

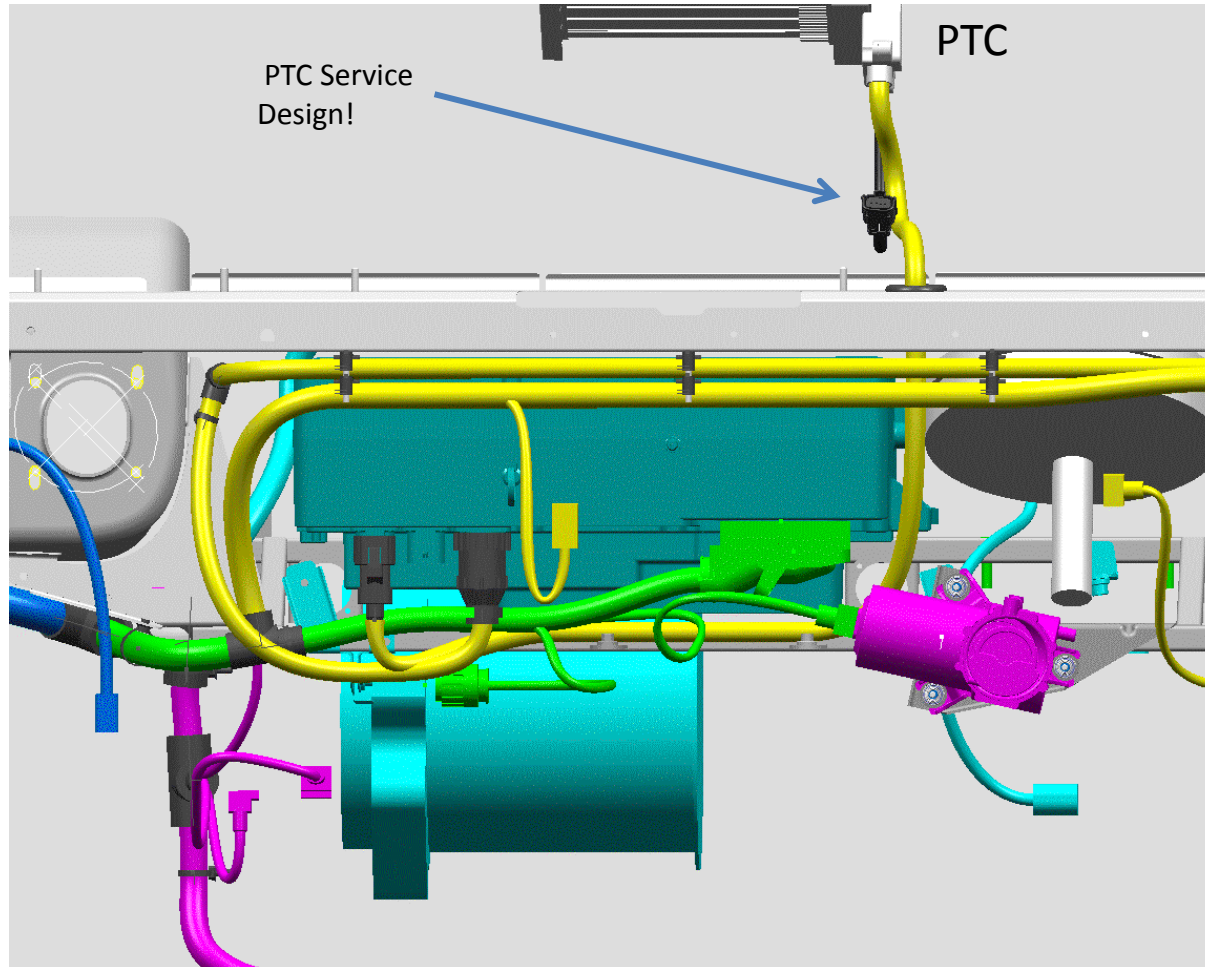
Re-work Information - PTC Service

Important information:

1. Disconnect 12V Battery before starting retro fit procedure.
2. Firmware must be loaded into controllers “in order” specified, failure to follow instructions damages controllers and are no longer usable.
(VCU’s and CDCM’s are expensive)
4. Do not connect PTC HV – High Voltage Connection to PCU or LV – Low Voltage Connection until programming is complete.
(VCU’s and CDCM’s are expensive)
3. Make sure Anti-freeze is completely evacuated from heater core prior to removal, big mess to clean up in drivers side foot well.

Re-work Information - PTC Service

PTC Service Design, HV Layout:



Cabin
Compartment

Motor
Compartment



- PTC Heater Kit
 - PTC Heater Assembly
 - Jumper wire, replaces relay
 - Plastic connector to replace “T” in cooling system
 - Yellow control wire



- Coolant recovery device, this is a cheap plastic 5 gallon bucket and shop vacuum.



