Manual

BDM100

Title: Page number:

IMPORTANT

The interconnection between the BDM100 Module and the appropriate ECU is very easy. Nevertheless you should read this manual carefully because any failure may result in the destruction of the ECU.

⚠️

! To avoid unnecessary damages, please carefully read this manual before you start running the BDM100 Module with an ECU !

The BDM100 Module

In all cases, always connect the BDM100 module with your PC or notebook, first!.

The lower of the both blue LEDs on the Front panel now should start flashing as shown in picture 1.

The BDM100 module has no own power source. Its an USB-Device and obtain its power via the USB cable.

Always make sure that **all** necessary connections are done, **before** you apply power to an ECU!

The upper of the both blue LEDs indicates that an ECU connected to the BDM100 module is supplied with the required voltage.

Pict. 1: The BDM100 Module is always connected to the USB cable first.

Pict. 2: The BDM100 module connected to an engaged ECU.

Interconnection Sequence for Bosch EDC16 and ME9 ECUs

When the Bosch EDC16 or ME9 ECU is opened, you may look for a typical 14-pads arrangement near the back border of the printed connection board of the ECU.
It should look like as shown in Picture 3. This is the BDM-Port of the newest Bosch ECUs.

Note that at all only 10 pads of the total 14 pads are used for the EDC16 or ME9 programming port.
The pads with the numbers 2,3,13 and 14 are not used.

Ensure that the pads are clean and free of remaining flux agent.

Pin1

Pict. 3: This is the characteristic arrangement of the Bosch BDM pads.

Now place the BDM143 probe into the positioning frame and connect it to the BDM100 module
Ensure that the switch of the BDM143 probe is in its 'OFF'-position.
Carefully put the tips of the spring contact probes on the pads on the board as shown in picture 4.

The power supply of the BDM143 probe is plugged into the power source connector as shown in picture 4.

Now put the switch of the BDM143 in its 'ON'-position.

The red LED of the BDM143 and also the upper of the two blue LEDs on the front panel of the BDM100 module should light up to indicate, that the ECU board is supplied with the required voltage.

The BDM100 module is now operational.
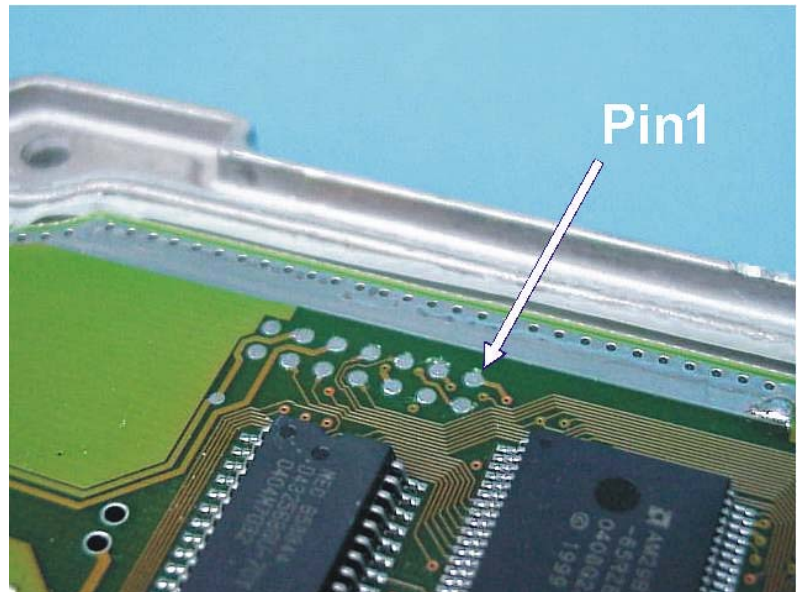
Pict. 4: The BDM143 probe contacting the pads.

Pict. 5: Finaly the power will applied.

Interconnection Sequence for Bosch EDC7 ECUs

On the EDC7 board the BDM port pads are located very near the MPC555 processor.

On Picture 3a the orientation of the Pads arrangement is shown.

Note that at all only 10 pads of the total 14 are used for the EDC7 programming port.

The pads with the numbers 2,3,13 and 14 are not used.

Ensure that the pads are clean and free of remaining flux agent.

On the EDC7 board the required pads are also located in the very middle of the whole board. Because of this you must not place the BDM143 probe completely into the guide slot of the positioning frame (as shown in picture 4a)

Now connect the BDM143 probe to the BDM100 module
Ensure that the switch of the BDM143 probe is in its 'OFF'-position.

Carefully put the tips of the spring contact probes on the pads on the board as shown in picture 4a.

It is recommended to use an isolation foil, in order to avoid that the arm of the positioning frame produces short-circuits between very high components on the top side of the board.

The power supply of the BDM143 probe is plugged into the power source connector as shown in picture 5a.

Now put the switch of the BDM143 in its 'ON'-position.

The red LED of the BDM143 and also the upper of the two blue LEDs on the front panel of the BDM100 module should light up to indicate, that the ECU board is supplied with the required voltage.

The BDM100 module is now operational.
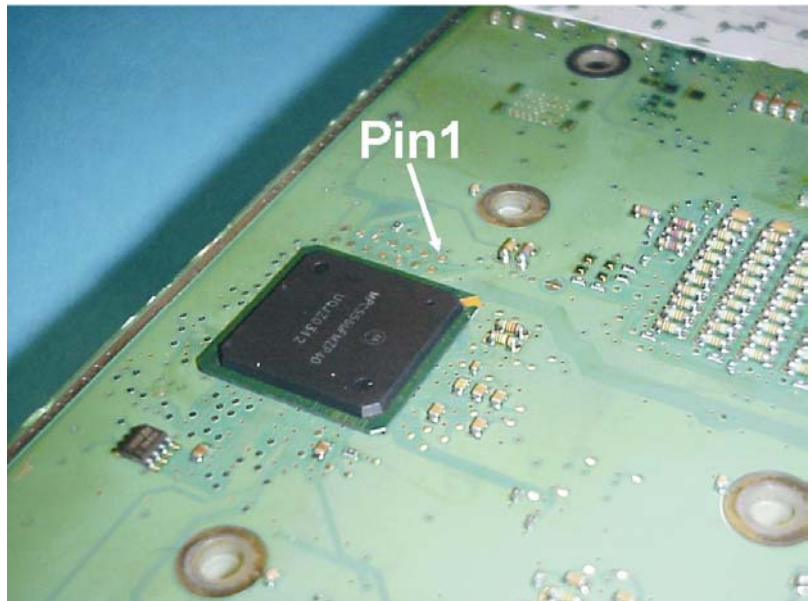
Pict. 3a: This is the characteristic arrangement of the Bosch BDM pads.

**Pict. 4a: The BDM143 probe contacting the pads.**

Pict. 5a: Finaly the power will applied.

Interconnection Sequence for Bosch ECUs using a BDM120 Cable

For connecting the BDM100 module to the EDC16 or to the ME9 ECUs the BDM120 cable is required which is equipped with an own power supply

First solder the 12way pin header onto the pads for the BDM port of the EDC16 or ME9 board.

Note that at all only 10 pads of the total 14 pads are used for the EDC16 or ME9 programming port.
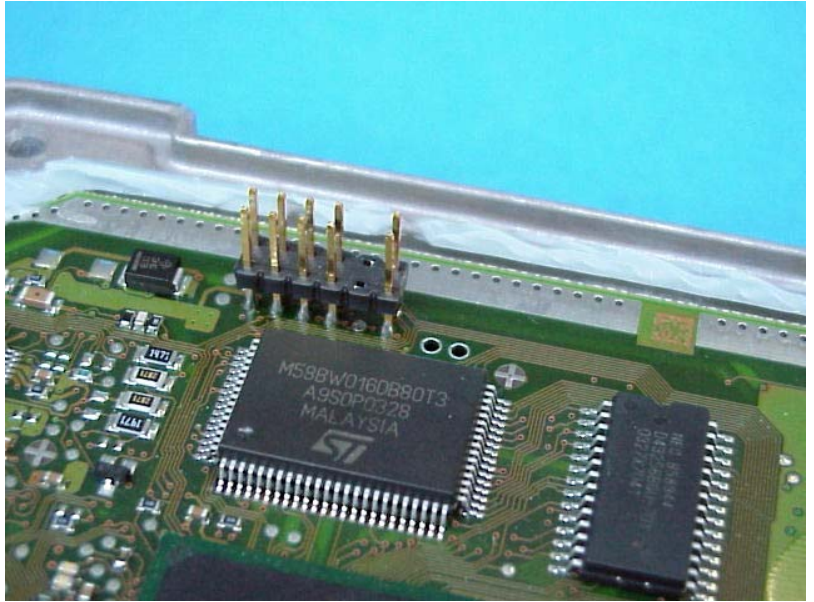

Pict. 12: This is the way the pin header will soldered..

Now take the BDM110 cable and connect it with the BDM120 cable as shown in picture 13.

Then connect the other side of the BDM100 cable to the BDM100 module.

Ensure that you have plugged the 12way connector in the 12way header **exactly as shown in picture 4!**

Again, ensure that all connections are plugged in the right direction.
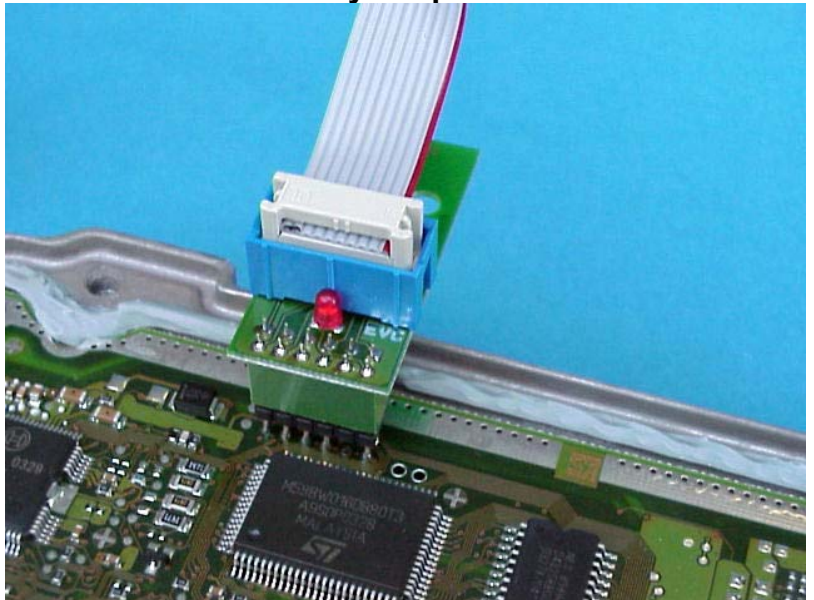
Pict. 13: The direction the BDM120 must plugged!

