

AUTOMOTIVE SEAT HEATING & COOLING

DegreeZ™

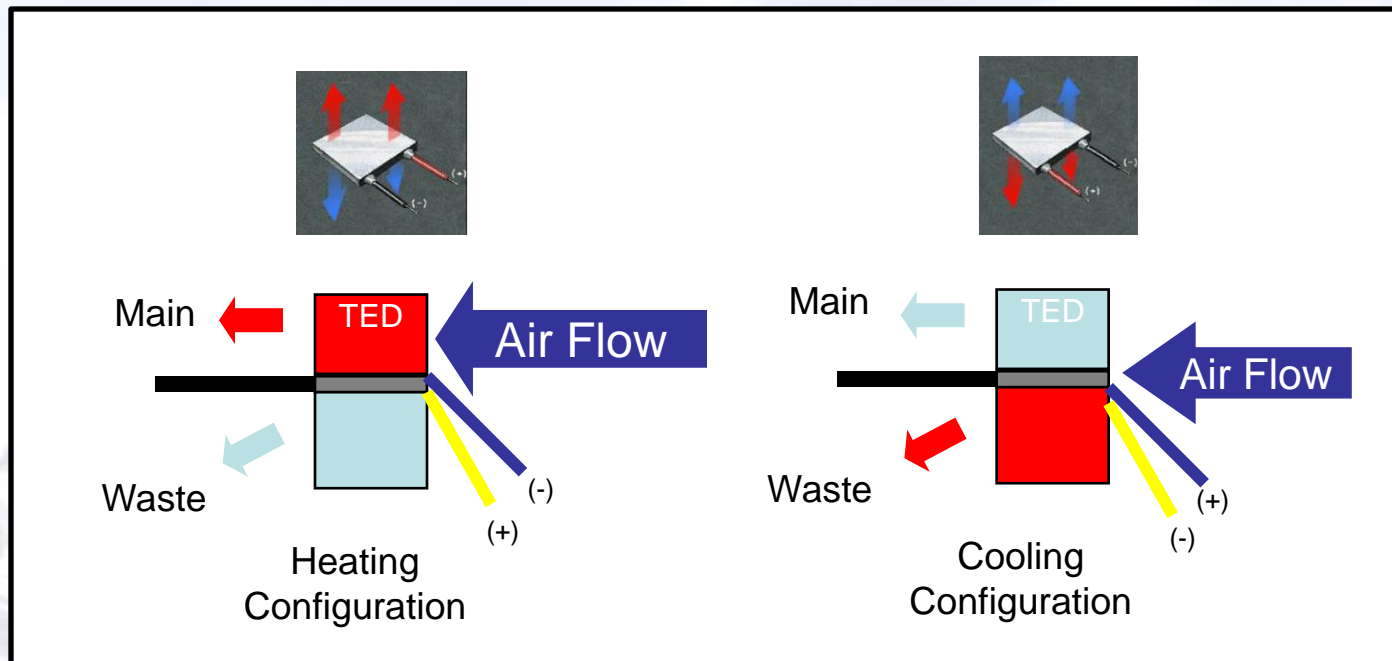
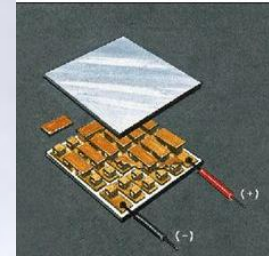
by *katzkin*®

UNIVERSAL SEAT HEATING AND COOLING

INSTALLATION PROCEDURE

TED - OPERATING PRINCIPLE

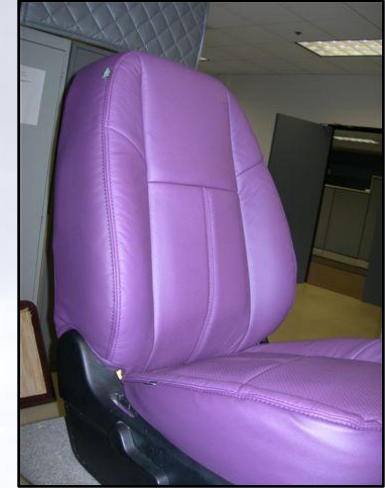
The MTM works by blowing air across the TED which uses the Peltier effect, a creation of a heat differential from an electric voltage. When a current is passed through two semiconductors (n-type and p-type) that are connected to each other at two junctions (top and bottom) The current causes one junction to heat up as the other cools. When the current is reversed, the opposite thermal effect occurs at the junctions.



