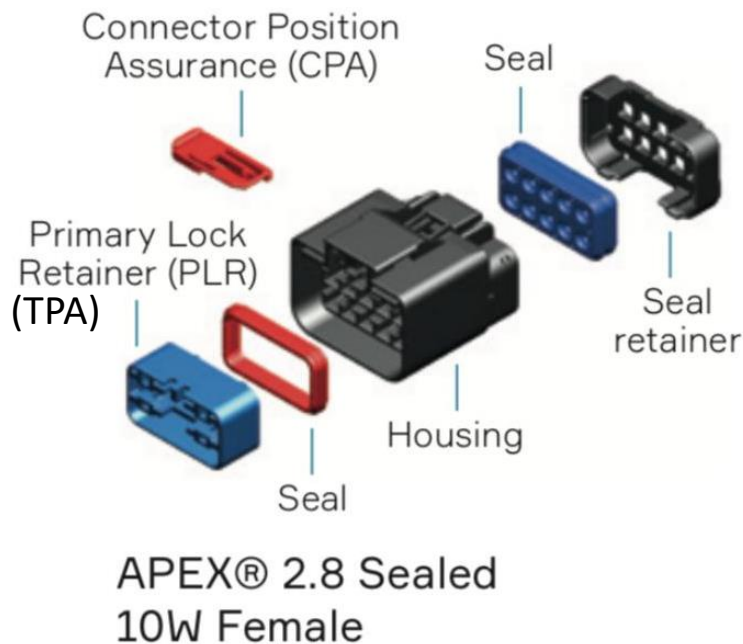
Pin 1 = left side from connector rear with lock on top as shown in sketch below (top left) = brown/green wire

Pin 2 = brown/red wire



Connector Information

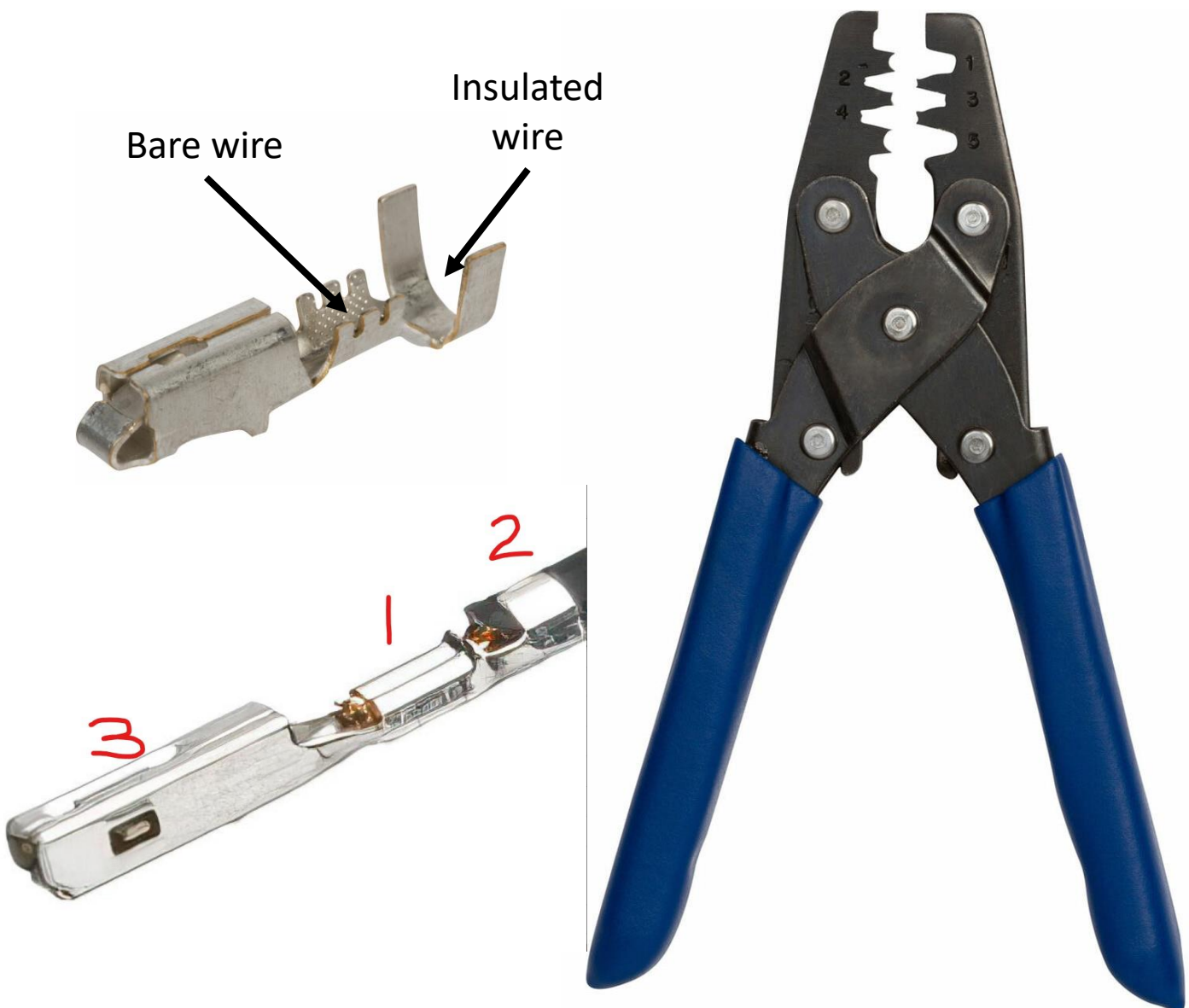
- The kit includes 2 connector bodies and 6 terminals (4 needed plus 2 spares just in case)
 - These are Aptiv APEX 2.8 sealed style 2 pin connectors
 - Connector housing components are shown below
 - Housing PN: 5420 0206
 - Terminal PN: 1362 7267-L
 - Terminal extraction tool PN: 5400EXT or 12094429
- **NOTE: the connector will not fully engage to the motor connector until it is fully assembled. Do not force it on.**