Finally, the power supply of the BDM120 cable is plugged into the power source connector.
The upper of the two blue LEDs on the front panel should light up to indicate, that the ECU board is now supplied with the required voltage.

The BDM100 module is now operational.

After finishing your work always remove the power supply from the power plug connector **first** before disconnecting any other connection!

Pict. 14: Finally the power will applied.

Pict. 6: The main connector of the Delphi ECU

In case of a Delphi ECU the power distribution can not provided by special pads of the BDM port.

Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 6.

The voltage is provided by a stabilized power supply or by the main connector of the ECU at the cable harness of the car.

! Warning ! Please always remind, if the open ECU is connected to the cable harness, it is already connected to the battery!
**Please, ensure that the ignition is switched off at beginning!**
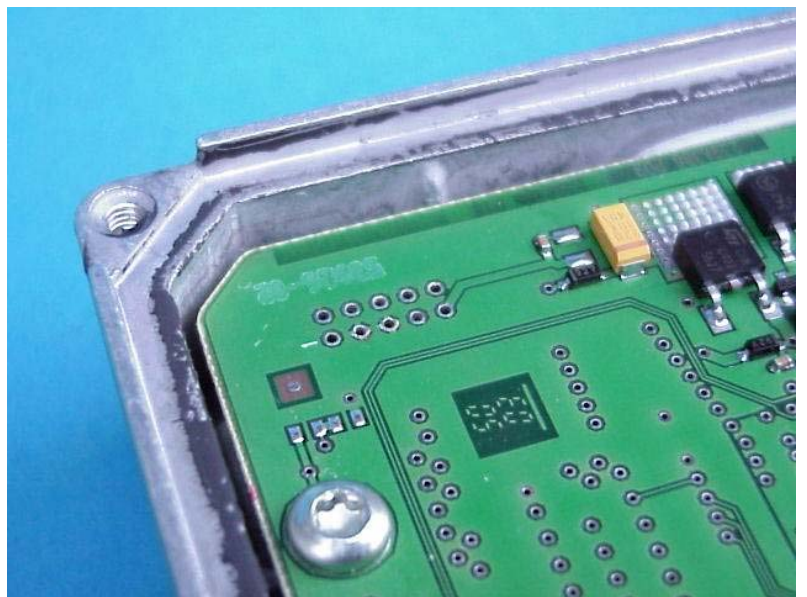
Pict. 7: The BDM pads of the Delphi ECU.

Now place the BDM142 probe into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board as shown in picture 8.
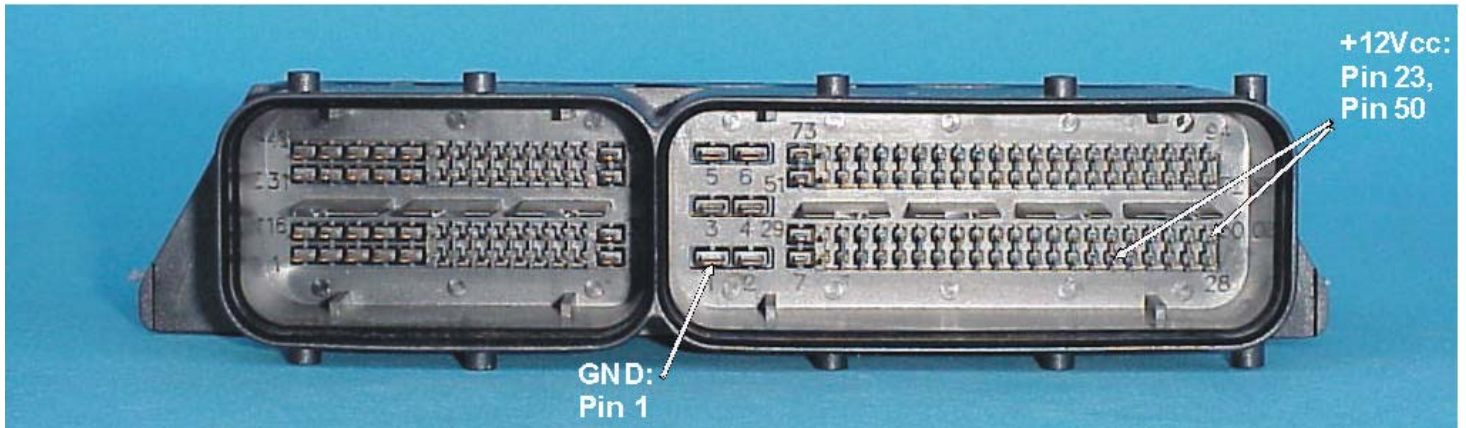
The tips of the spring contact probes should reach a spring travel of 2mm minimum for best contact conditions.

If you then applying power to the main connector of the ECU the red LED of the BDM142 probe lights up to indicate that the logic on the board is supplied with the required voltage.
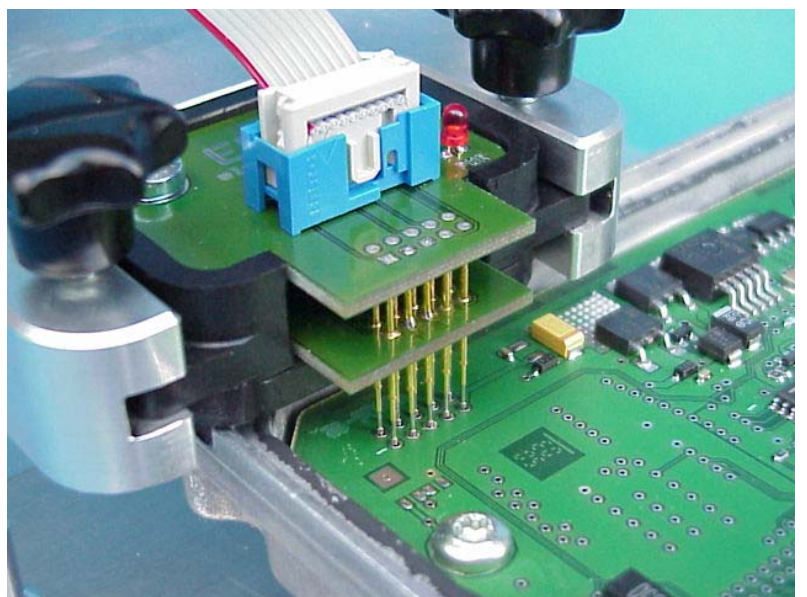
Pict. 8: The BDM142 probe contacting the BDM port pads of a Delphi ECU.

Pict. 9: The main connector of the Marelli ECU

In case of a Marelli ECU the power distribution can not provided by special pads of the BDM port.
Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 9.

The voltage is provided by a stabilized power supply or by the main connector of the ECU at the cable harness of the car.
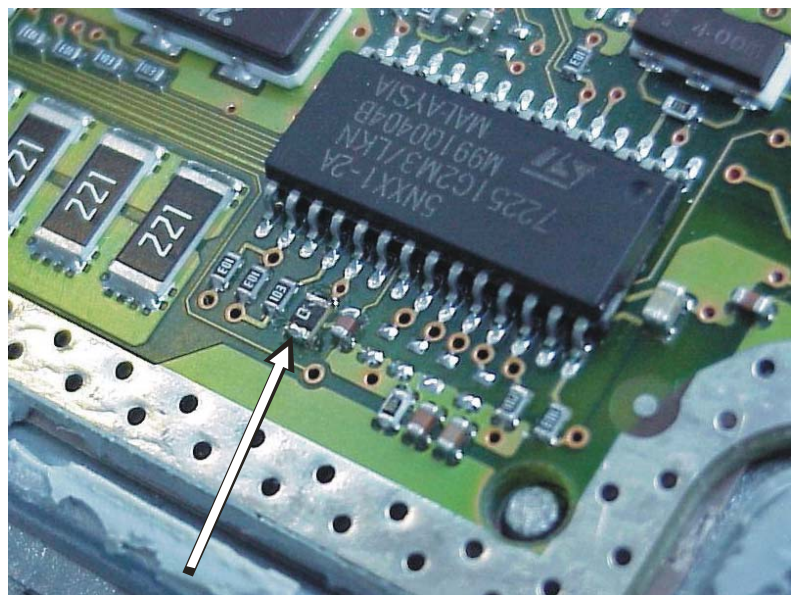
! Warning ! Please always remind, if the open ECU is connected to the cable harness, it is already connected to the battery!
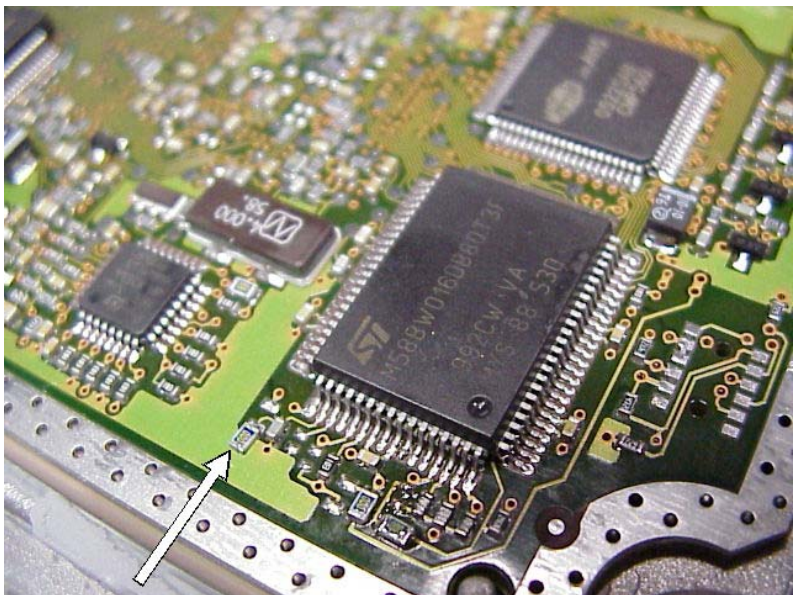**Please, ensure that the ignition is switched off at beginning!**

Pict. 10: The location of the zero-ohm resistor witch will be out-soldered.