For best performance the Air flow into the TED should be exposed to vehicle cabin air and the waste air allowed to exit the seat into the cabin air.

STEP 1 - EVALUATE SEAT TRIM

- Remove Leather trim and foam from seat assembly.
 - Upgraded Leather trim will need to contain perforated leather inserts as well as a reticulated foam. (Reticulated foam is a substitution for traditional plus pad).



Traditional plus pad



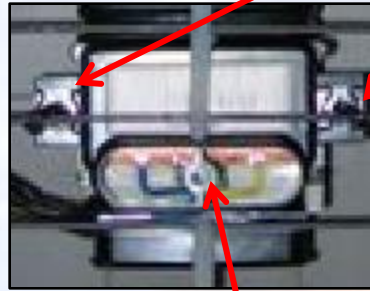
Reticulated foam



STEP 2 - PRELIMINARY BACK LAYOUT

- Position Back TED, blower and duct in similar fashion depending on application. Use tie wraps to secure CCS system.

- Use tie wraps to secure legs on the TED to suspension stringer wires.



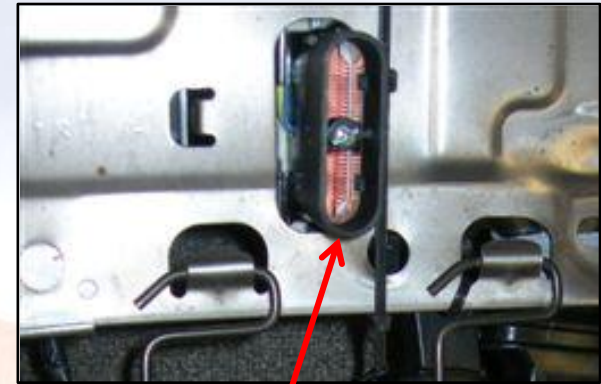
- Cut plastic stringer wire spacer tube to allow TED snout to pass through suspension



- Use tie wraps to secure legs on blower to suspension wires.

STEP 3 - PRELIMINARY CUSHION LAYOUT

- Position Cushion TED, blower and duct in similar fashion depending on application.

