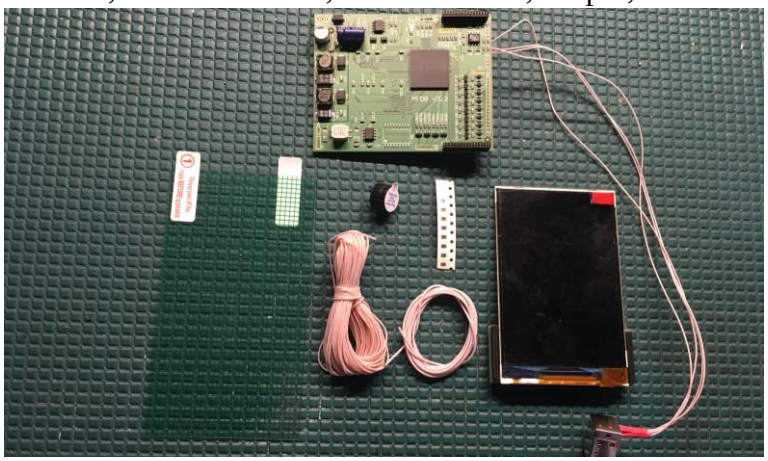
Audi 8E A4 ColorMFA Install Guide

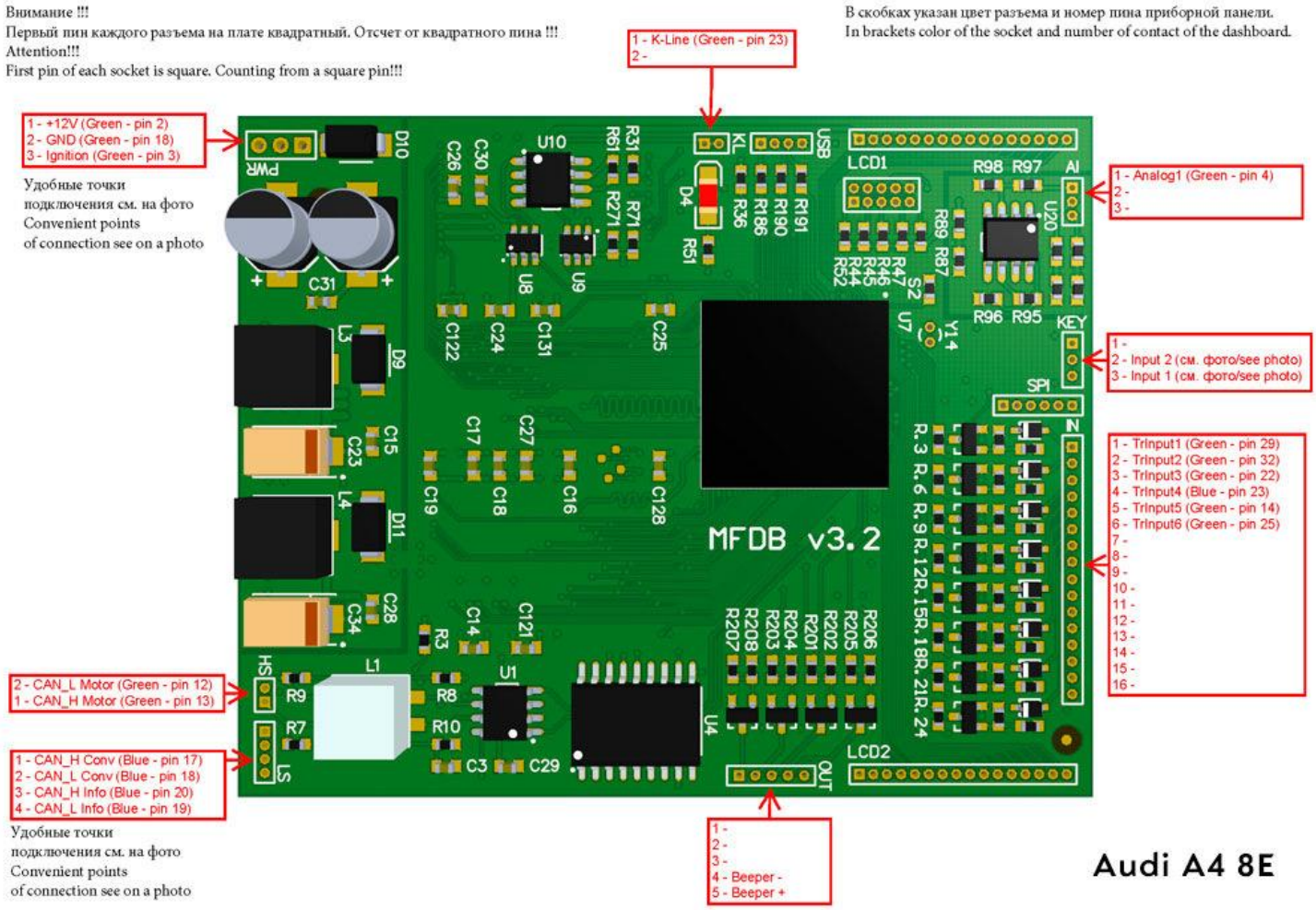
ColorMFA from AutoPilot. Instructions from Clusters by Litke and pinout from Drive2

This is an overview guide on how to install the v3.2/v3.4 ColorMFA units into Audi 8E A4 (B6 and B7 Generation) RB4/RB8 red and full color clusters. This is a general step by step guide on how to fit the unit. There are 2 versions of PCB for these clusters with minor differences for the power/ground and key input connection points. This install will show one example and we are including pictures of the second version from the official ColorMFA install pictures so all credit to them on those pictures. This will not cover basics such as soldering techniques, or how to disassemble the cluster fully. By Litke LLC and Matthew Litke are not responsible for any damages you may cause to yourself, your cluster, or your vehicle during this process.

ColorMFA Kit Contents:

-Main PCB, LCD, 0.12mm^2 wire, 0.35mm^2 wire, SMD resistors, beeper, matte film screen protector.

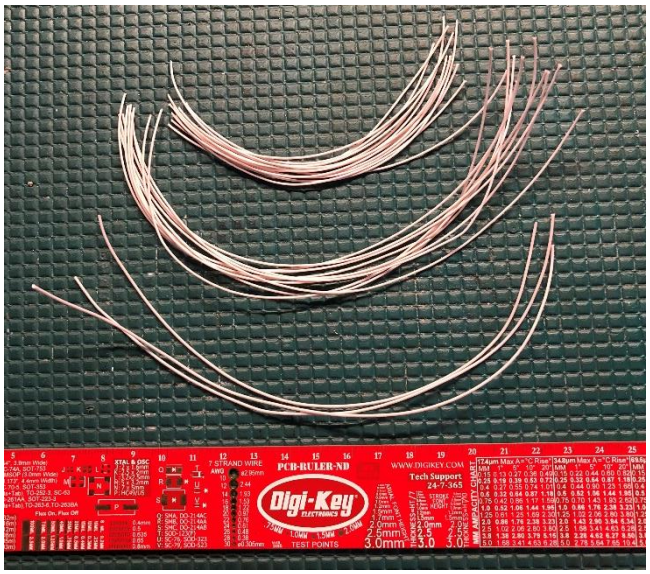




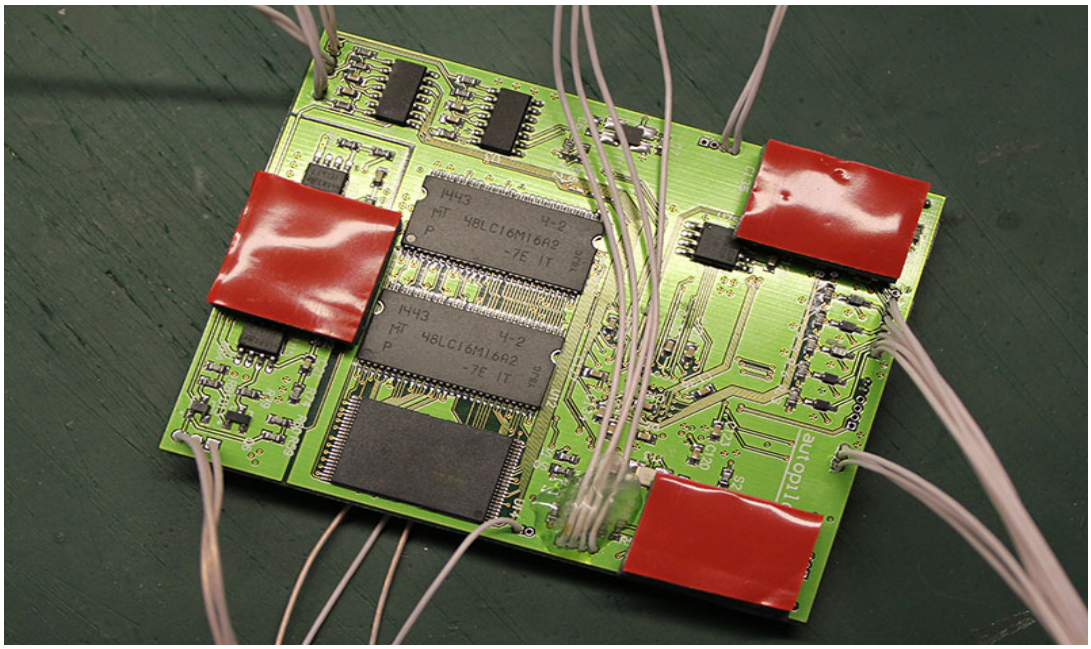
Tools/Parts Required:
-Solder iron and solder. Solder wick is helpful but not required.
-Wire strippers and wire cutters
-T10 Torx Driver
-Needle nose pliers
-Tweezers
-Ruler/Tape measure
-Knife/Razor blade
-Dremel/Rotary tool
-Double Sided tape (3M's "Red" Very High Bond works well)
-Multimeter (to check wire continuity)
-Drill (to twist the CANBus pairs)
-Scissors
-Optional: Glue to secure wires and PCB
-Optional: Heat Shrink Tubing