Before you can start to read out or program a Marelli ECU, you must solder out the zero-ohm resistor witch is next pin19 of the component with SO28 package in the top right corner of the ECU board (Pict. 9).

There are also another Series of the Marelli MJD- ECUs wich have another PCB-layout and some other components. There the zero-ohm resistor is placed near the flash-eprom (Pict. 9a).

Don't forget to solder the zero-ohm resistor on its place again when the work with the BDM equipment is done.

Pict. 9a: On ths Marelli MJD-ECU (with another PCB-design) the resistor is already out-soldered.

The BDM110-cable is made for connecting the BDM100 module with ECUs using a 10way standard BDM-port with a 0.1' pitch.

On a Marelli board you will find a 12pad array with 0,05' pitch for the BDM port. Two of them, pad 11 and pad 12 are unused.
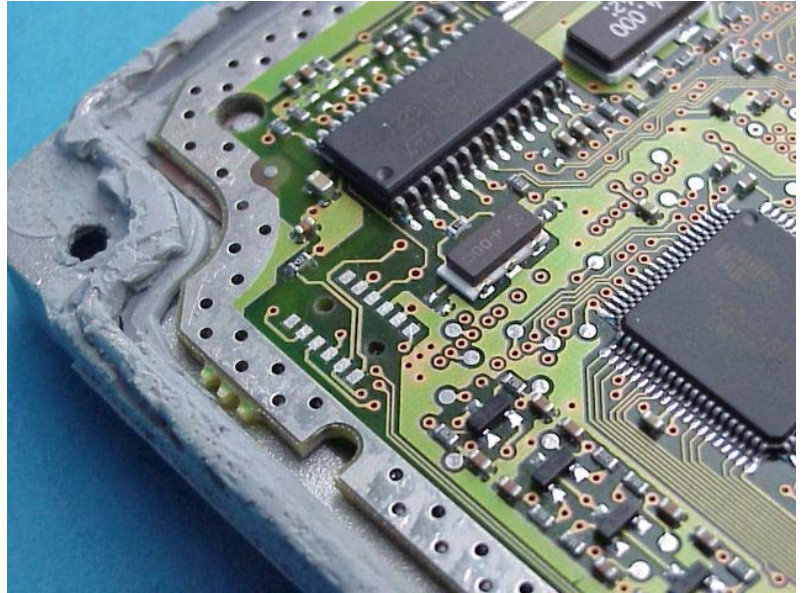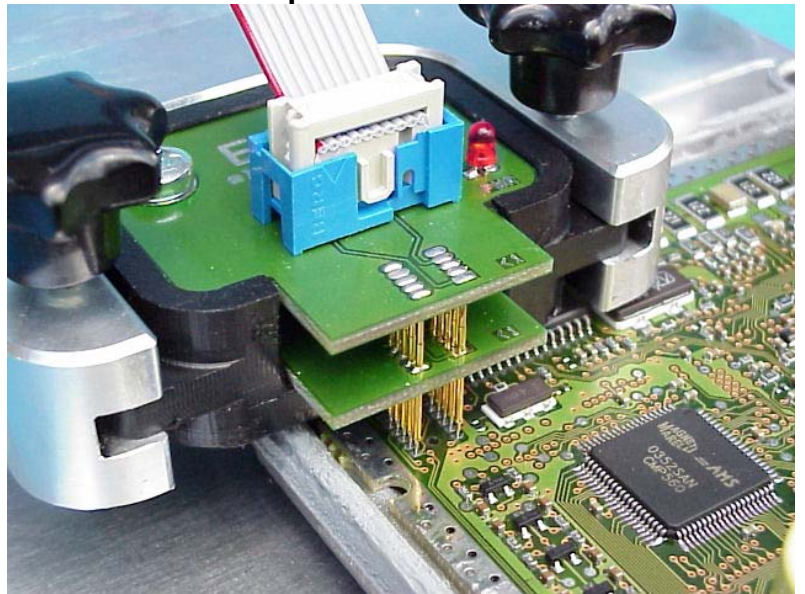

Pict. 11: The BDM pads of the Marelli ECU.

Now place the BDM144 probe into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board as shown in picture 11.
If the length of the spring contact pins should be to short, pull the spring contact pins up to the first rest position from the receptacles.
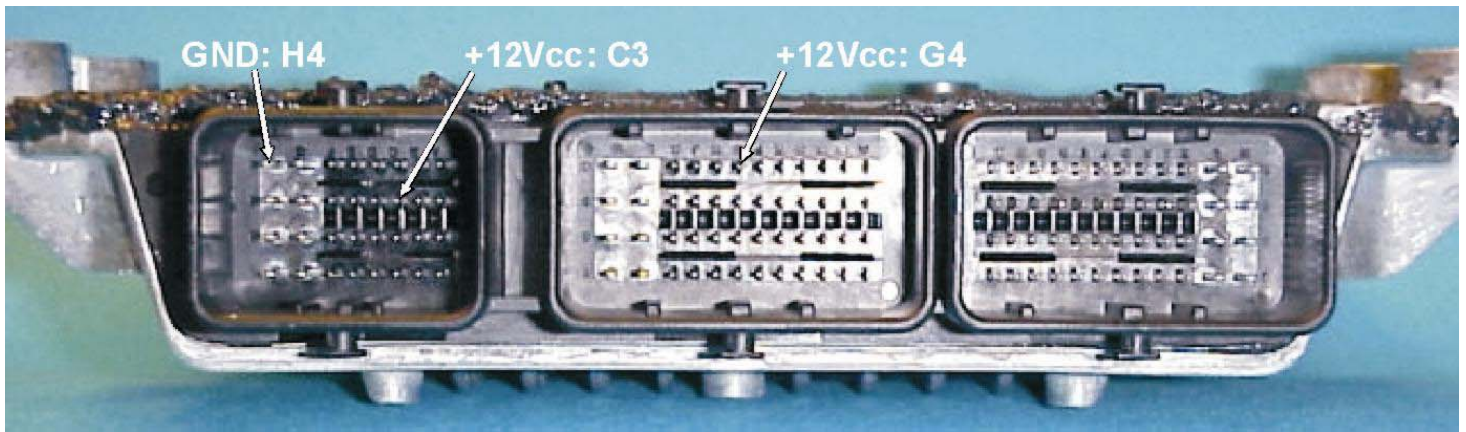
The tips of the spring contact probes should reach a spring travel of 2mm minimum for best contact conditions.

If you then applying power to the main connector of the ECU the red LED of the BDM144 probe lights up to indicate that the logic on the board is supplied with the required voltage.

Pict. 12: The BDM144 probe contacting the BDM port pads of a Marelli ECU.

Pict.16: The main connector of the Siemens SID803 ECU.

In case of the Siemens SID803 ECU the power distribution is provided by the pins of the main connector marked in picture 16.
Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 16.

The voltage is provided by a stabilized power supply or by the main connector of the ECU at the cable harness of the car.
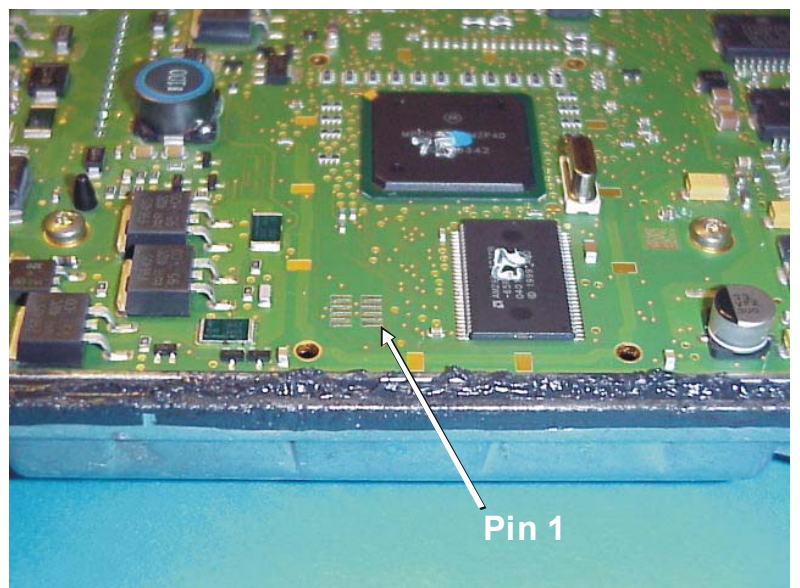
! Warning ! Please always remind, if the open ECU is connected to the cable harness, it is already connected to the battery!
**Please, ensure that the ignition is switched off at beginning!**

Now place the BDM141 probe into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board as shown in picture 18. If the length of the spring contact pins should be to short, pull the spring contact pins up to the first rest position from the receptacles.

The tips of the spring contact probes should reach a spring travel of 1mm minimum for best contact conditions.