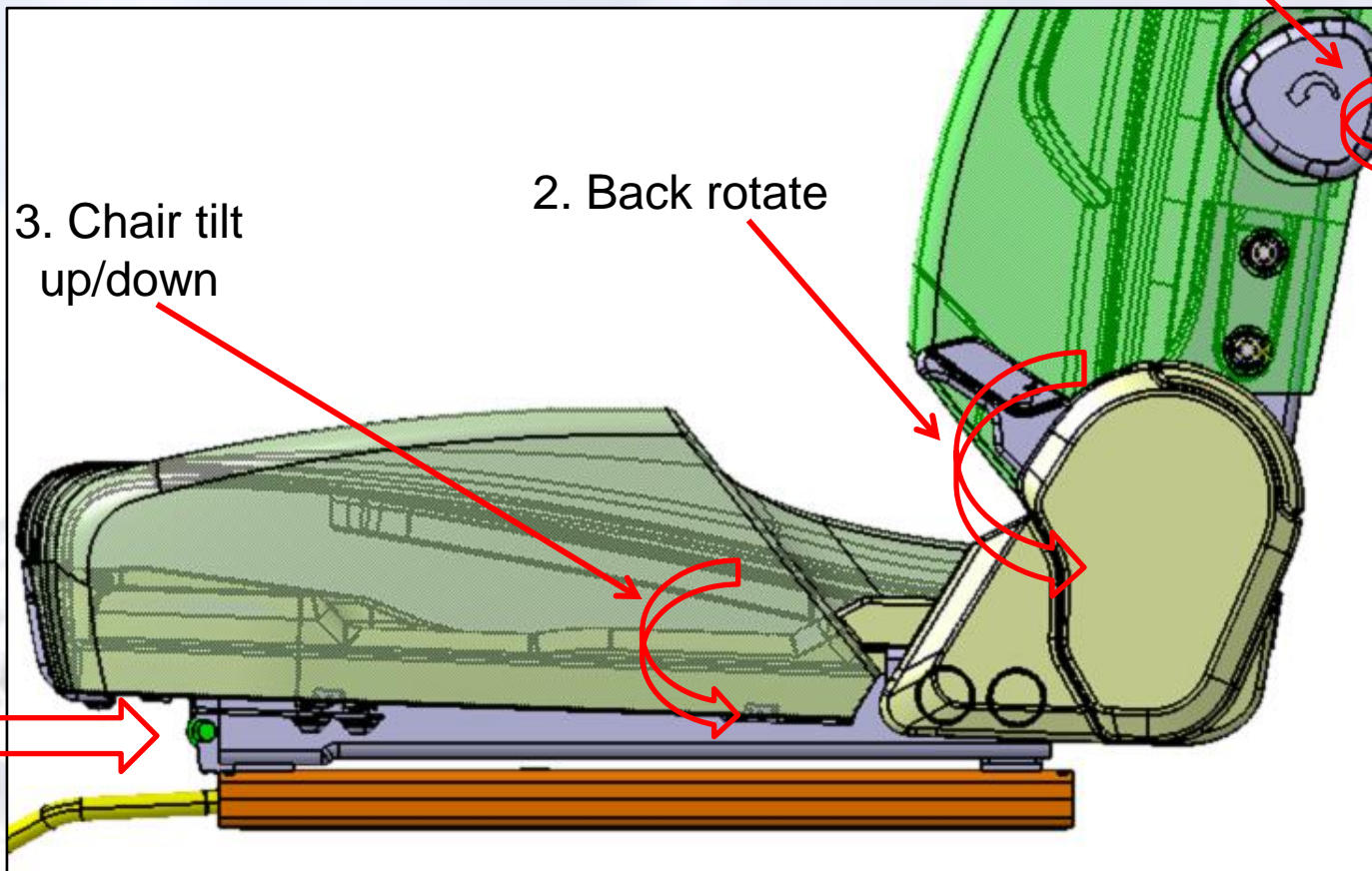


- Cut 57x20mm slot in steel pan to allow TED snout to pass through pan if necessary .
- Use tie wraps to secure blower legs to suspension.

STEP 4 – SEAT MOTION ENVELOPE

- Move seat in all degrees of motion to verify the placement of CCS system does not impede motion of seat. Also verify with suspension deflection while occupied.

1. Lumbar rotate and function



4. Base
slide

3. Chair tilt
up/down

2. Back rotate

5. Chair horizontal slide

STEP 5 – CUT HOLE IN CUSHION AND BACK SEAT FOAM

A. Cushion

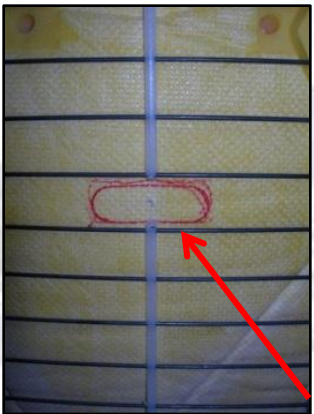


- Using slot cut in seat pan, place and mark location of hole on foam.



- Skive/cut out slot in foam.

B. Back



- Using location of TED on back suspension, place and mark location of hole on foam.



- Skive/cut out slot in foam.

STEP 6 – CUT AND PLACEMENT OF DISTRIBUTION PADS

A. Cutting



- Place distribution pad in desired location (do not stick to foam yet).
- Using a marker go through the back side of newly cut hole in foam and mark newly cut hole on back side of distribution pad.
- Cut on the line only through top layer. Now remove the top layer in pad to create opening.

B. Placement



- Now peel off PSA strips and put pad against foam, lining up hole in foam with hole in pad and press firmly to seat adhesive.
- Reinstall foam onto frame.

STEP 7 – BACK INSTALL TED AND WAIST DUCT

A.



- Snap waste duct assembly to the waste exit of the TED in the back assembly. Secure with tie wraps.

B.