- Tools Suggested

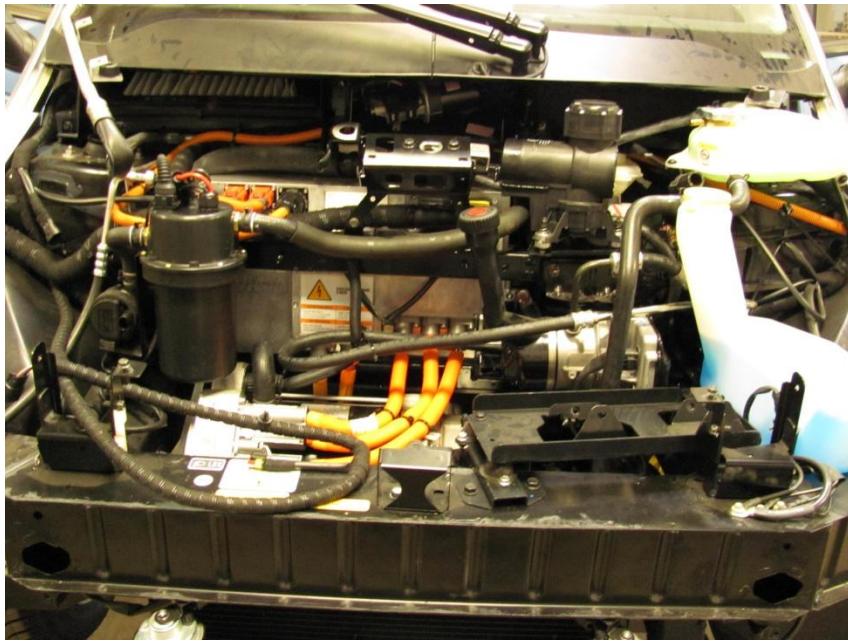
- Curved Awl, to remove heater hoses from heater core
- Long nose pliers, to remove clamps from heater core
- Torx bit set
- [Bosch 12V 12 Volt Cordless Lithium Ion Reciprocating Hand Saw PS60](#) saw to modify front of dash
- Coolant recovery device, this is a cheap plastic 5 gallon bucket and shop vacuum.





- Tools required
 - 5 Gallon Coolant Recovery bucket.
 - Note: need to make sure all coolant is removed from heater core prior to removing from vehicle. If all coolant is not removed coolant will require clean up in driver side compartment.
 - 17.5" – 2 x 4 brake pedal holding device. Required to remove heater core and install PTC Unit.



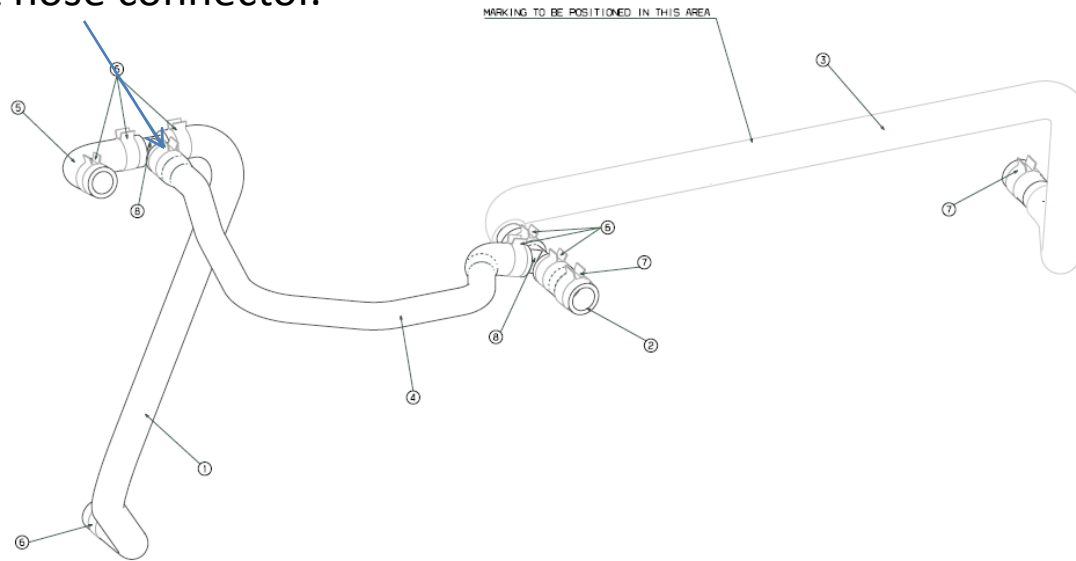


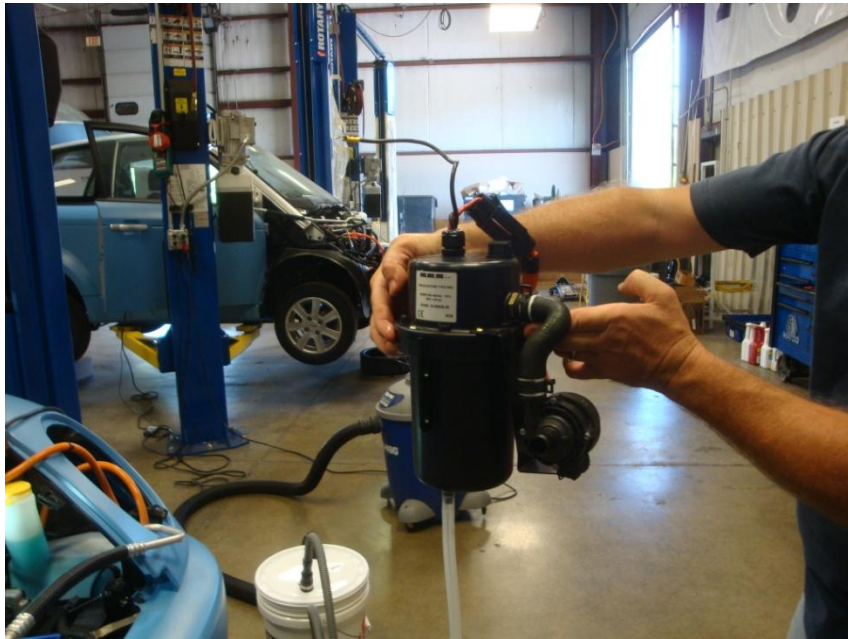
- Remove hood, latch and windshield wiper assembly.
- Pinch off hose on left side and right side of tee connection and remove tee.
- Install strait connector and reinstall clamps.
- Connect hose to recovery bucket and fluid heater connection and evacuate balance of coolant from heater and core.
- Remove hoses from fluid heater and connection to PCU.