If you then applying power to the main connector of the ECU the red LED of the BDM141 probe lights up to indicate that the logic on the board is supplied with the required voltage
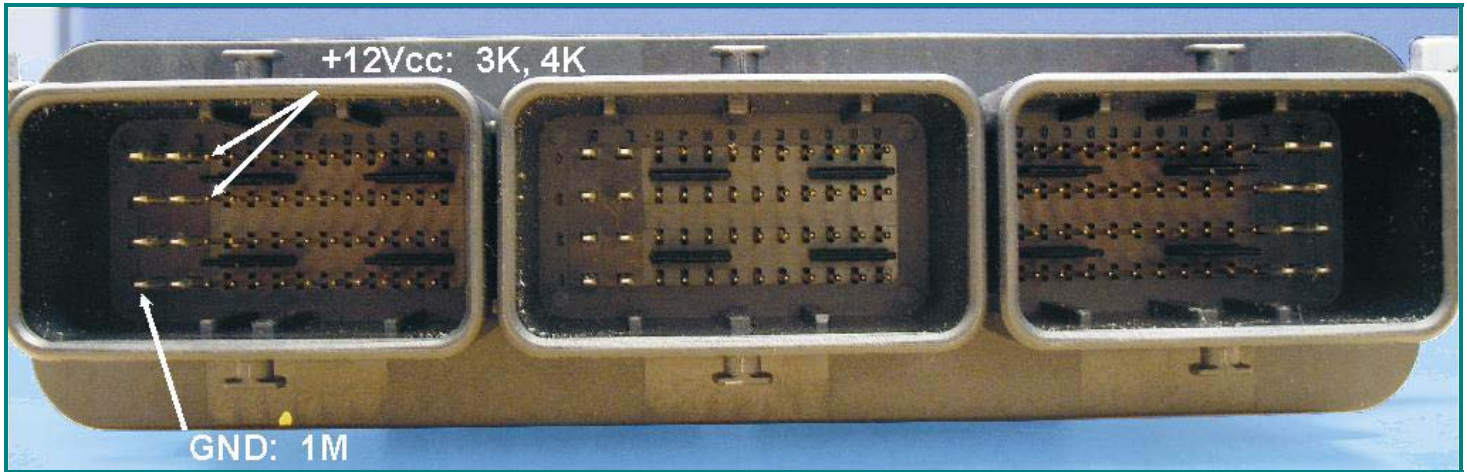

Pict. 17: The location of the BDM- Pads on the board of the Siemens SID803 ECU.
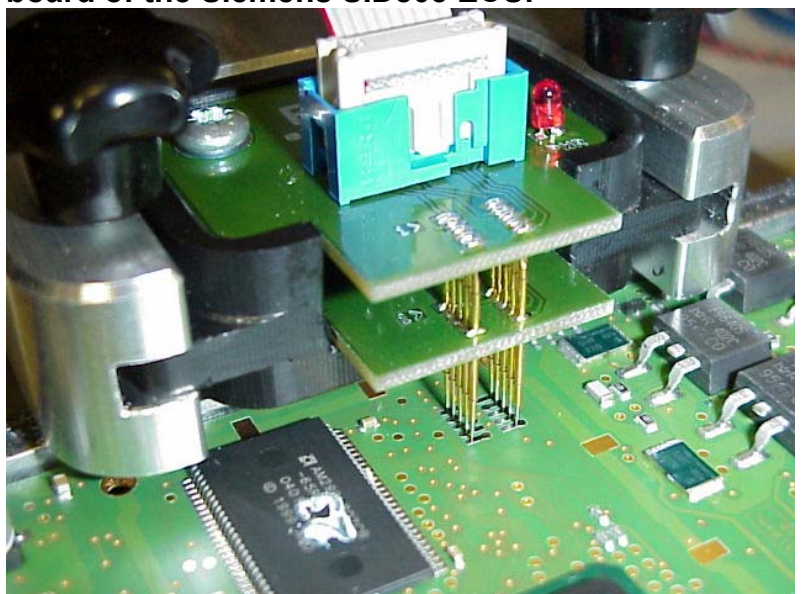
Pict. 18: The BDM141 contacting the BDM- Pads.

Pict.16a: The main connector of the Siemens SID201 ECU.

In case of the Siemens SID201 ECU the power distribution is provided by the pins of the main connector marked in picture 16.
Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 16a.

The voltage is provided by a stabilized power supply or by the main connector of the ECU at the cable harness of the car.

! Warning ! Please always remind, if the open ECU is connected to the cable harness, it is already connected to the battery!
Please, ensure that the ignition is switched off at beginning!

Now place the BDM141 probe into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board. If the length of the spring contact pins should be to short, pull the spring contact pins up to the first rest position from the receptacles.

The tips of the spring contact probes should reach a spring travel of 1mm minimum for best contact conditions.

If you then applying power to the main connector of the ECU the red LED of the BDM141 probe lights up to indicate that the logic on the board is supplied with the required voltage
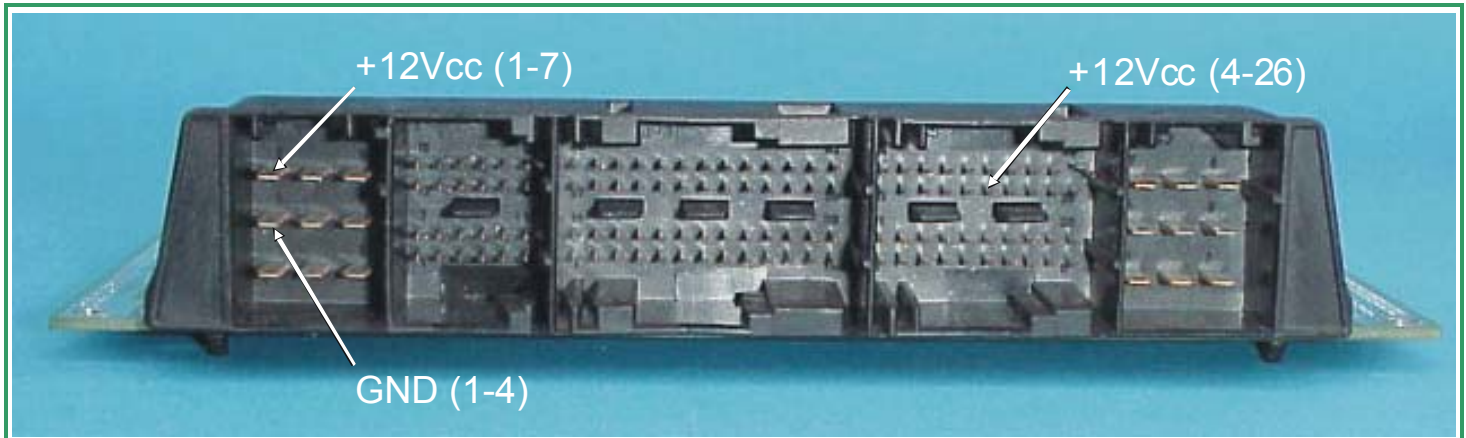

Pict. 17a: The location of the BDM- Pads on the board of the Siemens SID201 ECU.

Pict. 18a: The BDM141 contacting the BDM- Pads.

+12Vcc (1-7)   +12Vcc (4-26)

GND (1-4)

Pict.19: The main connector of the MS45 ECU.

In case of the Siemens MS45 ECU the power distribution is provided by the pins of the main connector marked in picture 19.

Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 19.

The voltage is provided by a stabilized power supply or by the main connector of the ECU at the cable harness of the car.

! Warning ! Please always remind, if the open ECU is connected to the cable harness, it is already connected to the battery!

Please, ensure that the ignition is switched off at beginning!

Now place the BDM141 probe into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board as shown in picture 21.

If the length of the spring contact pins should be to short, pull the spring contact pins up to the first rest position from the receptacles.

The tips of the spring contact probes should reach a spring travel of 1mm minimum for best contact conditions.

If you then applying power to the main connector of the ECU the red LED of the BDM141 probe lights up to indicate that the logic on the board is supplied with the required voltage
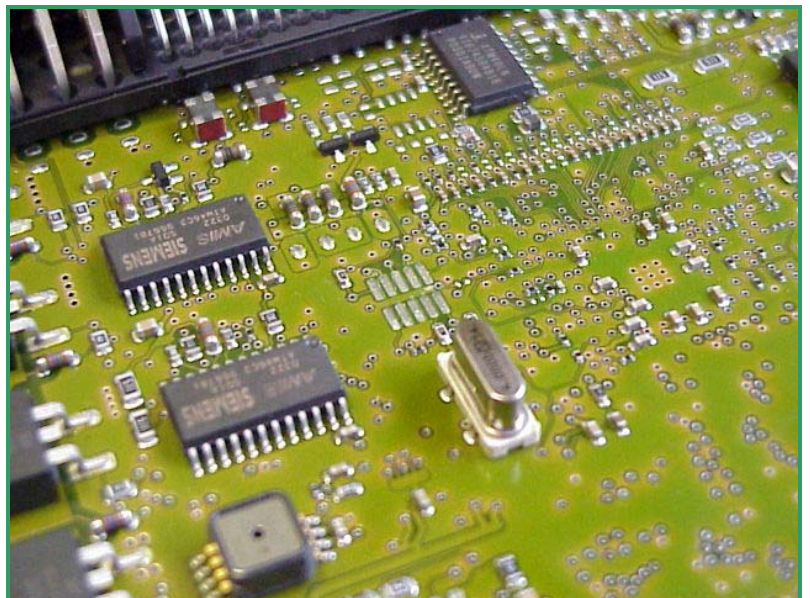
The BDM100 module is now operational.