Install Steps

- Prepare ColorMFA PCB
  - Cut the smaller gauge wire into 16 pieces in 300mm lengths each.
  - Cut 2 more pieces of the smaller gauge wire in 100mm lengths.
  - Cut the larger gauge wire in 3 equal pieces of roughly 230mm lengths.

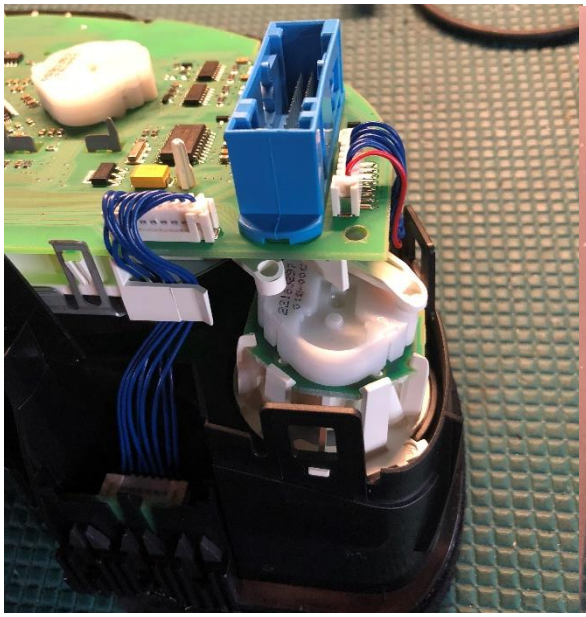


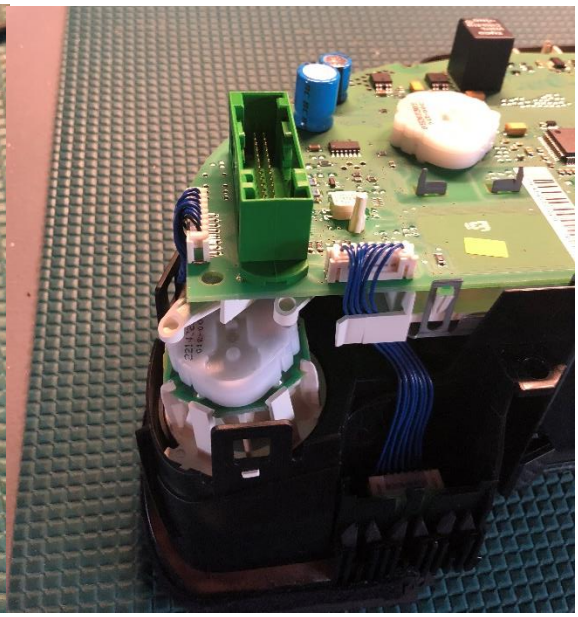
  - Solder these cut wires to the ColorMFA PCB as shown the diagram above. Route the wires through the bottom of the PCB for a cleaner looking install. The large gauge is for Ground, 12V, and Ignition. The 100mm pieces will be used the 2 beeper wires. The 300mm pieces will be used for CAN pairs, Kline, analog, key input, and Trinput. Mark CAN High on Motor, Comfort, and Infotainment with a marker than twist each H and L pair together with the drill.
  - Attach double sided tape to the backside of the PCB. Doubling up 2 pieces of 3M VHB provides good spacing between the cluster and ColorMFA PCBs and ensures the LCD won't sit too high or too low with regards to the face when installed. If you don't intend on glue the PCB later, use additional double sided tape at this step so the board sits securely.
  - Group the Comfort CAN, Infotainment CAN, Beeper, and Trinput4 into one bundle and the remaining wires into another bundle. Surround by heat shrink if preferred.



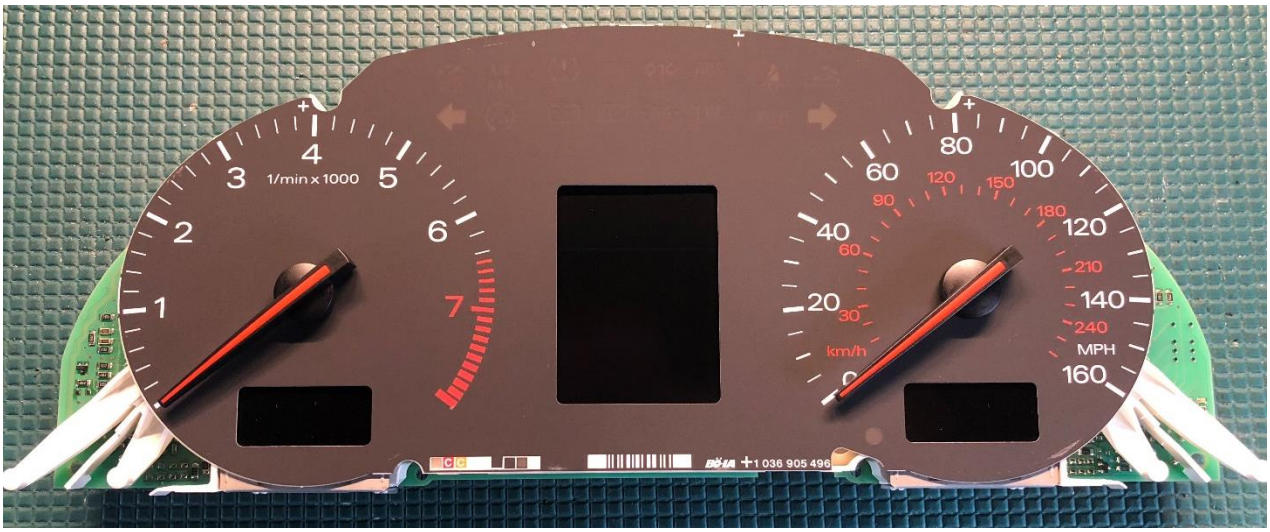
- Cluster Disassembly
    - Open the cluster. It is attached with 4 T10 screws (2 top, 2 bottom) and 4 clips (2 on each side).
    - Remove back plastic housing. This is held onto the PCB with 1 hook on the far left and 1 hook on the far right.

    - Remove the 4 connections for the fuel and coolant gauges and buttons.