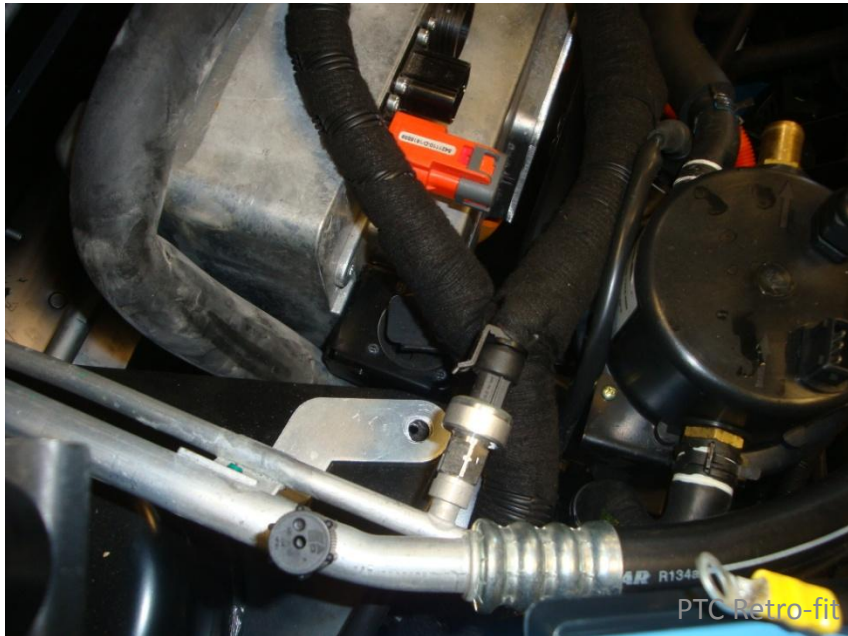
Re-work Information - PTC Service

Remove tee from upper hose
And install strait hose connector.





- Remove Fluid heater assembly.



- Reinstall fastener to support A/C Lines



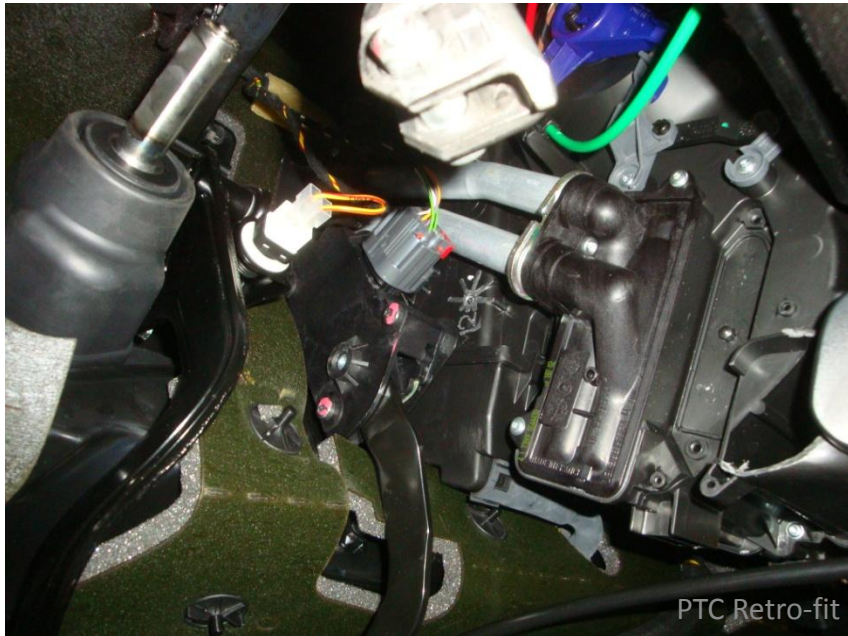
- Remove ignition key from ignition switch. Make sure column is locked in place.
- (This is to avoid damage to clock spring for Air Bag)
- Tape added for safety



- Disconnect u-joint from steering gear.