Bild. 20: On the MS45 board the BDM-Pads are arranged very centrically.
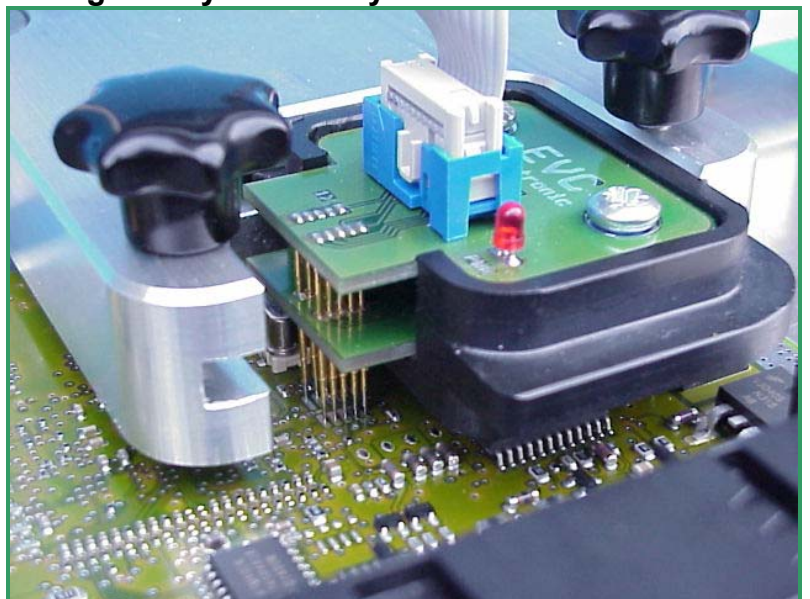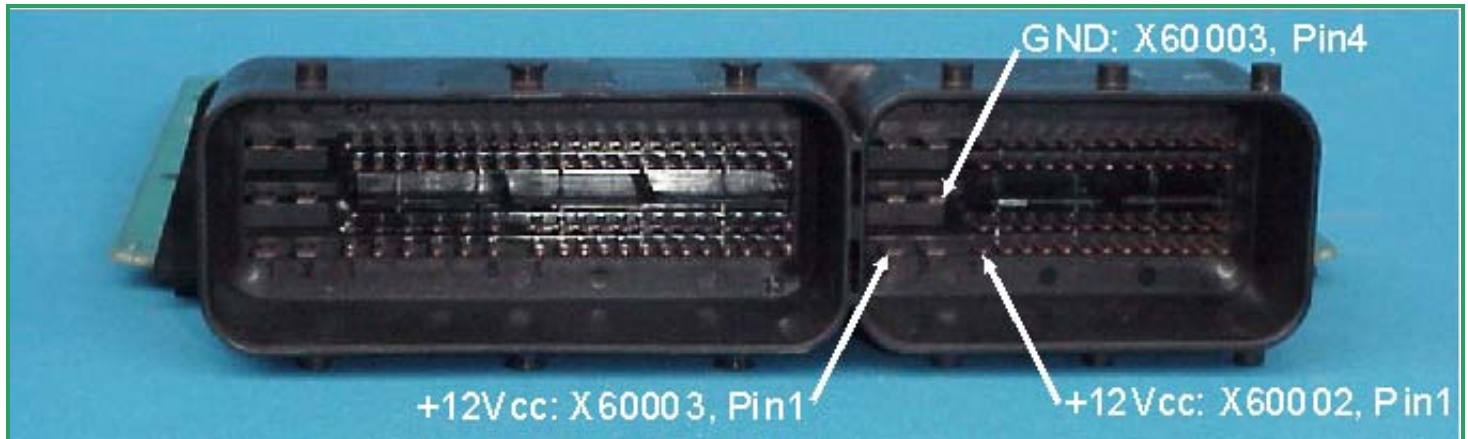

Bild. 21: The BDM141 contacting BDM- Pads.

Pict.19a: The main connector of the MSS65 ECU.

On the Siemens MS45 ECU the power distribution is provided by the pins of the main connector as shown in picture 19a.
Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 19.

On the MSS65 board there are two processors wich each own programing port pad arrays. Each array consist of 30 pads but only the first 10 of them are used for BDM purposes.
For connecting the BDM-pads controllable the BDM141 and also the BDM144 probe are required.
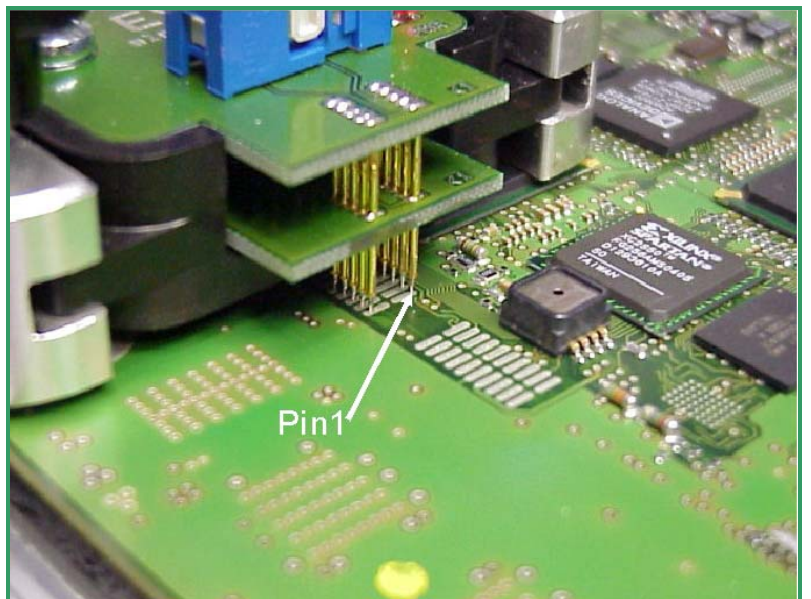
Now place the BDM probes in succession into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board as shown in picture 20a and picture 21a.

If the length of the spring contact pins should be to short, pull the spring contact pins up to the first rest position from the receptacles.
The tips of the spring contact probes should reach a spring travel of 1mm minimum for best contact conditions.

If you then applying power to the main connector of the ECU the red LED of the BDM14x probe lights up to indicate that the logic on the board is supplied with the required voltage
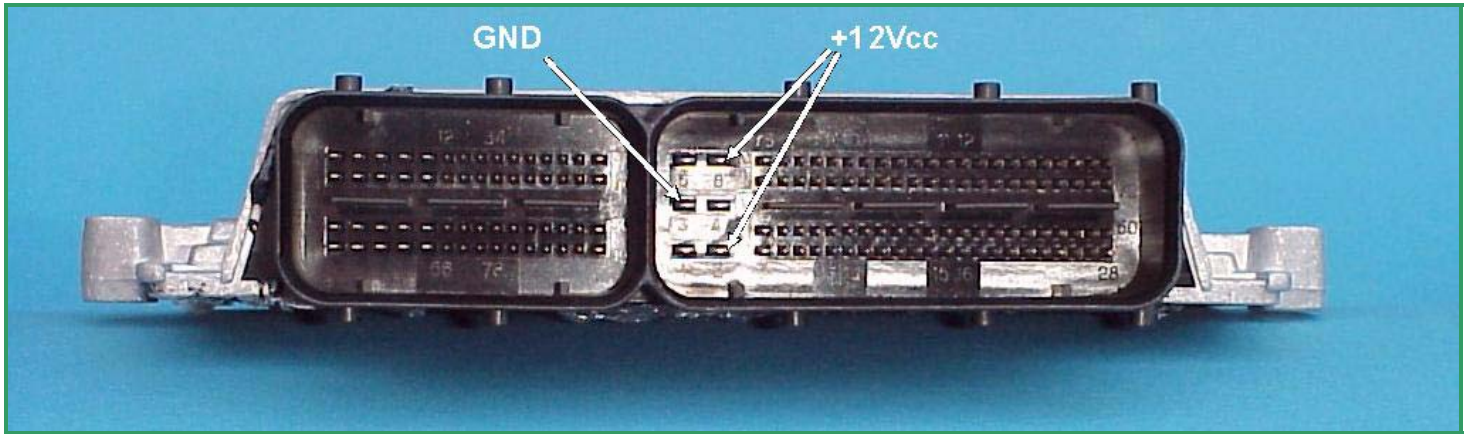
The BDM100 module is now operational

Pict. 20a: On the MSS65 board both the BDM144 (shown in this picture) and the BDM141 probes are required.
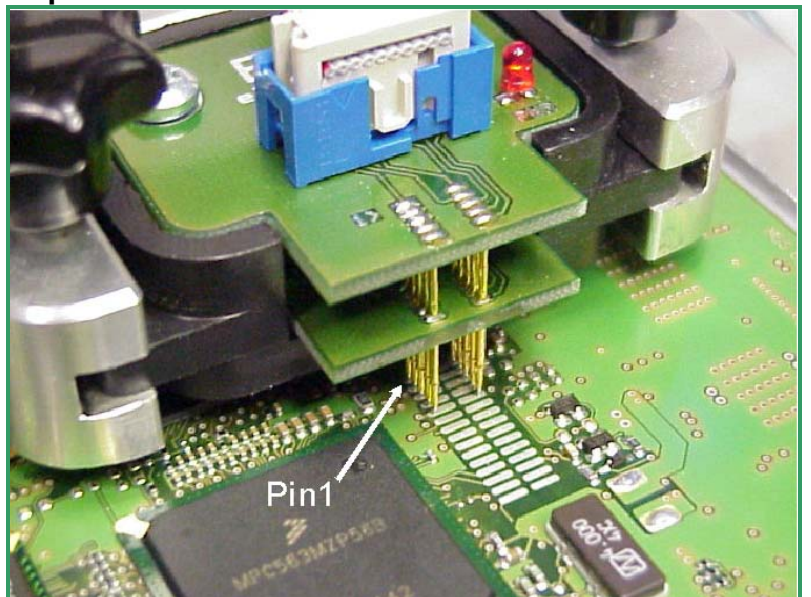
Pict. 21a: The BDM141 probe contacting the BDM-pads of the second processor..

Pict. 22: The main connector of the Siemens HMC Theta PI-ECU.

On the Siemens MS45 ECU the power distribution is provided by the pins of the main connector as shown in picture 19a.
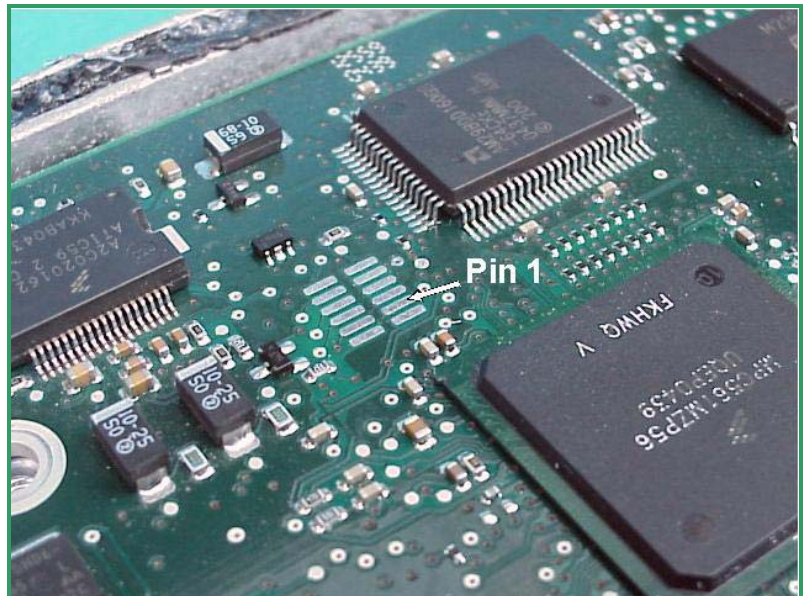Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 22.