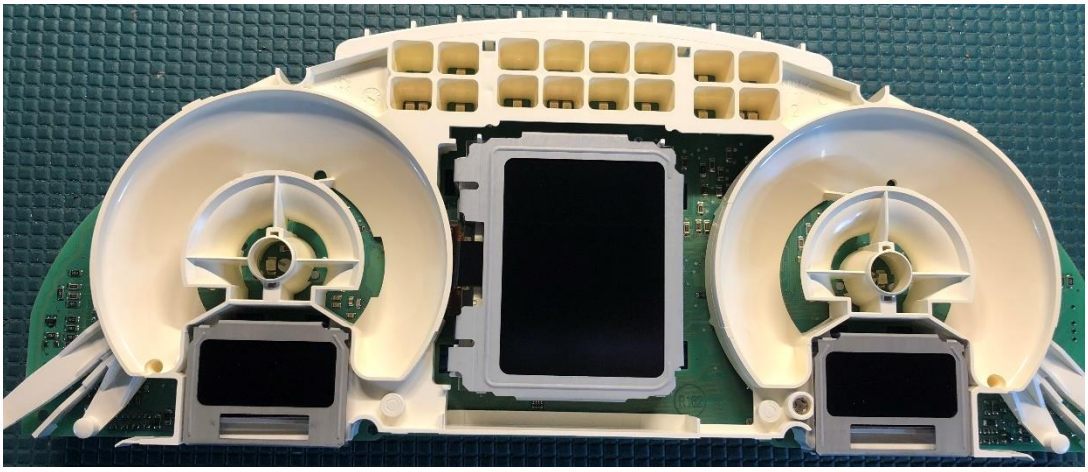




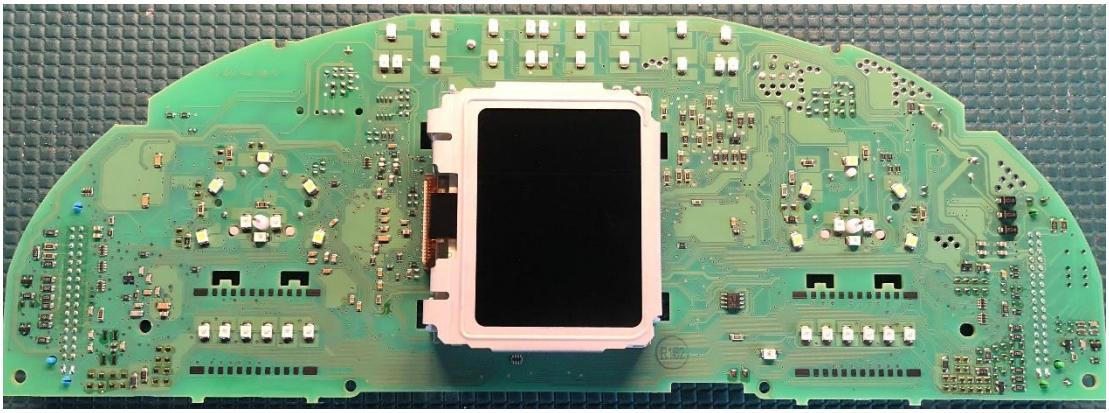
    - Remove the PCB from the lens then remove the needles by twisting counter clockwise while pulling up then remove faces.



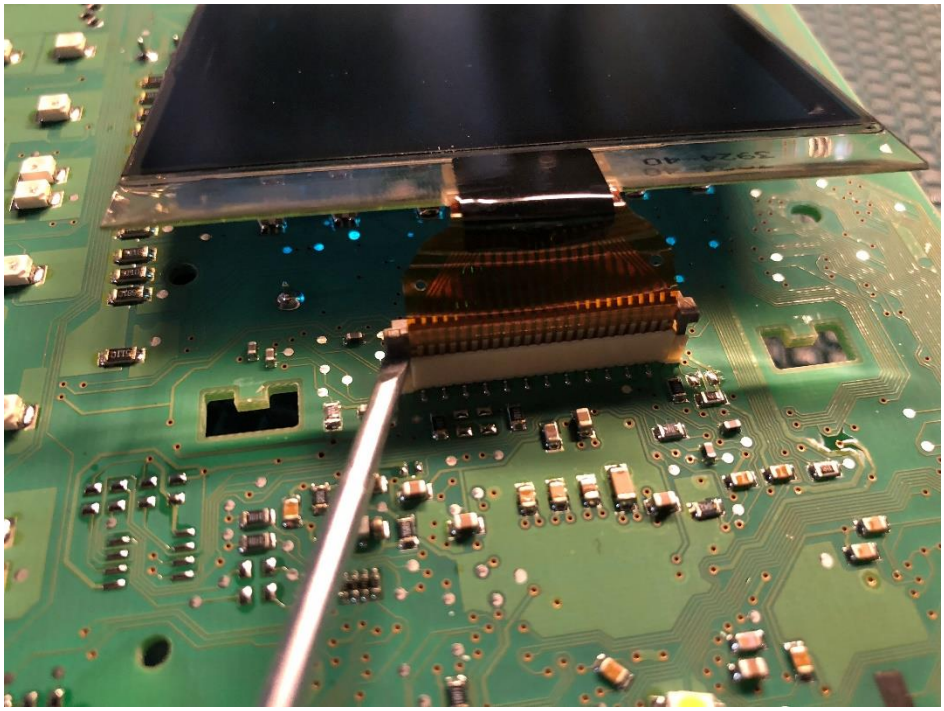
- Remove the clock and odometer screen cage by bending the hooks and lifting them out.



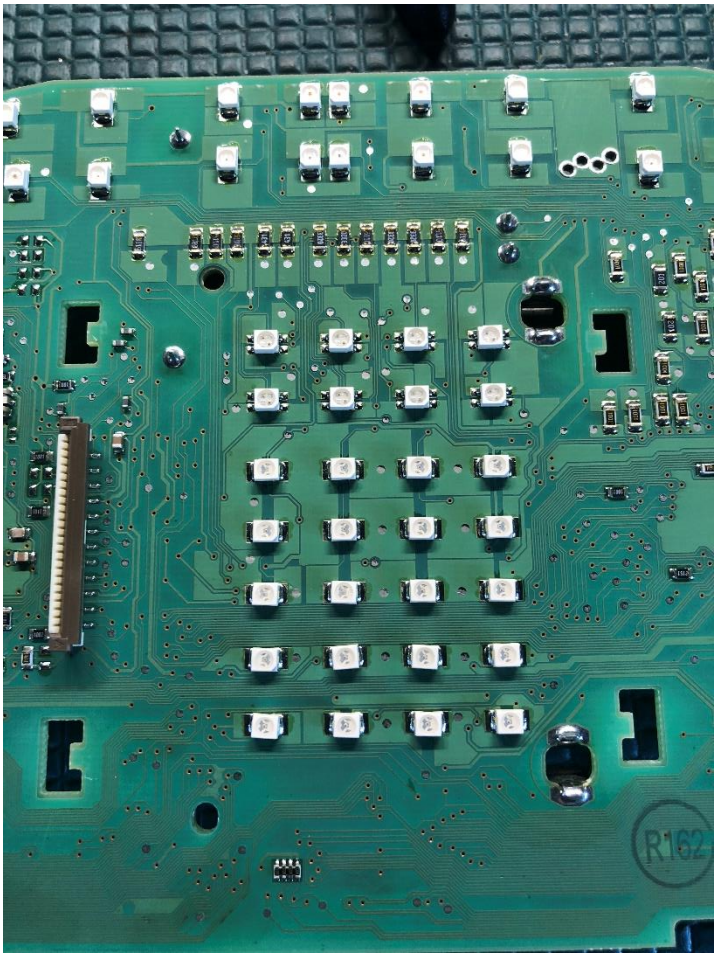
- Remove the white plastic light shroud. There are hooks that need to be pressed on the backside of the PCB to release it.

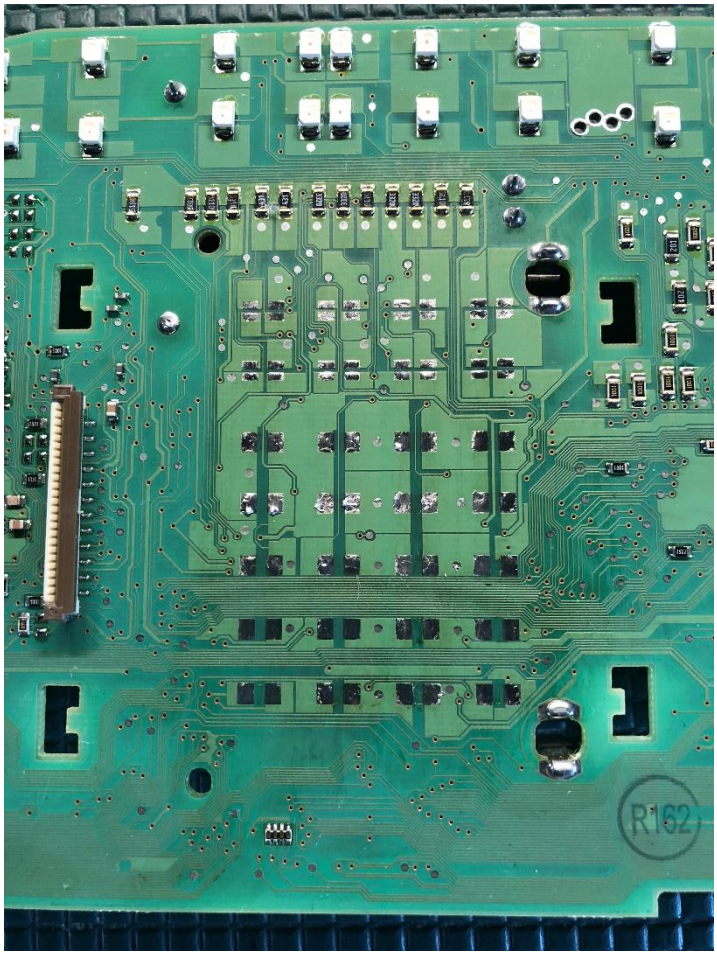


- Prepare cluster PCB for ColorMFA
  - Start by removing the stock screen by removing the metal cage around the screen. Then release the ribbon cable connection and pull the screen and shroud off the PCB.