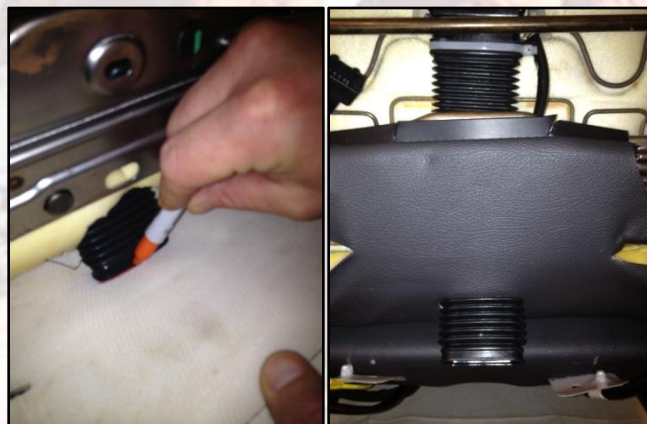
- Route waste duct to desired area (Bottom or side of Lean back) to establish placement of grill bezel. Extend duct if necessary using adaptor and extra duct.

C.



- Secure TED to seat back with tie wraps.

D.



- Mark cover and cut opening for waist duct.

STEP 8 –BACK INSTALL BLOWER AND EXHAUST VENT

A.



- Snap duct to the other side of the TED in the back assembly. Secure with tie wraps.

B.



- Snap blower assembly to duct. Secure blower to duct with tie wraps then secure blower to seat back with tie wraps.

C.



- Snap duct onto barb feature of grill bezel, and secure with tie wrap.

D.



- Using bezel as guide, mark and cut out hole inside facing. Snap bezel grill to bezel base plate, making sure side facing material is trapped by bezel.

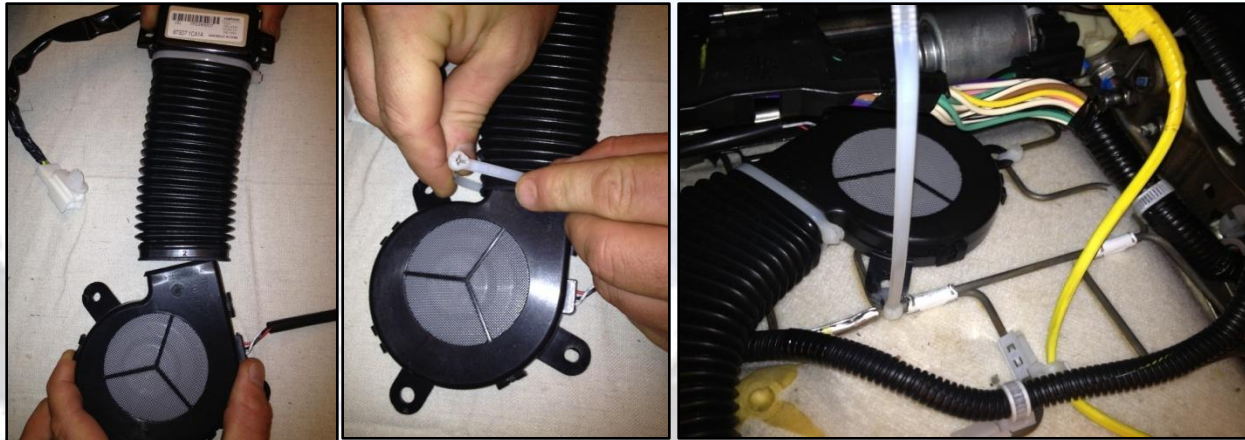
STEP 9 - CUSHION INSTALL TED AND BLOWER

A.



- Install TED into opening cut in cushion. Secure TED to cushion frame with tie wraps. (No waste duct is needed under the seat).

B



- Attach blower to duct using tie straps and attach blower to frame using tie straps.