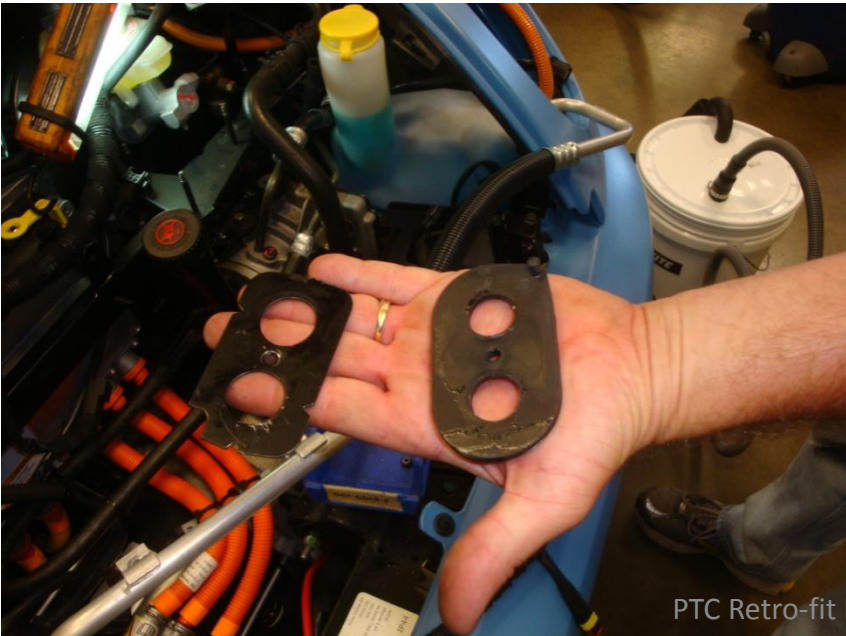
- **Two man operation** – Man 1 place foot on brake pedal. Man 2 open brake bleed screw left or right rear brake cylinder assy and close. Man 1 install 2x4 to hold down brake pedal for heater core removal.

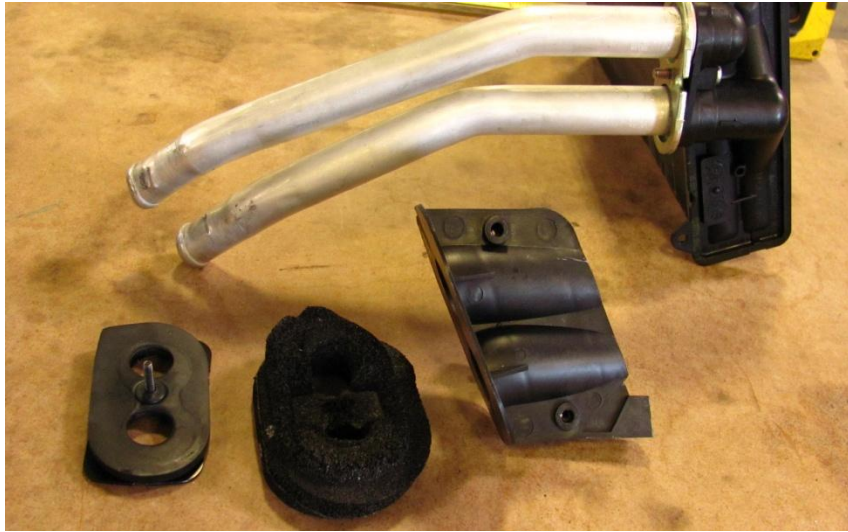


- Remove fasteners that retain aluminum inlet and outlet from heater core. Remove attaching 2 retaining screws from heater core to air box to remove core.



- Remove fastener from between inlet and outlet to remove retaining plate and gasket

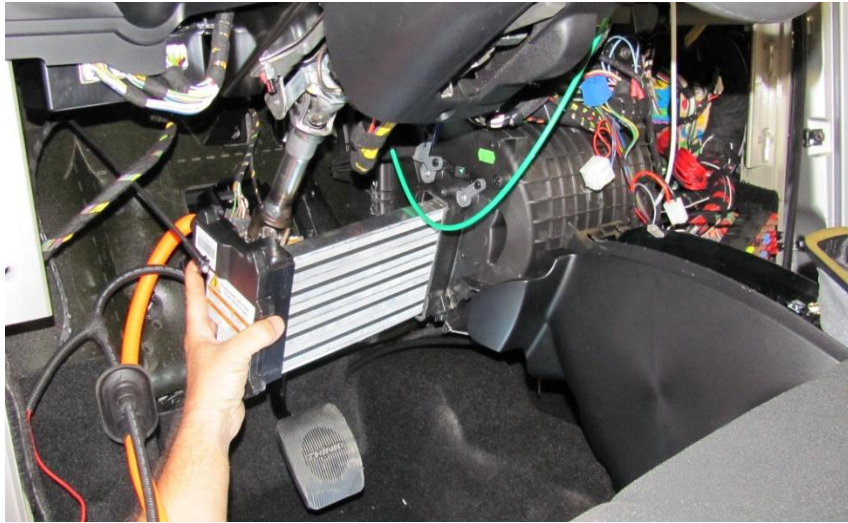




- Remove fastener from between inlet and outlet to remove retaining plate and gasket and plastic support brackets from heater core assy.



- Modify front of dash to allow the Tyco HV and LV connectors to pass from the passenger compartment to the under hood.



Install PTC Heater Assy in heater box and reuse two fasteners from heater core to retain.



PTC in place now thread HV and LV connectors through front of dash.



- Make sure oval grommet is fully seated in front of dash.