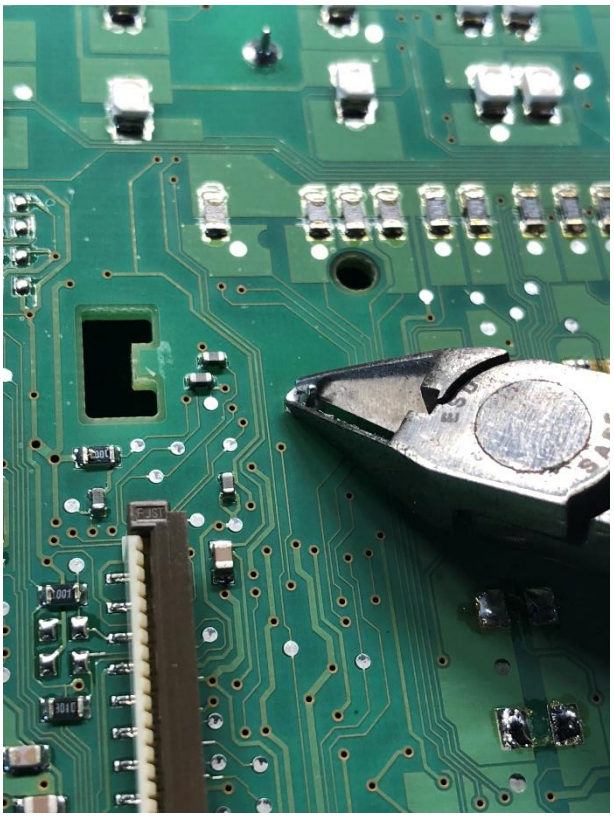


- Remove all the LED’s originally behind the LCD. These LEDs do not require jumper resistors. Leave them “open”. Ensure solder is not bridging any of the pads together.

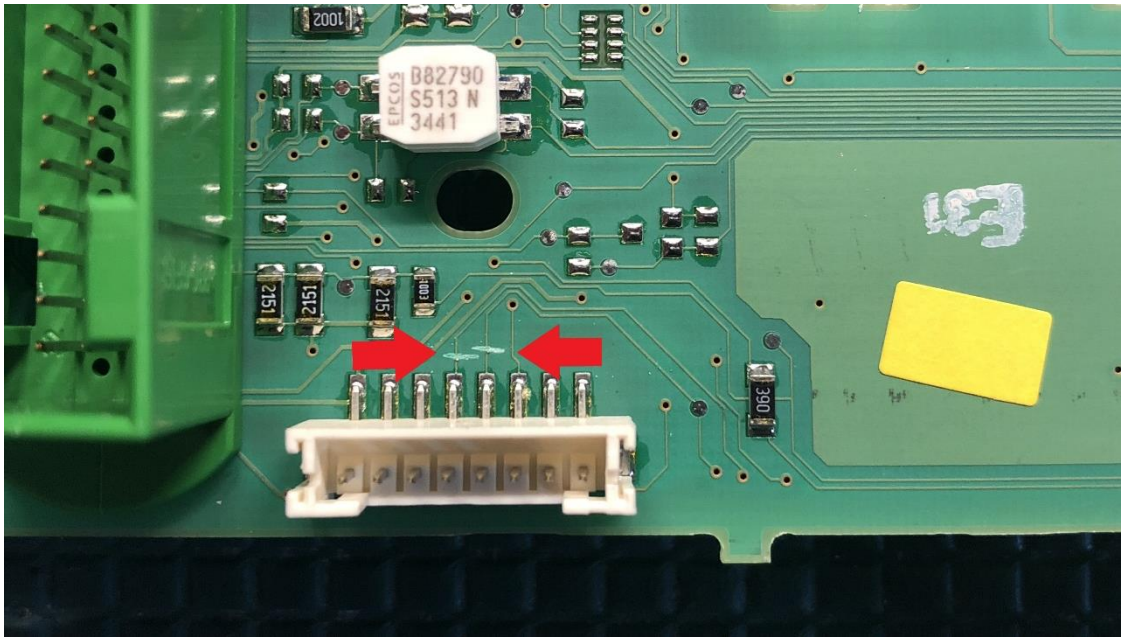


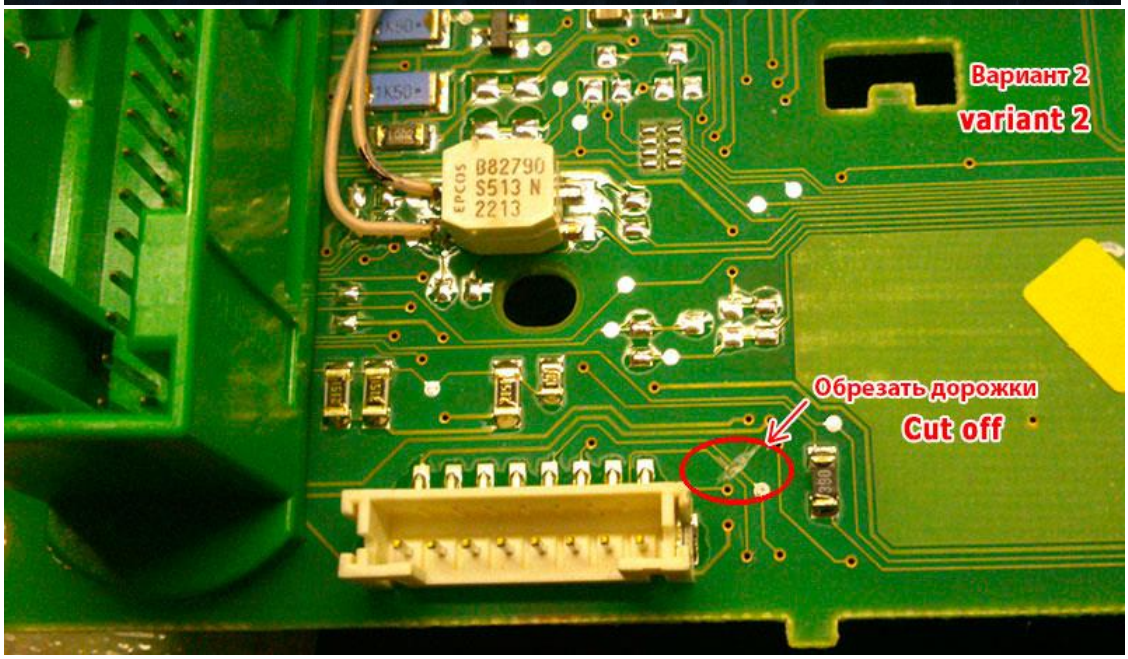


- Trim the speaker pin so that it is flush with the PCB and doesn’t interfere with ColorMFA PCB.

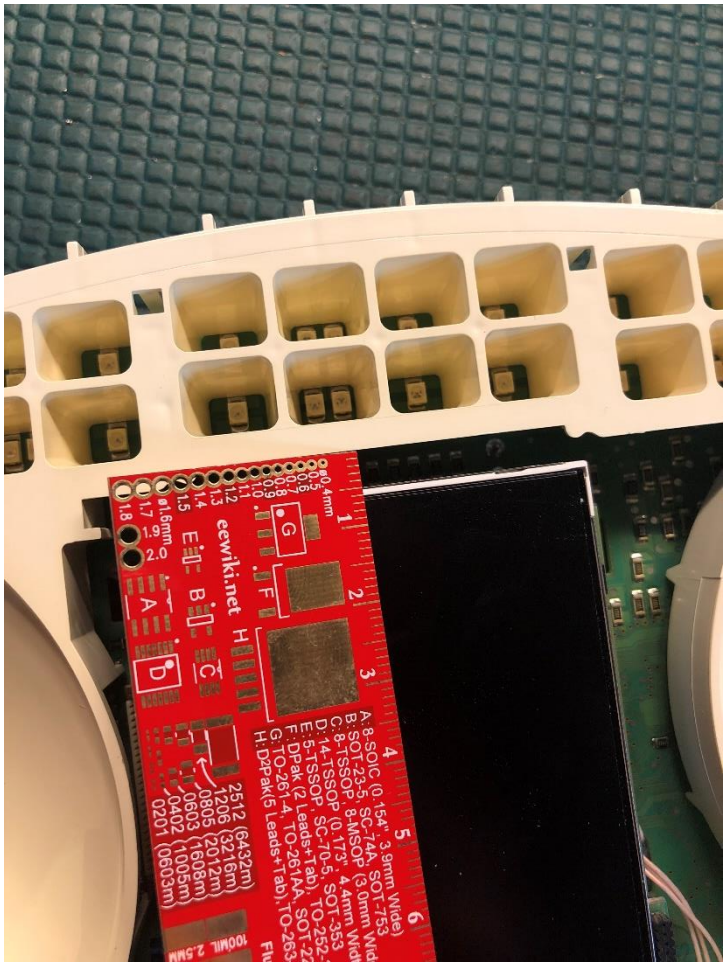


- Cut the traces the key input 1 and 2. There are 2 versions for these so not which type you have before cutting traces.