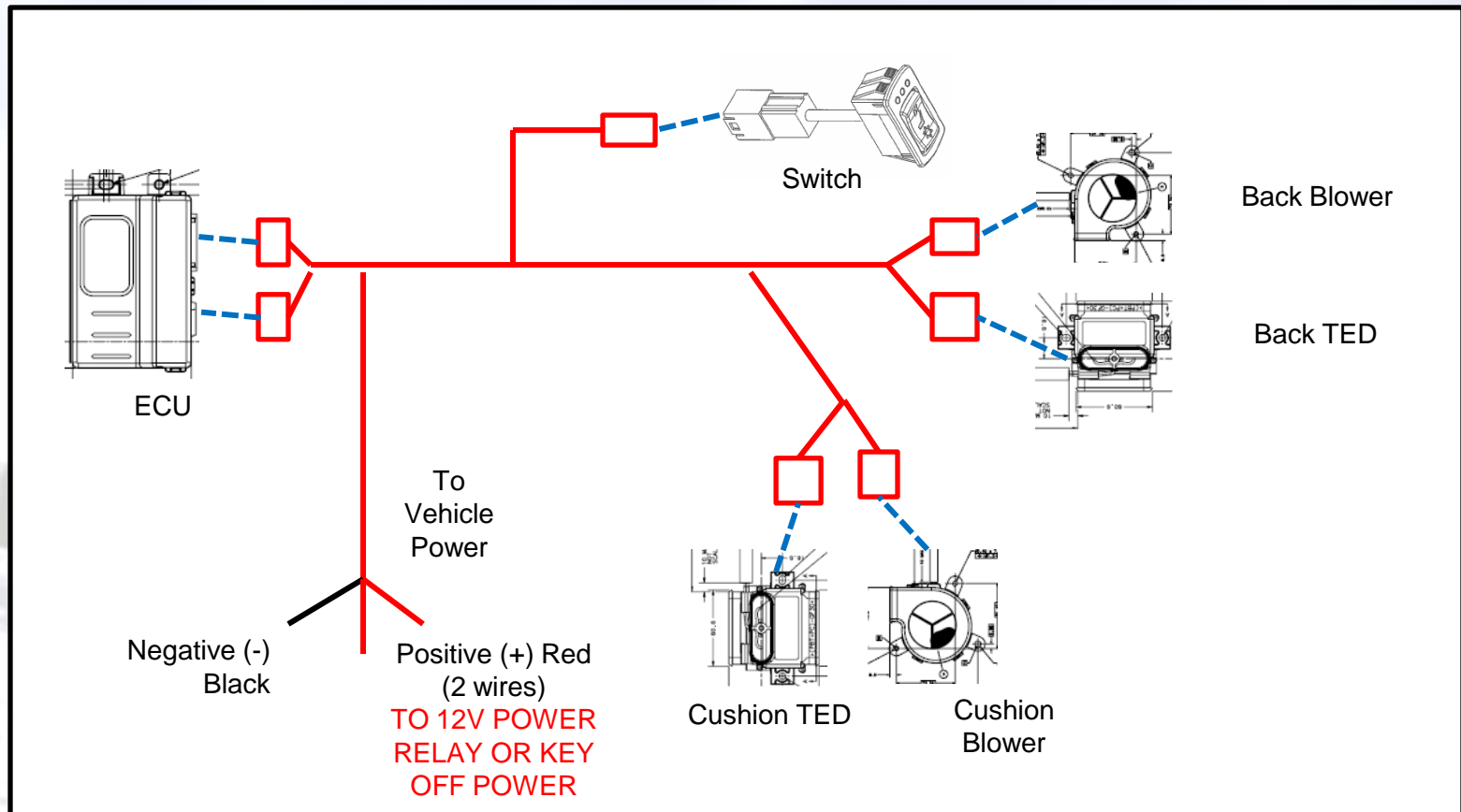
STEP 10 – MOUNT ECU

- Place ECU against seat structure. Using mounting features mark hole location on structure. Secure module to structure with tie straps or self tapping screws.



STEP 11 – CONNECT HARNESS TO MTM

- A. Place and route wire harness to seat.
- B. Connect back and cushion TED and blower connectors to appropriate connectors on harness.
- C. Connect seat switch to harness.
- D. Connect ECU to harness.
- E. Secure any loose wires to seat structure with tie wraps.
- F. Function seat through its full travel one more time to confirm motion does not pinch or stretch harness.



STEP 12 – CONFIRM SEAT FUNCTION

- A. Connect seat CCS harness to 12V power source with amp meter or use a hand held voltmeter to measure current.
- B. Confirm cooling function by actuating switch to place into cool mode (blue LEDs). Amp meter should read approx 5 amps.
- C. Confirm heating function by actuating switch to place into heating mode (red LEDs). Amp meter should read approx 10 amps
- D. Seat ready for installation back into vehicle.