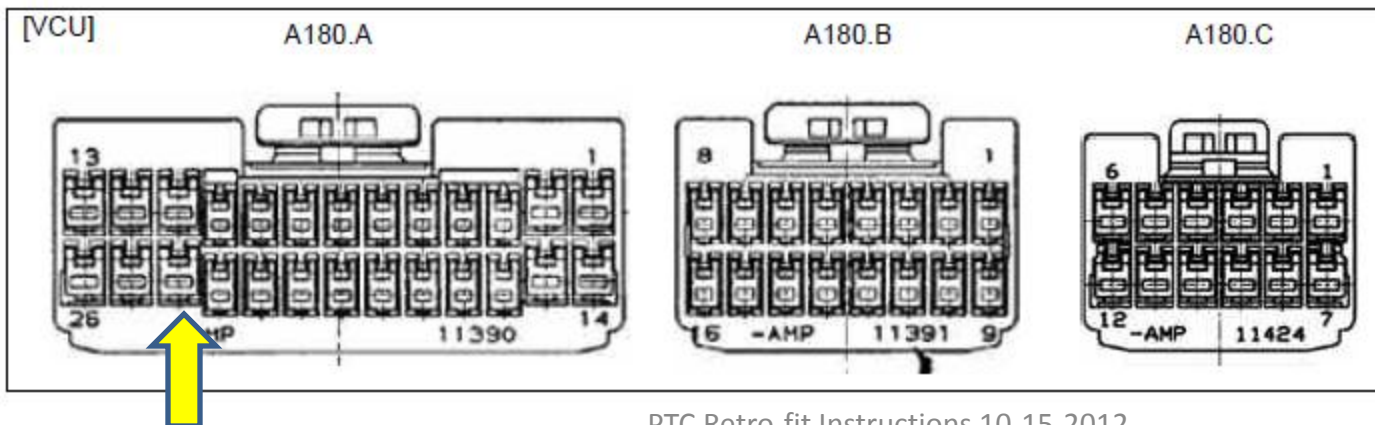
- Tie wrap HV and LV wires to existing wire looms across front of dash under hood.
- **Reminder do not connect HV and LV wires at this time**
- **Install blind plug in HV PCU Connection**

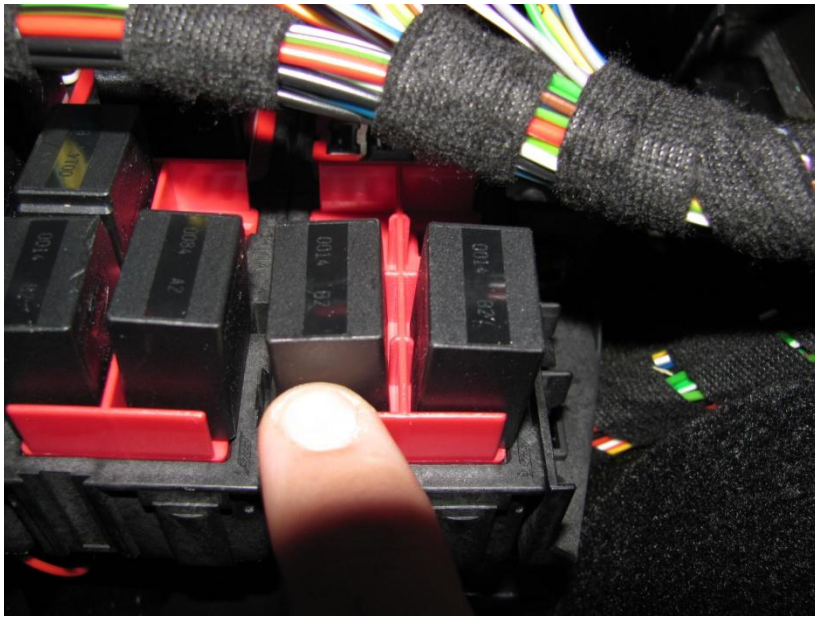


Plug yellow wire into
VCU A180.A Connector
Pin # 24/26 pin connector.

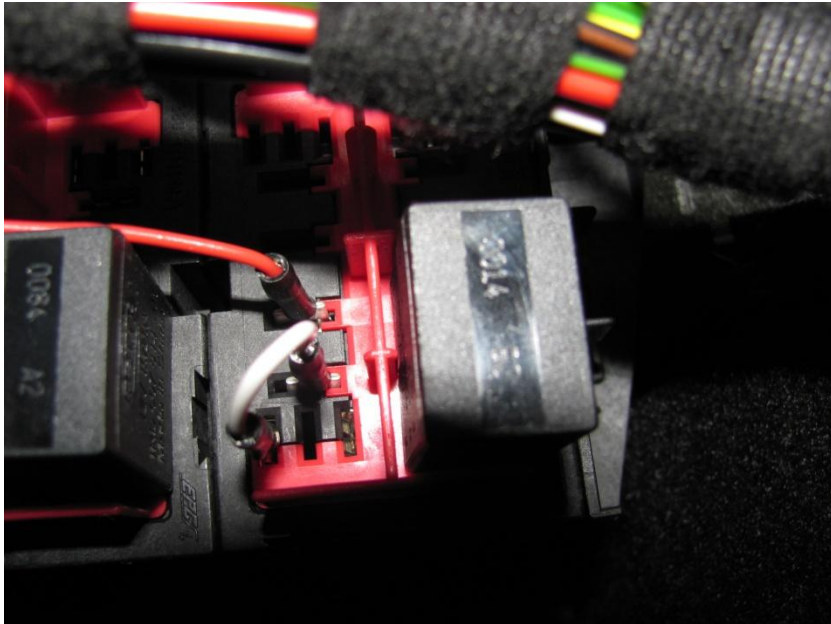
This connector will need to
be unplugged from VCU. Use a
Small screwdriver to lift the
unlock Tab on the connector.
Insert the square pin into the
Connector body.