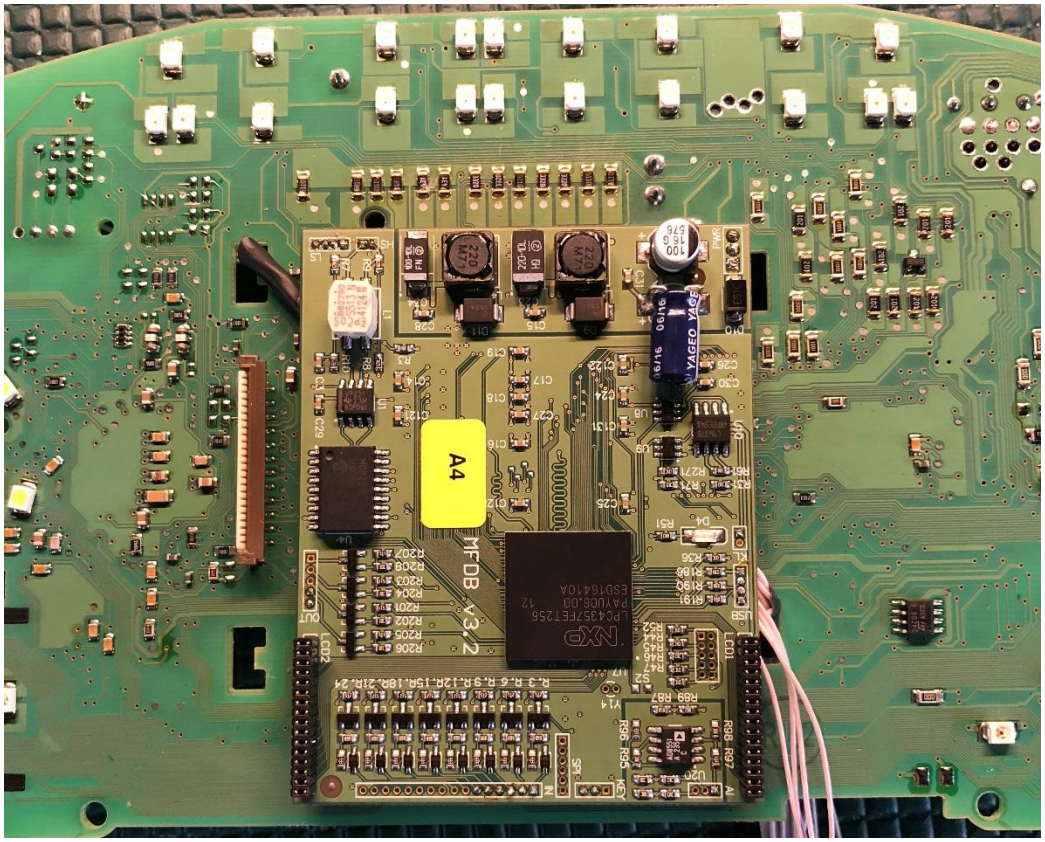




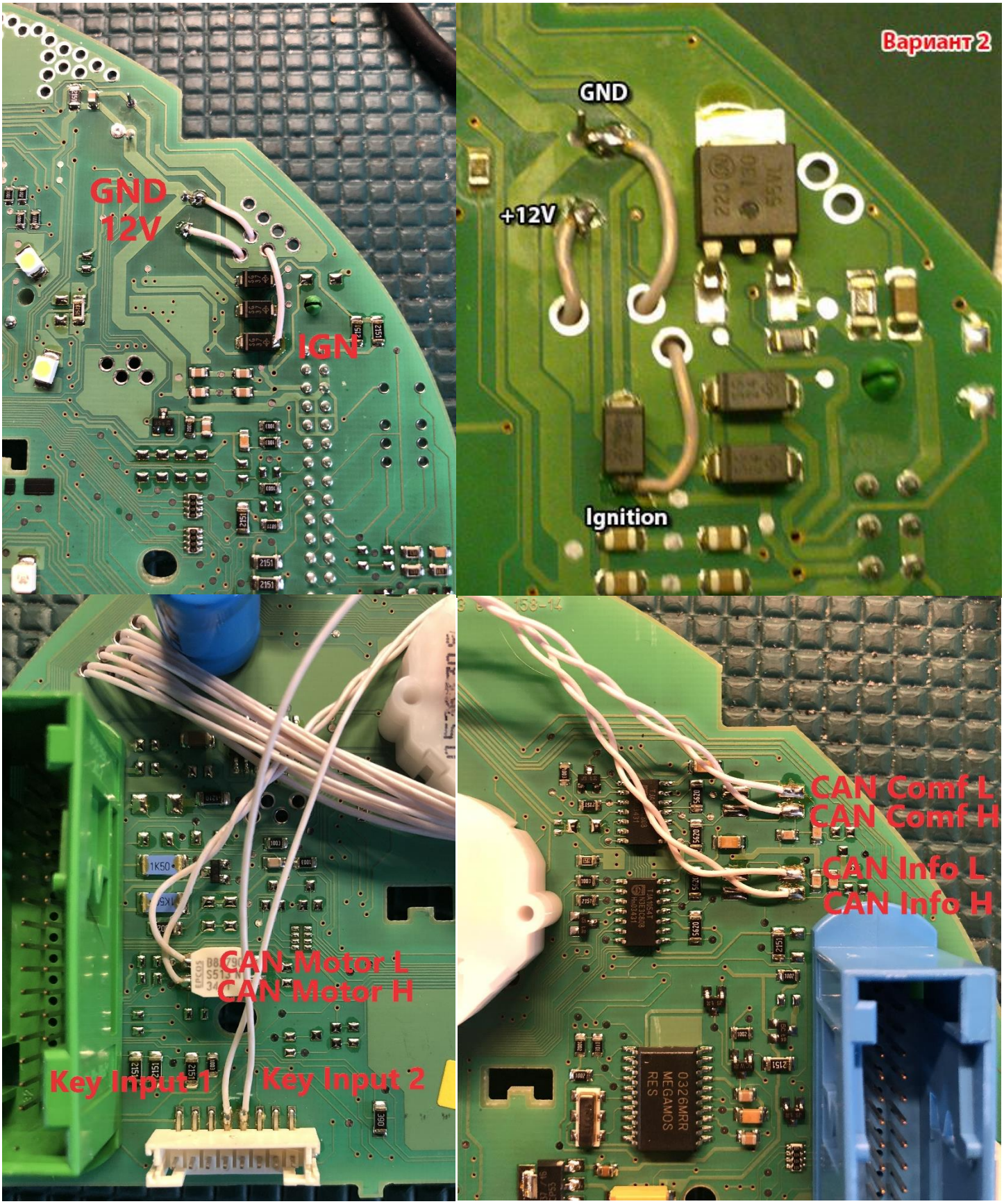
- Fitting ColorMFA to cluster
  - Temporarily refit the white plastic light shroud and fit the LCD to the ColorMFA PCB. Remove the double-sided tape backing and press the ColorMFA board to the cluster. The top of the LCD should be positioned so that it is 5mm below the white plastic and bottom of PCB and LCD sit flush against the plastic. Ensure the LCD is centered with the cut out section in the top of the white plastic. The bottom plastic can be cut off and removed if preferred. It serves as a night alignment piece if it is kept on.