Now place the BDM144 probe into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board as shown in picture 24.

If the length of the spring contact pins should be to short, pull the spring contact pins up to the first rest position from the receptacles.

The tips of the spring contact probes should reach a spring travel of 1mm minimum for best contact conditions.

If you then applying power to the main connector of the ECU the red LED of the BDM144 probe lights up to indicate that the logic on the board is supplied with the required voltage

The BDM100 module is now operational

Pict. 23: Only ten of the present 12 pads will be used. The extra both are not connected.
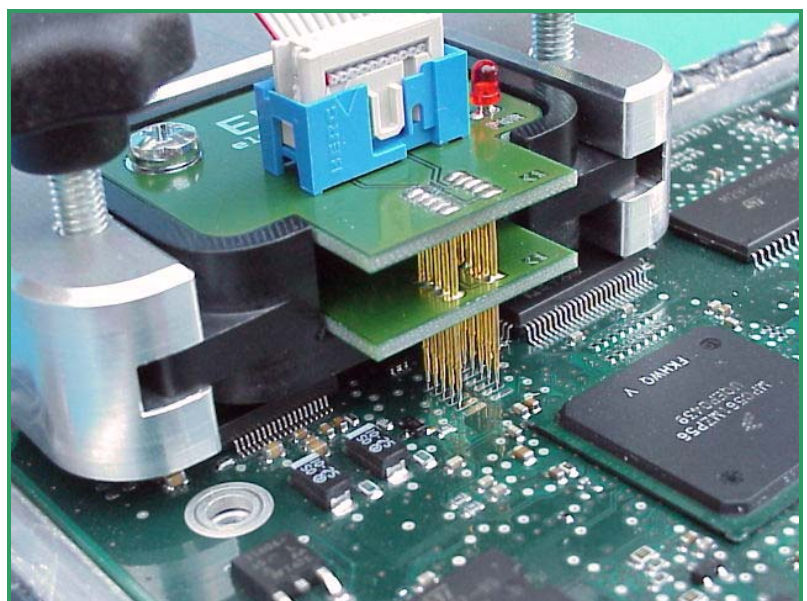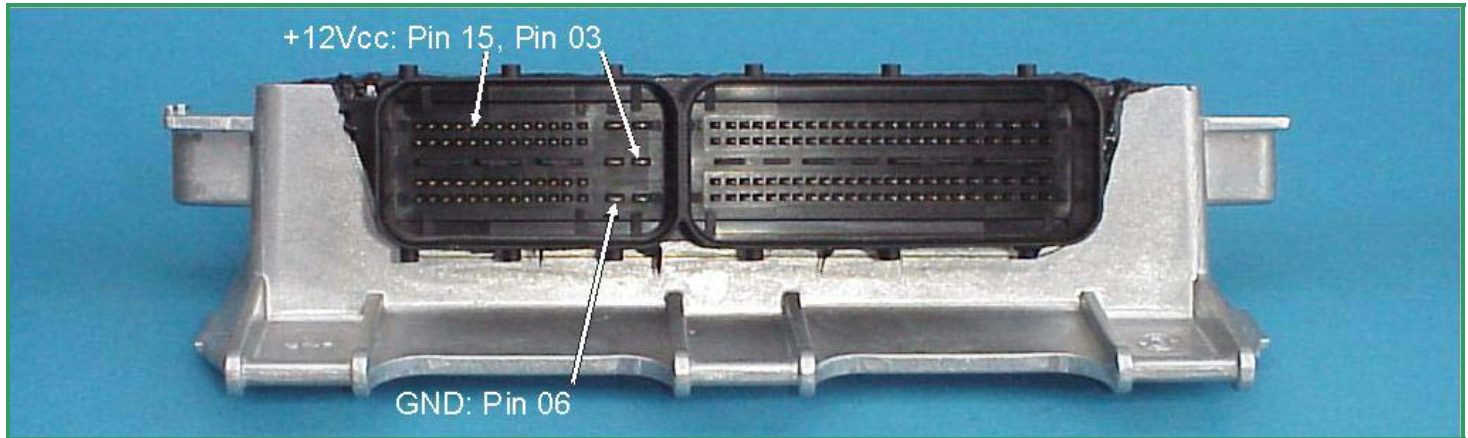

Bild. 24: The tips of the spring contact probes should reach a spring travel of 2mm minimum for best contact conditions

Pict. 25: The main connector of the SIM266 ECUs.

On the Siemens MS45 ECU the power distribution is provided by the pins of the main connector as shown in picture 22.

Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture.25

Athough the BDM pads don't appear in a well known arrangement on the Siemens SIM266 ECU board, the BDM145 probe provides a solution to contact the required BDM pads wich are scattered all over the top side of the ECU board.

After removing the back plate of the ECU you will look for the PCP area the required pads are located in (as shown in Pict. 26).
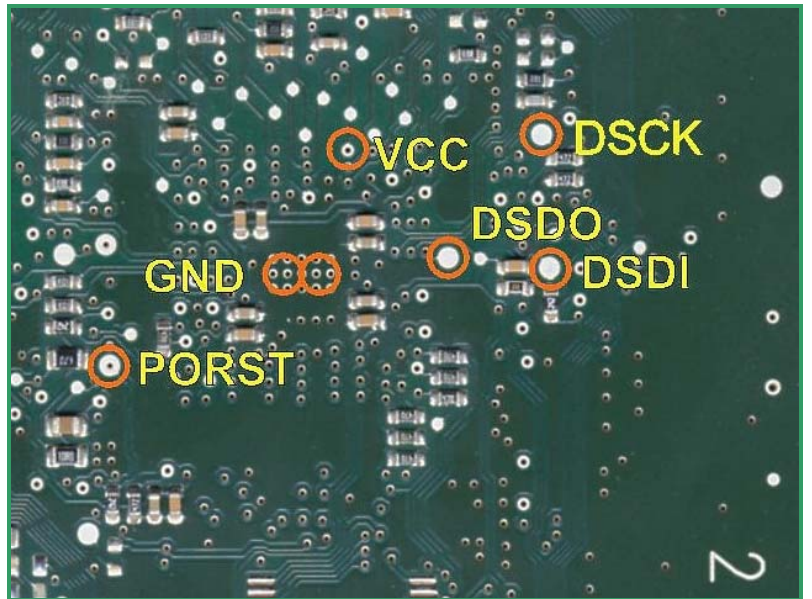

**Pict. 26: This are the pads which are required fo the BDM interface.**

Use a support padding with 10mm thickness and 100mm x 150mm in size under the ECU to get a horzontally alignment of the ECU board with the posititning frame base plate.

Now place the BDM145 probe into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board as shown in picture 27.

Use the representation in Pict. 26 for orientation and make sure that the spring contatct probe hits centrically the correct pads before you switch on the power.
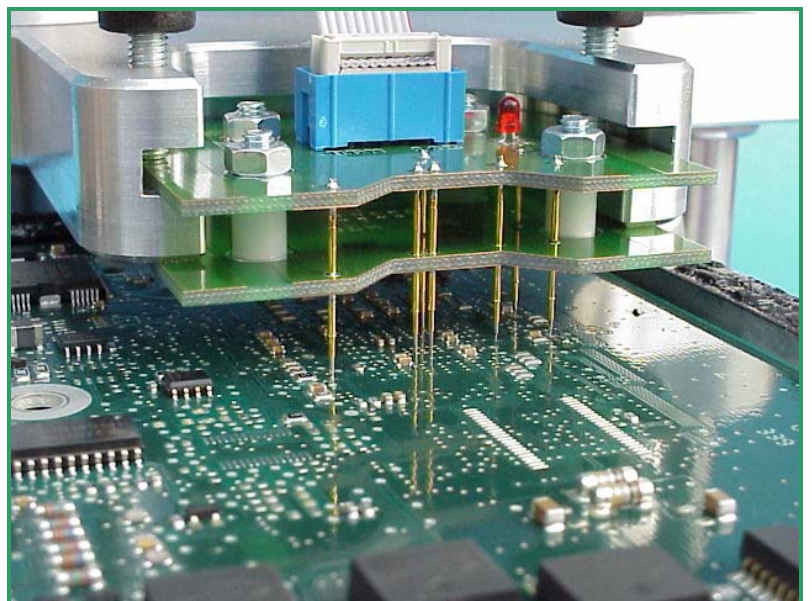
Pict. 27: The tips of the spring contact probes should reach a spring travel of 2mm minimum for best contact conditions
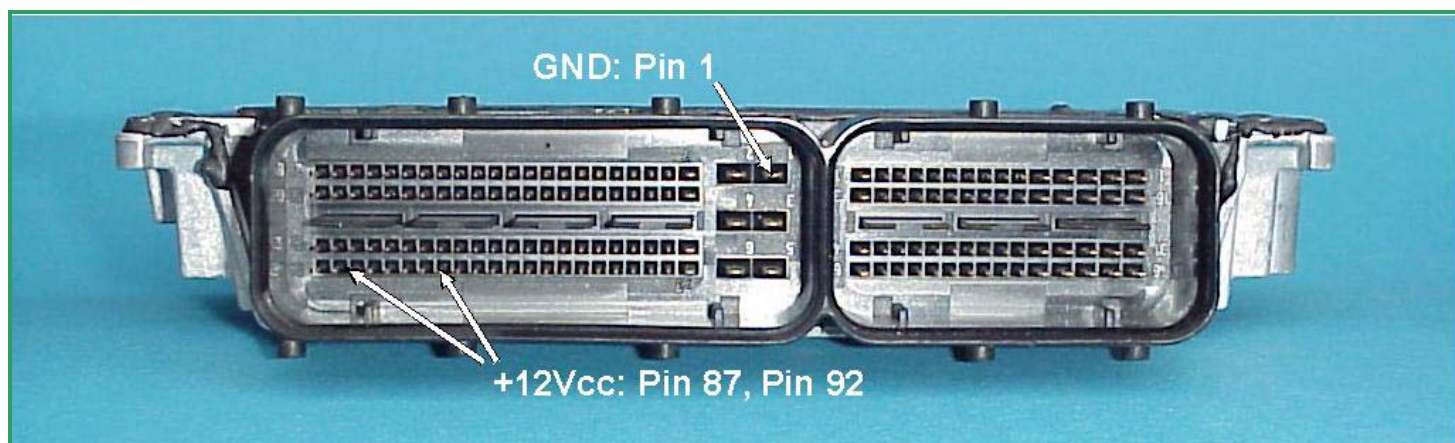
Pict. 28: : The main connector of the SIMOS-6.x ECU series.