Make sure the Pin is fully seated
in the connector Body.





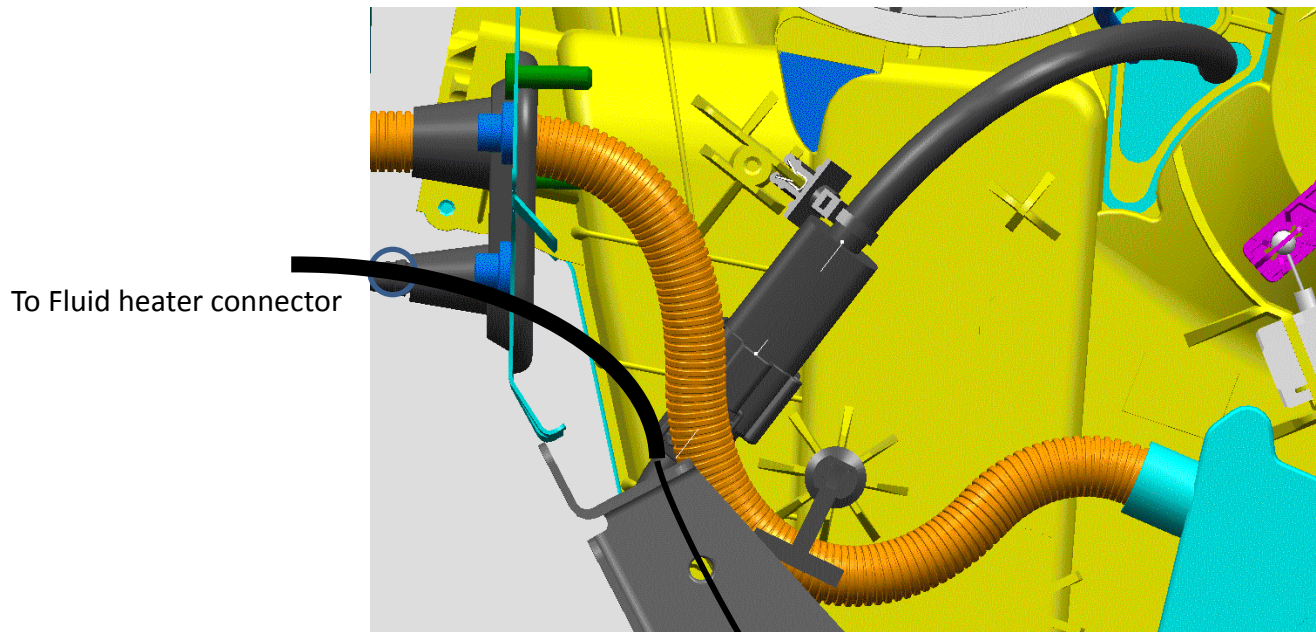
- Relay to be removed, located in relay center under fuse panel on passenger side of vehicle.



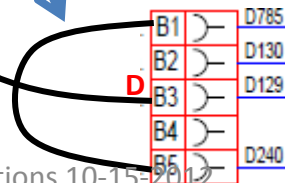
- Plug in red wire and jumper wire as illustrated
 - **Reminder do not connect HV and LV wires at this time**
 - **Install blind plug in HV PCU Connection**

Re-work Information - PTC Service

PTC Service Design, HV & LV Layout:



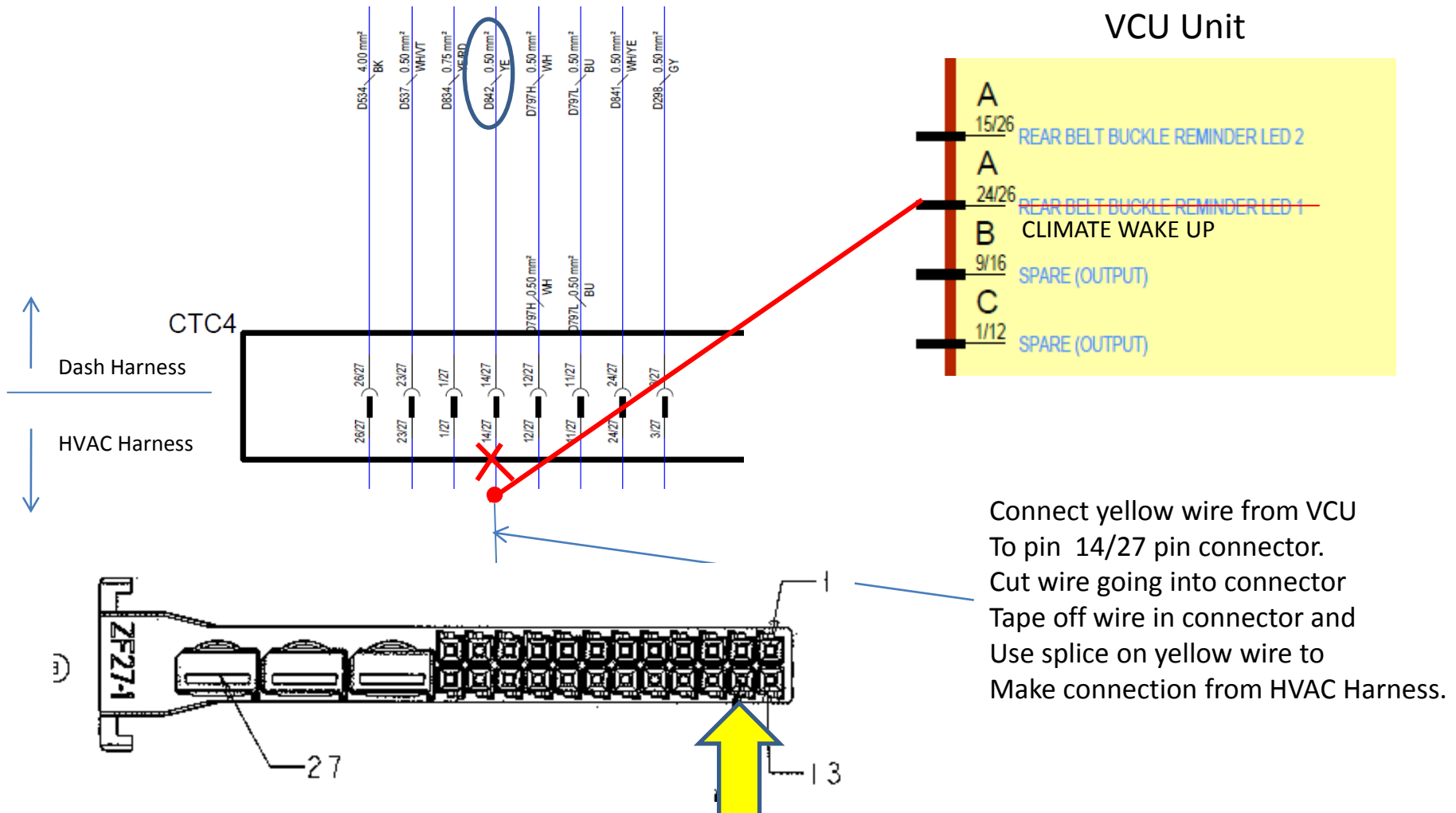
Red wire and yellow wire
Need to be threaded from
Driver side of vehicle to
Passenger side to make connections



Relay Box,
Position 24

Re-work Information - PTC Service

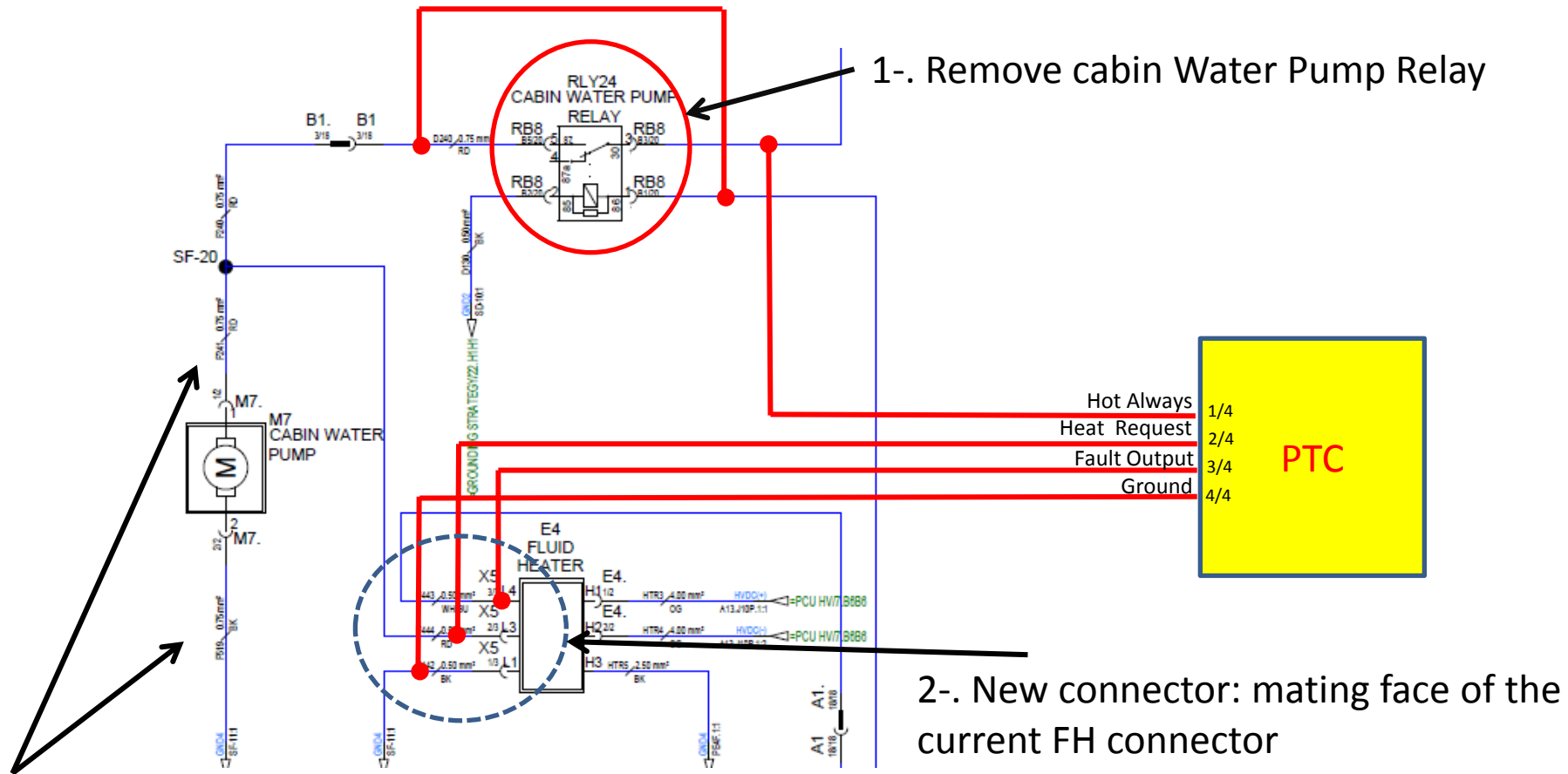
Circuit Changes (red) to ABS Gen-2: Climate Wake up