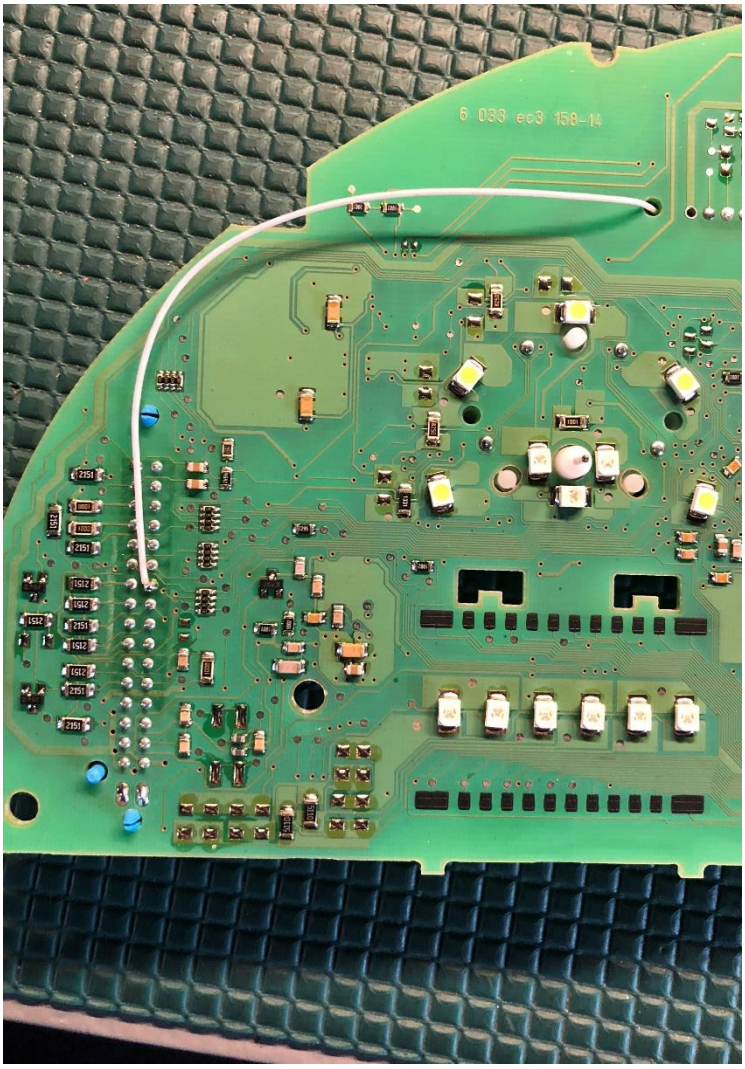
- Once the ColorMFA board is stuck to the PCB in the proper position, remove the white plastic shroud. Route the smaller bundle of wires into the opening from the top left screen cage mount and round the larger bundle of wires in the opening in the bottom right screen cage mount.

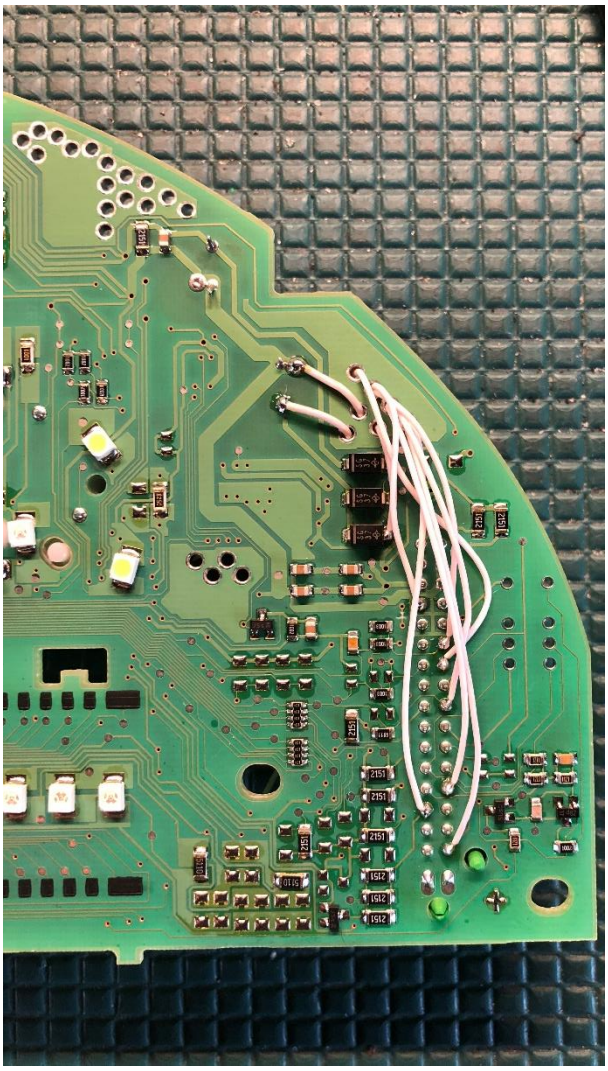


- Begin identifying where each with a meter for continuity and route it to the correct location and trim any excess length. The green and blue header connections and power/grounds will be run back through the PCB. CANs, key input and beeper wires will remain on the underside of the PCB.
- Begin soldering the CAN and power/ground wires to it's corresponding location according to the diagram on the first page and the pictures below.

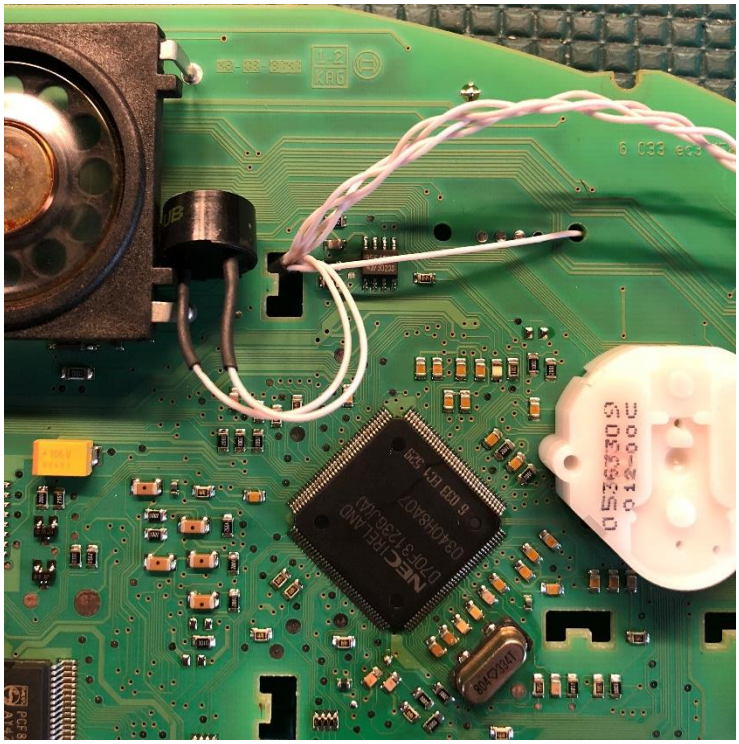


- Continue to identify and solder the remaining wires and route them as shown below.





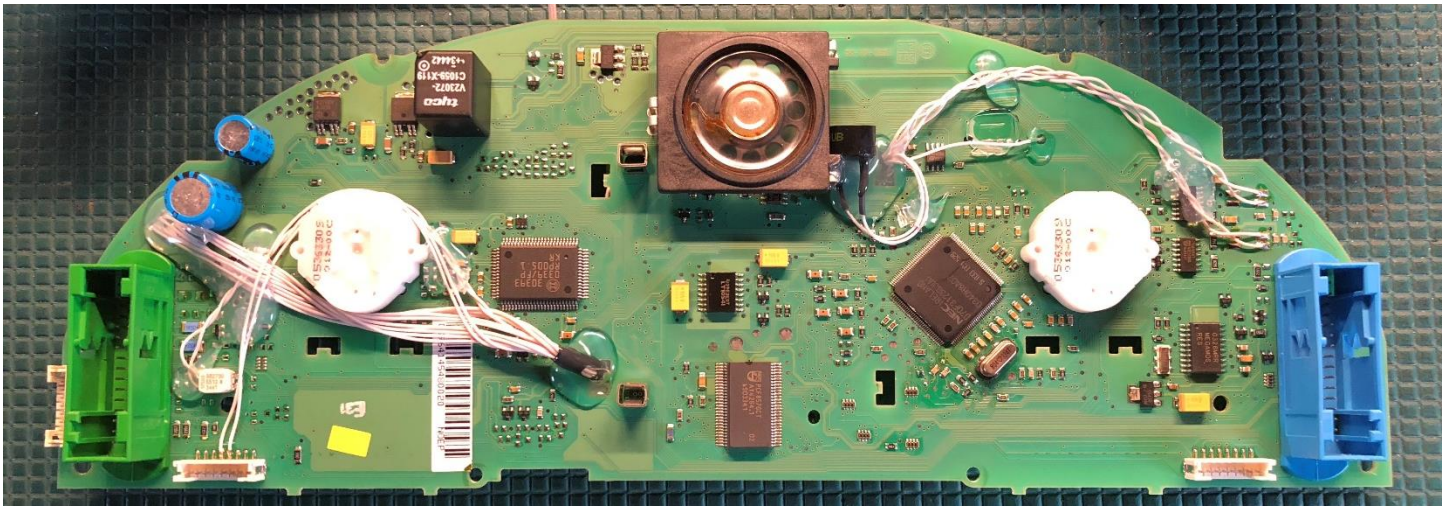
- Route the 2 remaining wires for the beeper next to the stock speaker and connect them to the beeper. The longer leg of the beeper is positive. Add heat shrink to these solder joints.