On the Siemens SIMOS-6.x ECU series the power distribution is provided by the pins of the main connector as shown in picture 28.

Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture.28

Athough the BDM pads do not appear in a well known arrangement on the ECU board, the BDM146 probe provides a solution to contact the required BDM pads wich are scattered all over the top side of the ECU board like shown in Pict.29.
The required pads are marked with orange circles and the resulting location of the BDM146 probe board is shown like a blue shadow.
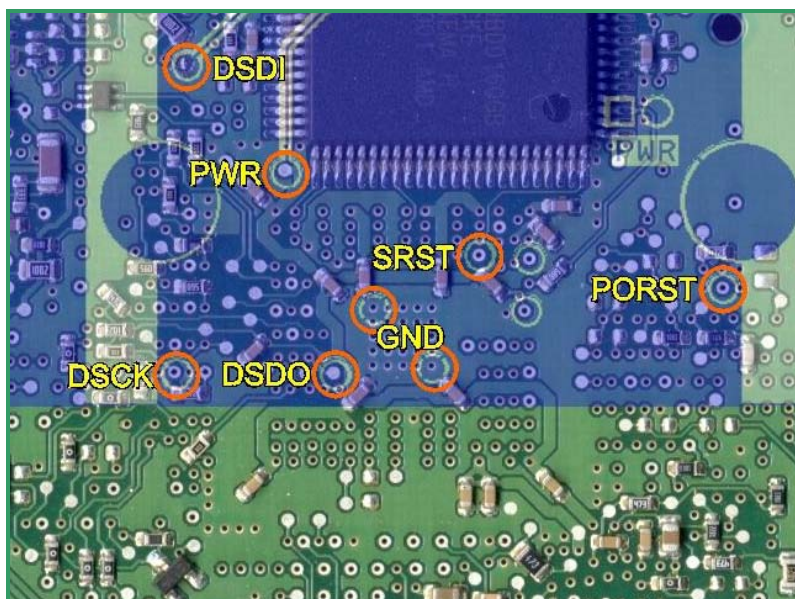

Pict. 29: This are the pads which are required fo the BDM interface.

After removing the back plate of the ECU you will look for the PCP area the required pads are located in (as shown in Pict. 29).

Now place the BDM146 probe into the positioning frame and carefully put the tips of the spring contact probes on the pads on the board as shown in picture 30.
Then connect the BDM110 flat wire cable to the BDM100 module wich must already connected to your computer.

Use the representation in Pict. 29 for orientation and make sure that the spring contatct probe hits centrically the correct pads before you switch on the power.
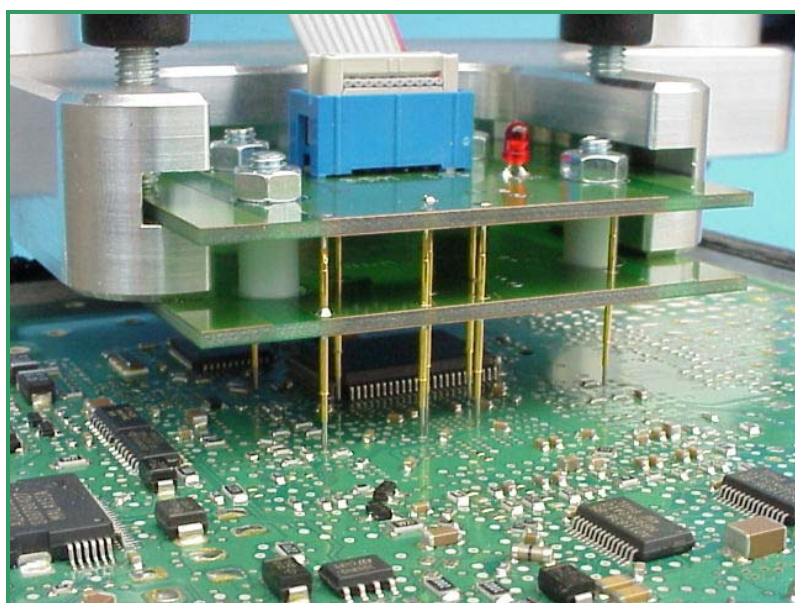
Pict. 30: The tips of the spring contact probes should reach a spring travel of 2mm minimum for best contact conditions
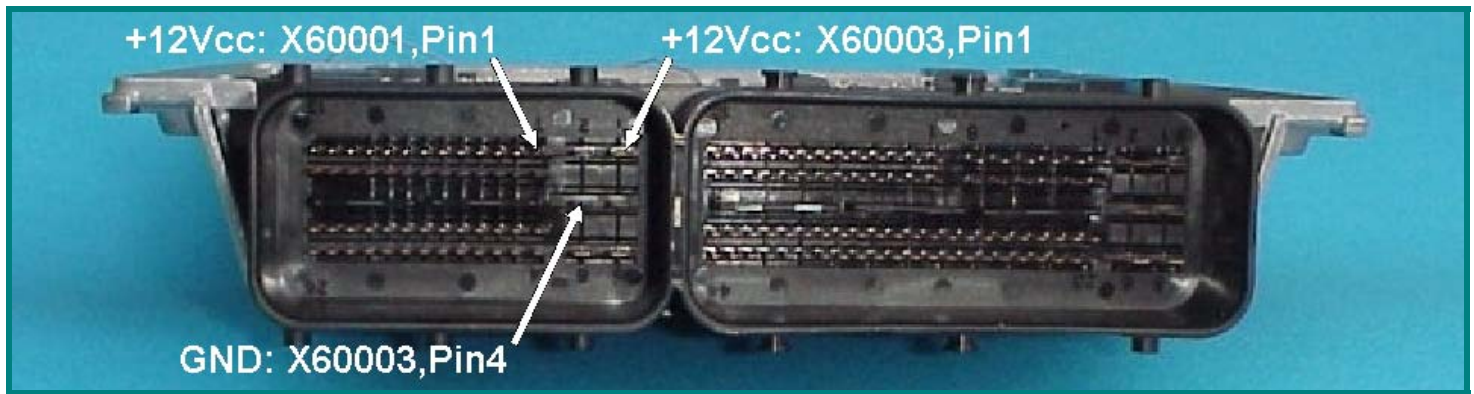
Pict. 31: The main connector of the Siemens MSV70 ECU (equal to the one of the MSS65 ECU).

On the Siemens MSV70 ECU the power distribution is provided by the pins of the main connector as shown in picture 31.

Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 31

To make the BDM100-Modul able to recogniize the ECU, a drop of solder or a zero-Ohm resistor is required. Place it between the both solderpads wich are marked by a yellow circle on picture 32.
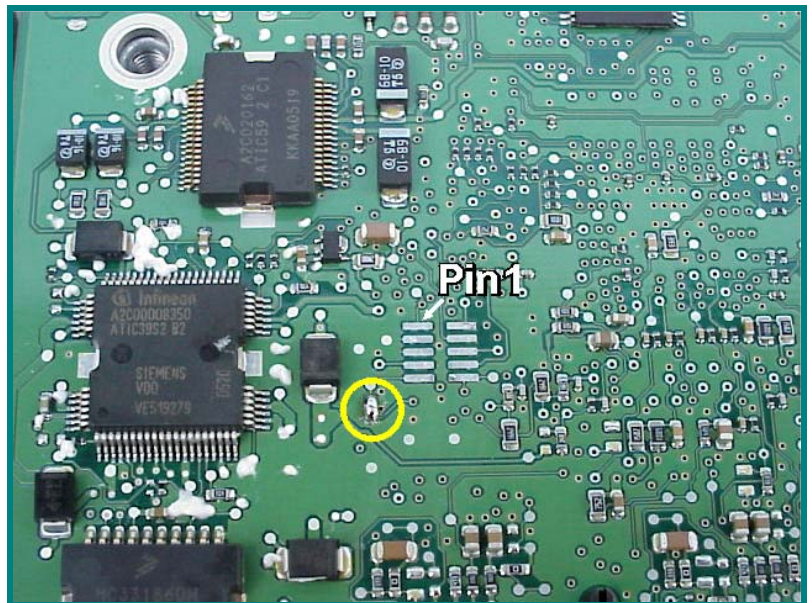
Now place the BDM141 probe into the positioning frame and carefully center the tips of the spring contact probes on the BDM-pads on the board as shown in picture 33.

Then connect the BDM110 flat wire cable to the BDM100 module wich must already connected to your computer.

The tips of the spring contact probes should reach a spring travel of 1mm minimum for best contact conditions.

If you then applying power to the main connector of the ECU the red LED of the BDM141 probe lights up to indicate that the logic on the board is supplied with the required voltage

The BDM100 module is now operational.