Connect yellow wire from VCU
To pin 14/27 pin connector.
Cut wire going into connector
Tape off wire in connector and
Use splice on yellow wire to
Make connection from HVAC Harness.

Re-work Information - PTC Service

Circuit changes (red) to ABS Gen-2: PTC Introduction *(this change is common for ESP Vehicles)*



- 3-. Remove 'Cabin Water Pump Connector' and attach branch to main branch harness
- 4-. Remove 'Cabin Water Pump' from vehicle

PTC Heater Programming

Programming is done with two cables. PCAN and SIADIS.

PCAN is the white cable that connects to the OBD2 connector in the fuse box

SIADIS is the black cable that connects to the flat connector under the passenger side of the dash.

PCAN is used for **BMS,CDCM and VCU** programming and SIADIS for **PCU** programming.

Programming must be done in a specific order and with the PTC heater electrically disconnected from the vehicle!!!

Deviation from this order will result in control unit failure!!!!!!

BMS

Turn the ignition key to the **ON** position

Open the **Programming Tool**

Select the **Use CAN** box located at the left center of the programming tool

Click **Browse** located in the right upper corner

From the pop up window, double click the file named **MLec_A306_427.s19**

Click **Start** located at the right center of the programming tool

At this point you will hear the battery contactors open

Once finished click **Exit** and turn the ignition key off

PTC Heater Programming

CDCM

Turn the ignition key to the **ON** position

Open the **CCP_Tool**

Select **File** in the left upper corner then select **Open File**

Click **CCP** in the center top of the pop up window

Double click **CDCM Firmware**, then double click **cdc_m_0_9_1.hex**

In the left upper corner select **CDCM** from the **ECU** drop down tab

Click **Initialize CAN interface** ,just below the ECU drop down tab

Click **FLASH** located in the right lower of the CCP Tool.

At this point you will hear the condenser fan start running

Once the condenser fan stops the programming is complete, Click **Release CAN interface** and shut the ignition key off.

PTC Heater Programming

PCU

At this point switch to the SIADIS cable

With the ignition key off open the **C167 Loader**

In the left upper corner click the **SELECT** tab

From the pop up window double click **590_2024_A_GEN2_069_001_00P_ABS_PTC**

Turn the Ignition to the **ON** position, This will auto start to program

At this point the contactors will not close

Once finished click **OK** on the **Download Complete** pop up window

Switch **OFF** ignition key

PTC Heater Programming

VCU

At this point switch back to the PCAN cable

Turn the ignition key **ON** for 3 seconds, **OFF** for 3 seconds then back **ON**

Open the **CCP_Tool**

In the right upper corner change the **Program block end address** from **7FFF** to **78FF**

Select **File** in the left upper corner then select **Open File**

Click **CCP** in the center top of the pop up window

Double click **VCU Firmware**, then double click **vcu_2_2_reworkedcluster_withPTC.hex**

In the left upper corner select **VCU** from the **ECU** drop down tab

Click **Initialize CAN interface**, just below the ECU drop down tab

Click **FLASH** located in the right lower of the CCP_Tool

At this point the “P R N D E” display will go dark; this is how you know the programming is loading properly.

If this does not happen click the **Release CAN interface** button; close the **CCP_Tool**;

Switch the Ignition **OFF** then back **ON**; reopen the **CCP_Tool** and restart the process

Once programming is complete the “P R N D E” display will light back up and the car will chime. Turn ignition key to the **OFF** position

If the “P R N D E” display does not light back up the **VCU** will need to be replaced

PTC Heater Programming

Heater Connections

Heater connections must be made in the correct order!!!! Deviation from this order will result in control unit failure!!!!

All connections must be made with the ignition **key OFF** and the key **Removed** from the ignition switch

Remove the High Voltage blank plug from the PCU and install the High Voltage cable from the new PTC heater

Connect the Low Voltage 3 pin connector previously on the fluid heater to the 3 pin connector from the new PTC heater.

Start the vehicle and check for proper operation.