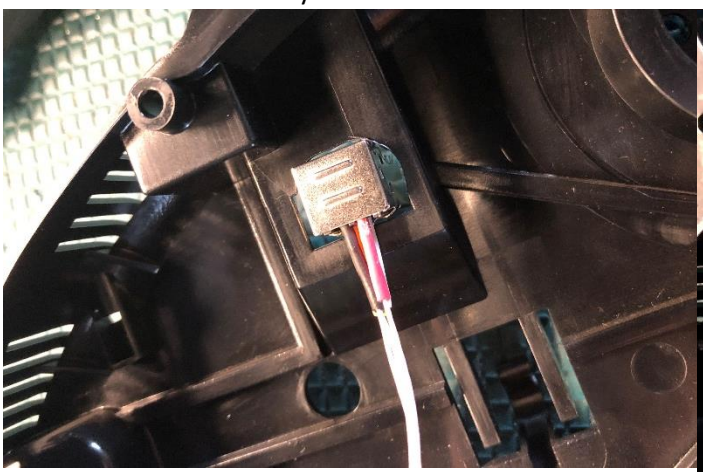
- Do 1 final check with the meter to ensure each wire from the ColorMFA board is in the correct location. The solder portion is now complete.

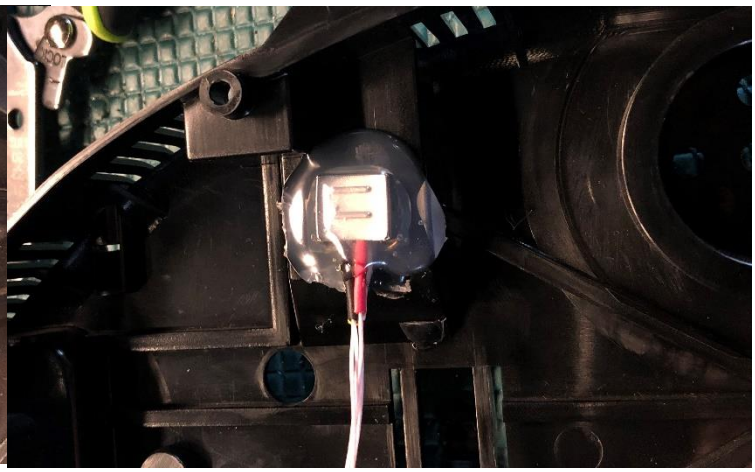
Reassembly

- Secure all the wires with tape, epoxy, hot glue, etc so that they do not chaff and cause accidental shorts. Can also secure the ColorMFA PCB better at this time just ensure the board is sitting straight and level.

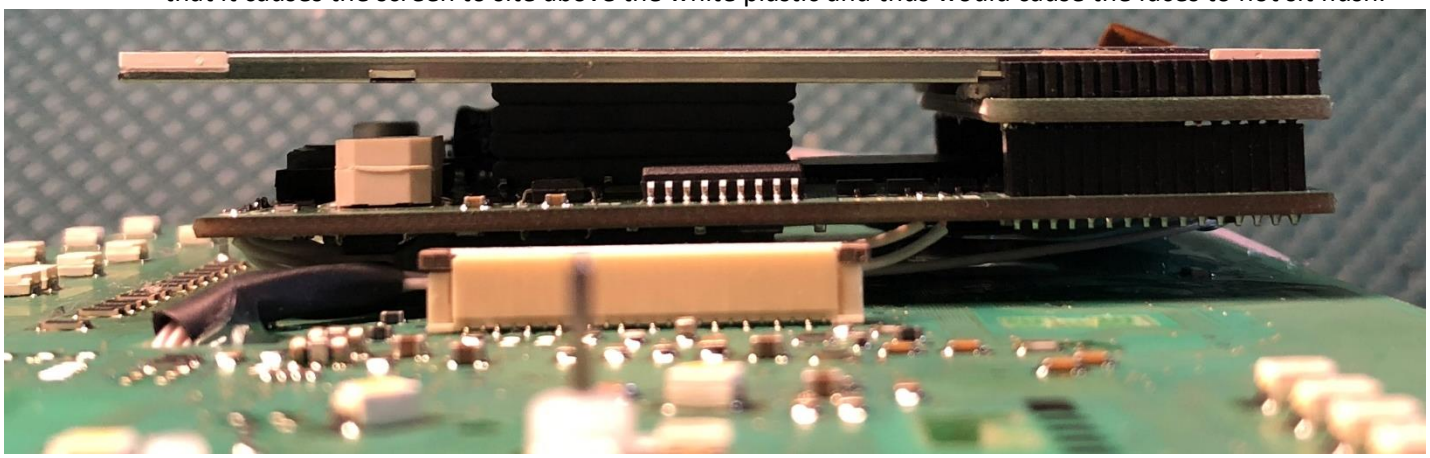


- Locate where you'd like the USB B to go. Cutting a square hole for it to fit through. Glue the port so the location you chose.