Terminal Crimp Instructions

1. Slide both wires thru the seal retainer & wire seal before crimping

2. Strip approx. 0.15" / 4mm of the insulation off the end of the wire
3. Place the bare wire section into the crimp section shown below and crimp with an appropriate crimping tool. See area #1 below for what a proper crimp looks like
4. Crimp the insulated section of the wire to strain relief the wire. See area #2 below for what a proper crimp looks like



Validate wind direction (optional)

1. Connect the terminals without the connector housing to the window motor and validate window direction is correct with your wiring and switch
2. Note which wire color is which pin on the connector

Connector Assembly & Final Hookup

1. Once direction is validated, fully assemble the connector housing following the instructions on the following page
2. Plug the connector on the window motor
3. Do a final test to ensure terminals are fully seated and correctly assembled to the connector housing
4. Engaging the CPA (red lock) is optional. These are difficult to engage/disengage and not required in this application.

Connector Assembly Instructions

FEMALE

- 1** CPA and TPA in pre-staged position



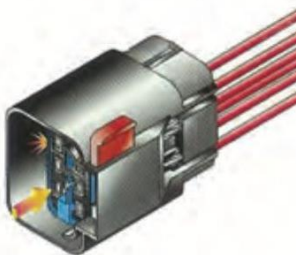
- 2** Insert male terminal through rear mat seal. The grip may be oriented either up or down.



- 3** Seat male terminal into connector cavity. Listen for audible “click.”



- 4** Push TPA into its locked position.

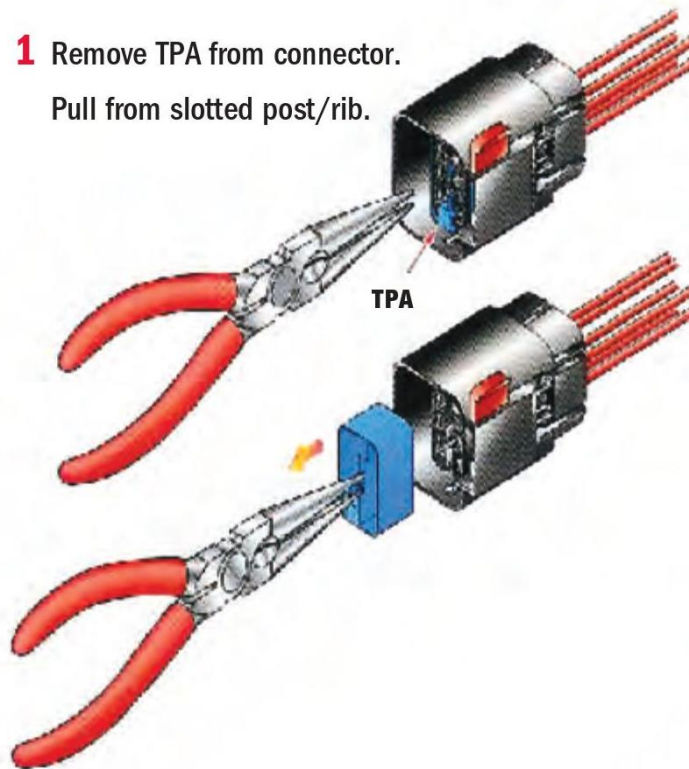


Connector Disassembly Instructions

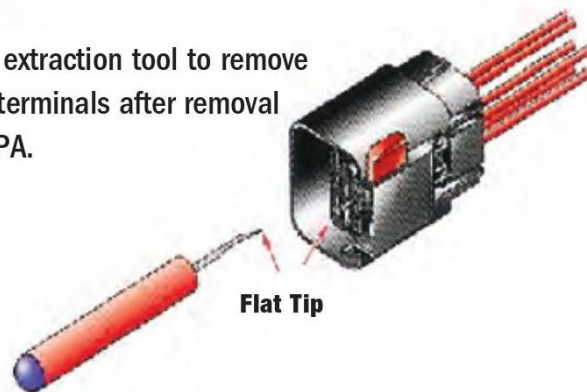
FEMALE

- 1** Remove TPA from connector.

Pull from slotted post/rib.



- 2** Use extraction tool to remove the terminals after removal of TPA.



- 3** Slightly lift plastic finger lock in the cavity while pulling on the wire to remove the terminals out of the rear of the connection housing.