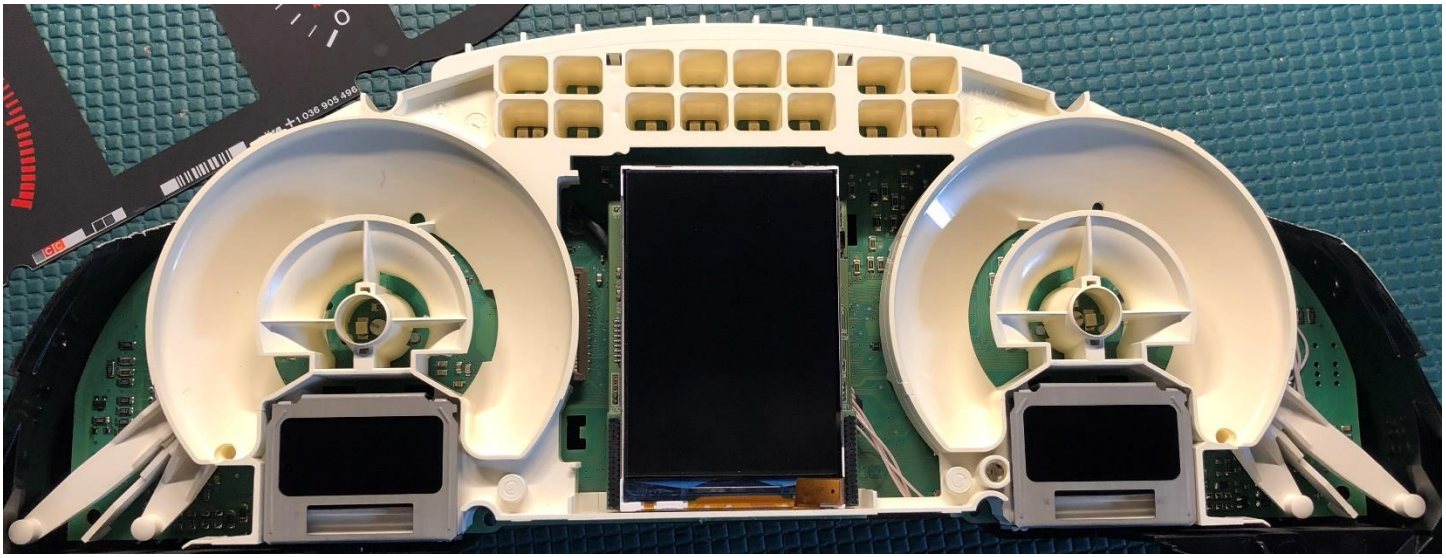




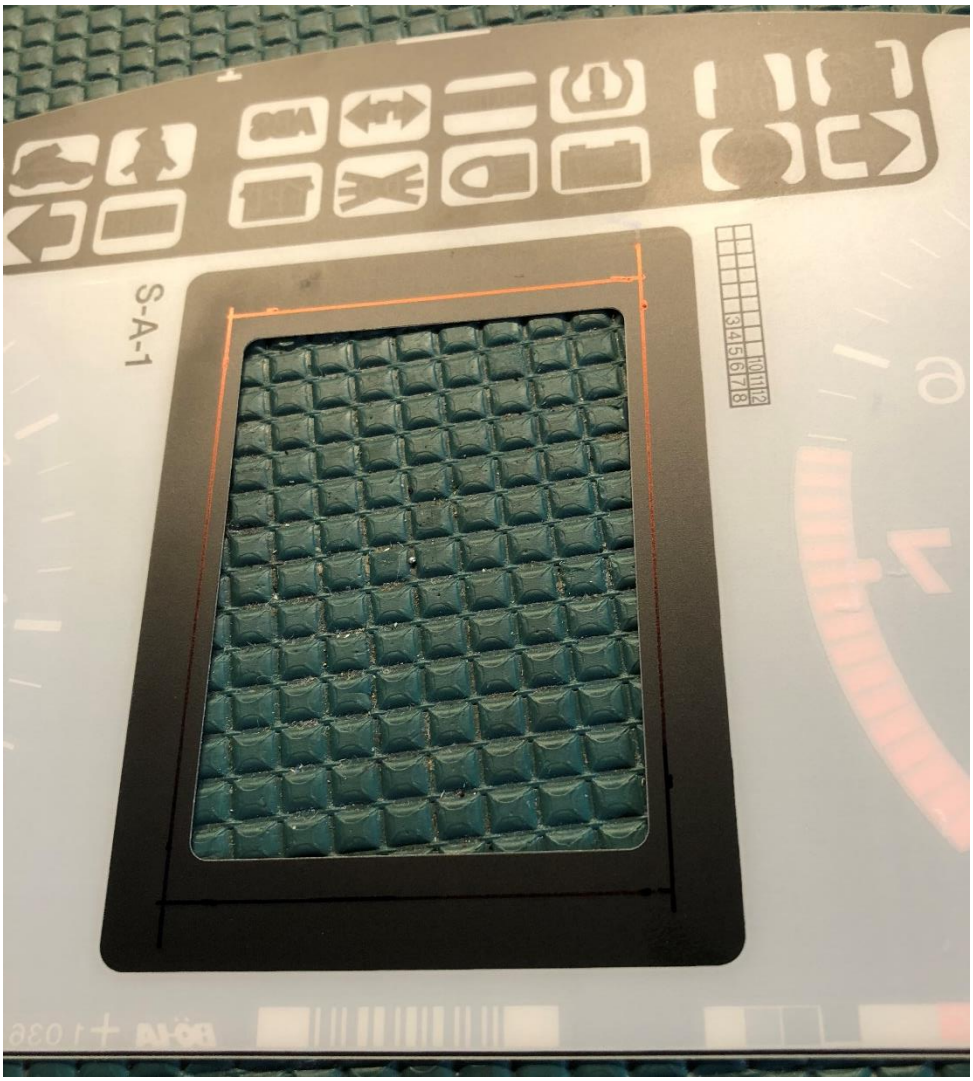
- Cut the matte screen protector film to the size of the LCD and apply it to the LCD.
- Install the ColorMFA screen onto the ColorMFA PCB. It's recommended to add about 3 layers of the double sided tape to hold the screen and board securely together. Do not stack too much tape though that it causes the screen to site above the white plastic and thus would cause the faces to not sit flush.

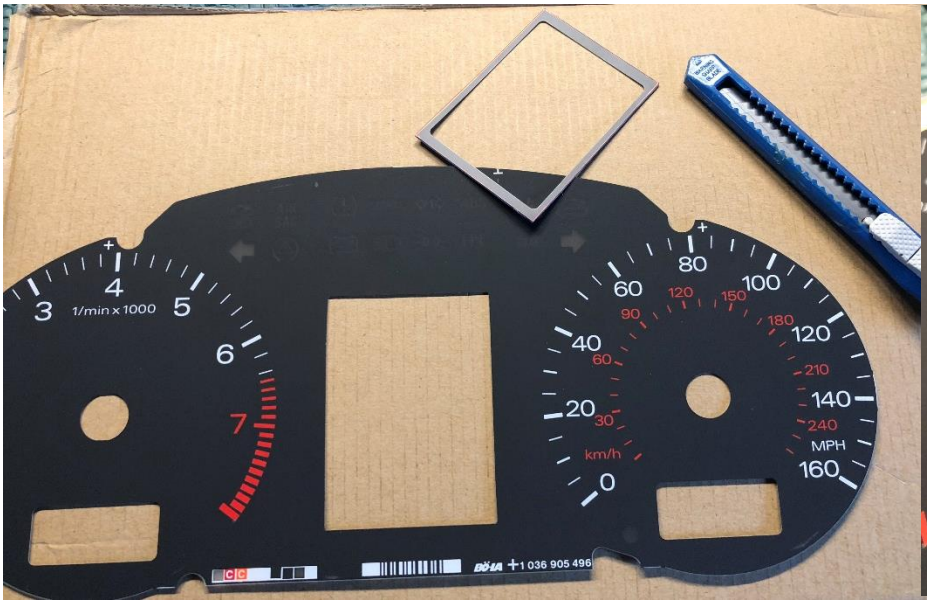


- Install the white plastic shrouding. Ensure it fully sits onto the PCB and isn't being lifted up by wires.



- The screen opening in the face must be enlarged. The opening should be extend 4mm on top, 4mm on bottom, and 2mm on each side. The opening will go from 41mmx61mm to 49mmx69mm. Use a flat edge and razor blade to score these marks until the plastic can be removed. Make sure these cuts are straight and clean as this will be seen once the cluster is reassembled. A black marker can be used to make the new edge look a little cleaner since the cut can expose "white" lines.





- Install faces and needles. When installing the needles be sure to only turn counter clockwise so the motor "zeros out" then keep turning until you reach 0. If you pass 0, go all the way around again and start over. Never turn clockwise. Also leave about a 2mm gap between the bottom of the needle and the face so that it does not rub and catch. If VCDS is available, the needles can be checked with 17-Instruments and output tests which will result in the needles sweeping and stopping at 3000 RPM and 62MPH. If the needle is off during these tests to NOT move them while still in the test, click next so the needle goes back to zero then move it.
- Place the PCB assembly back into the lens. Reconnect the 4 connections for the fuel, coolant and buttons.
- Snap the back cover onto the front lens and reinstall the 4 T10 screws. Install complete.

Notes:

- For use of the boost gauge function on the ColorMFA, the MAP sensor must be splice into and run to the Green cluster plug cavity 4 (will be unpopulated). If the car is not factory turbo, a 5V MAP sensor can still be used and return signal run to green connector cavity 4. For factory turbo, connect to ECU T121/101 for Gas, T121/71 for TDI. VW repair wire 000979009 can be used for the cluster plug.
- Be sure to adjust the gear ratios in the calibration settings so that the indicator works correctly. A step by step guide has been made for that as well and can be provided.
- On some cars it is necessary to record the cluster to disable the factory FIS. On B6 this is not very important. On B7 this must be changed. (Following info from Remnevolt on Drive2.ru). Using VAGCom check/modify the following values.
    - 17-Instrument
      10-Adapation
      Channel 19
      x? xxx:
      On- board computer
      0 - only level 2 (long-term memory)
      1 - levels 1 and 2

      xx? xx: Driver information system (DIS)
      0 - DIS 1
      1 - Highline without DIS
      2 - DIS 2
      Change these values so the second digit is either 1 or 0 and their digit is 0 thus giving x10xxx or x00xx (x10xx works better). The x's will remain unchanged from their original values. Test and save this new value, then exit VAGCom.

Instrument cluster pinout

Audi A4 8E B6/B7

		1	Washer fluid low	1	Terminal 58d		
		2	Coolant level low	2	Terminal 30		+12V
		3	Fuel gauge sender	3	Terminal 15		Ignition
		4	Coolant temperature	4	Vacant		Analog1
		5	Control group 2 Navigation system	5	Speedometer (input)		
		6	Control group 3 Navigation system	6	Speedometer (output 2)		
		7	Control group x Telematics	7	Airbag (inverted)		
		8	Menu switch (menu)	8	Turn signal (right-side)		
		9	Vacant	9	Brake fluid low		
		10	Bonnet switch	10	Turn signal (left-side)		
		11	Fuel gauge sender 2	11	Turn signal (trailer)		
		12	Menu switch (Out A)	12	CAN Low (Motor)		CAN_L Motor
		13	Vacant	13	CAN High (Motor)		CAN_H Motor
		14	Vacant	14	Terminal 61/charge warning		TrInput5
		15	Vacant	15	Vacant		
		16	FDR/TCS (= ESP)	16	Oil pressure 2		
CAN_H Conv		17	CAN High (Convenience)	17	Terminal 58s		
CAN_L Conv		18	CAN Low (Convenience)	18	Terminal 31 load		GND
CAN_L Info		19	CAN Low (Infotainment)	19	Terminal 31 load		
CAN_H Info		20	CAN High (Infotainment)	20	Vacant		
		21	Ambient temp. (input)	21	Speedometer (output 1)		
		22	S contact	22	ABS warning		TrInput3
TrInput4		23	Oil level / oil temperature	23	K wire		K-Line
		24	Self-levelling suspension	24	CAN drive (display)		
		25	Menu switch (enter)	25	Tank flap switch		TrInput6
		26	Vacant	26	CAN diagnosis Low		
		27	Vacant	27	CAN diagnosis (display)		
		28	Menu switch (Out B)	28	CAN diagnosis High		
		29	Vacant	29	HRC (headlight range control)		TrInput1
		30	Transponder 2	30	Belt buckle		
		31	Transponder 1	31	External buzzer		
		32	Terminal 31 (sensor)	32	Brake pad wear		TrInput2