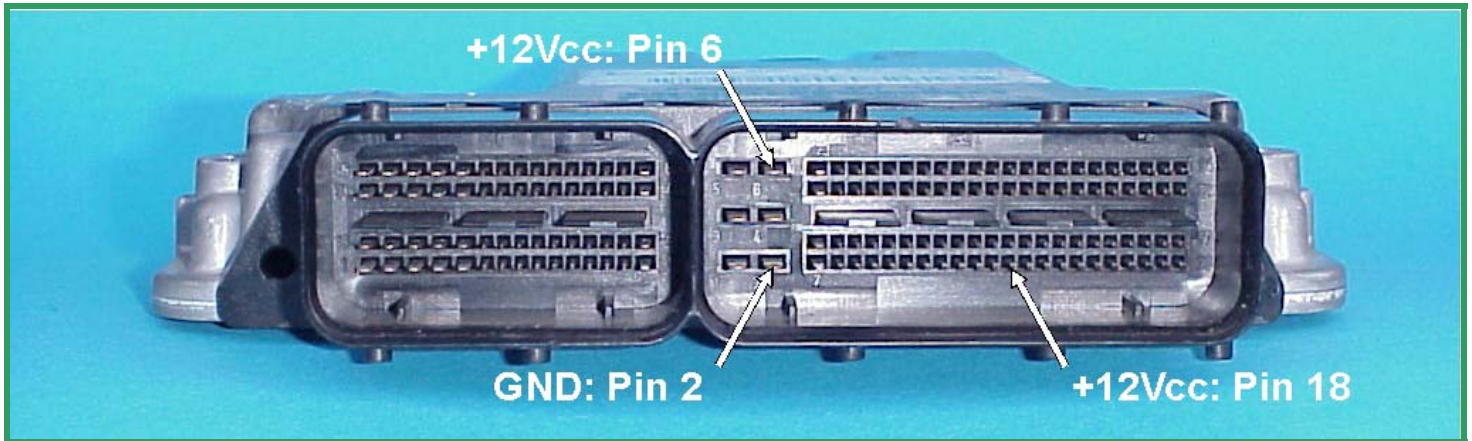

Pic. 32: This are the pads which are required fo the BDM interface. The required jumper is marked by a yellow circle.
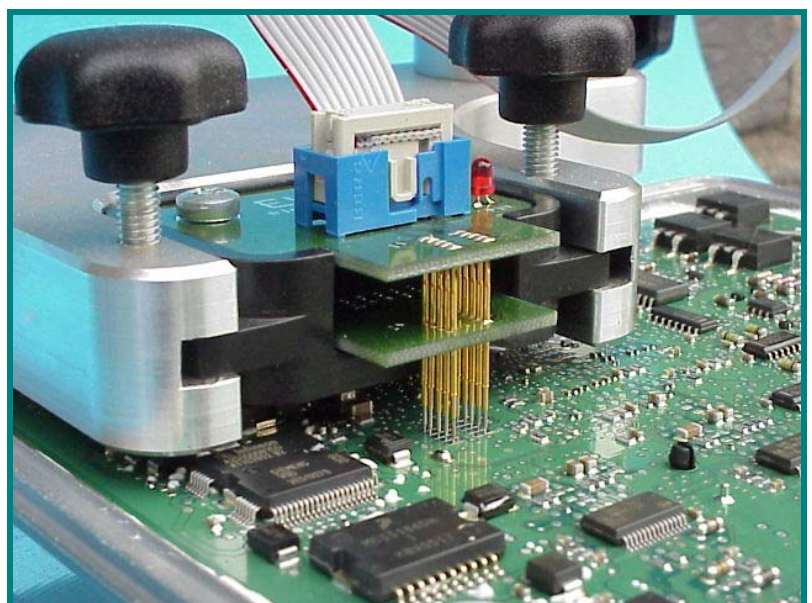
Pict.33: Make sure, that you are not producing short circuits, if you are lowering the arm of the positioning frame!

Pict. 34: The main connector of the Siemens PPD1.1 ECU.

On the Siemens PPD1.1 ECU the power distribution is provided by the pins of the main connector as shown in picture 34.

Use separate wires to connect GND and +12Vcc to the pins of the main connector shown in picture 34
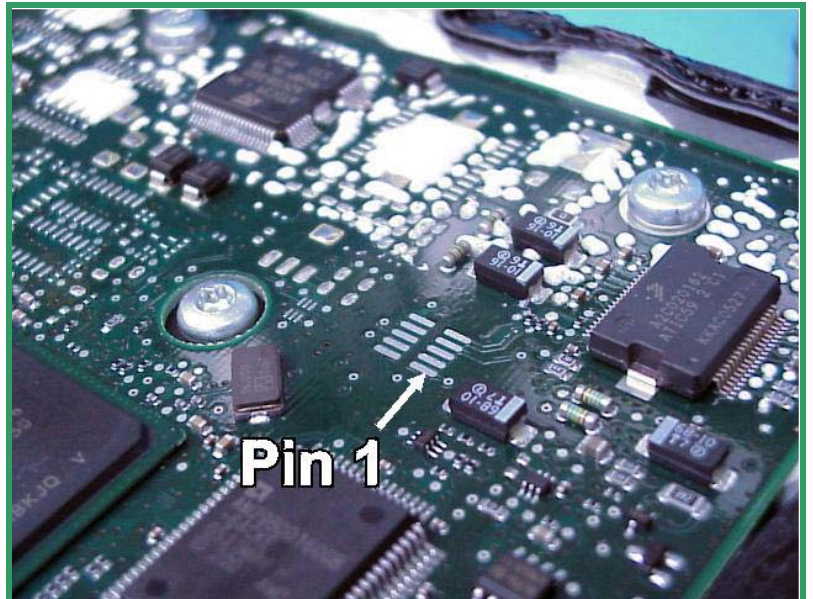
Now place the BDM144 probe into the positioning frame and carefully center the tips of the spring contact probes on the BDM-pads on the board as shown in picture 36.

Then connect the BDM110 flat wire cable to the BDM100 module wich is already connected to your computer.

The tips of the spring contact probes should reach a spring travel of 1mm minimum for good contact conditions.

If you then applying power to the main connector of the ECU the red LED on the BDM144 probe lights up to indicate that the logic on the board is supplied with the required voltage
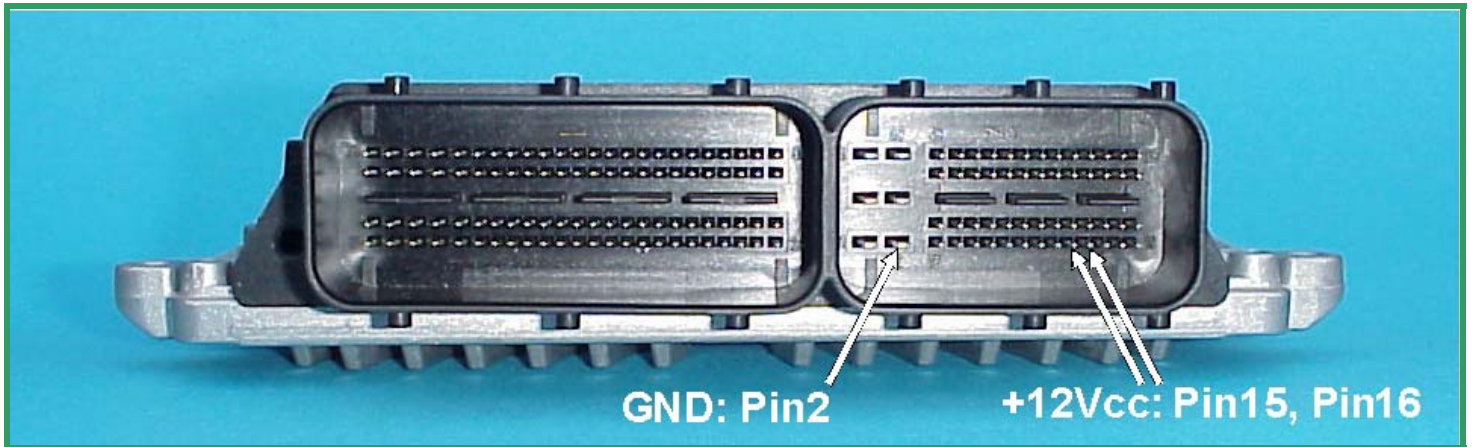
The BDM100 module is now operational.

Pict. 35: This are the pads which are required fo the BDM interface.

Pict. 36: In this case the BDM144 probe is best suited for contacting the BDM-pads on the PPD1.1.

GND: Pin2 **+12Vcc: Pin15, Pin16**

Pict. 37: The main connector of the Bosch ME9.7 ECU.

On the Bosch ME9.7 ECU the power distribution is provided by the pins of the main connector.

Use separate wires with matching connectors to connect GND and +12Vcc to the pins of the main connector shown in picture 37.

Now place a BDM141 probe into the positioning frame and carefully center the tips of the spring contact probes on the BDM-pads on the board as shown in picture 39.

The tips of the spring contact probes should reach a spring travel of 1.5 mm minimum for best contact conditions.

Then connect the BDM110 flat wire cable to the BDM100 module wich is already connected to your computer.

If you then applying power to the main connector of the ECU the red LED on the BDM141 probe lights up to indicate that the logic on the board is supplied with the required voltage

The BDM100 module is now operational.
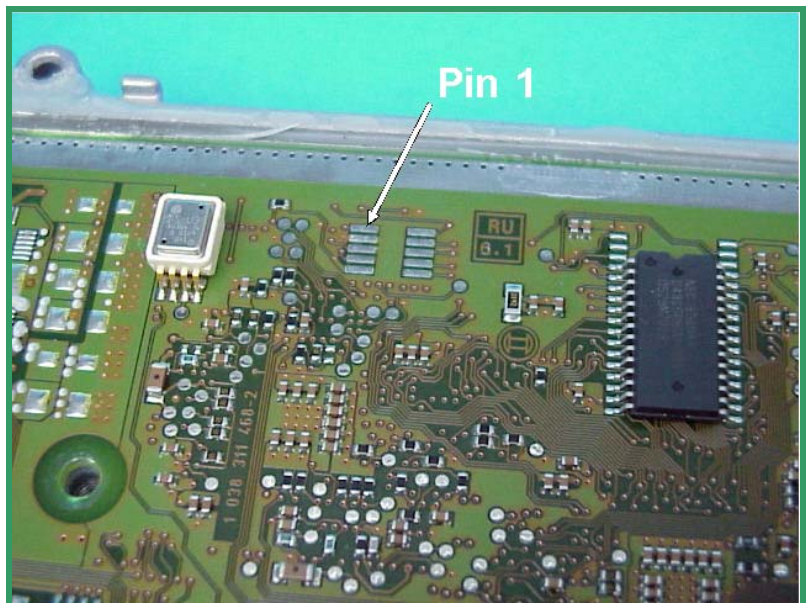
Pin 1

Pict. 38: This are the required Pads for the BDM Interface.
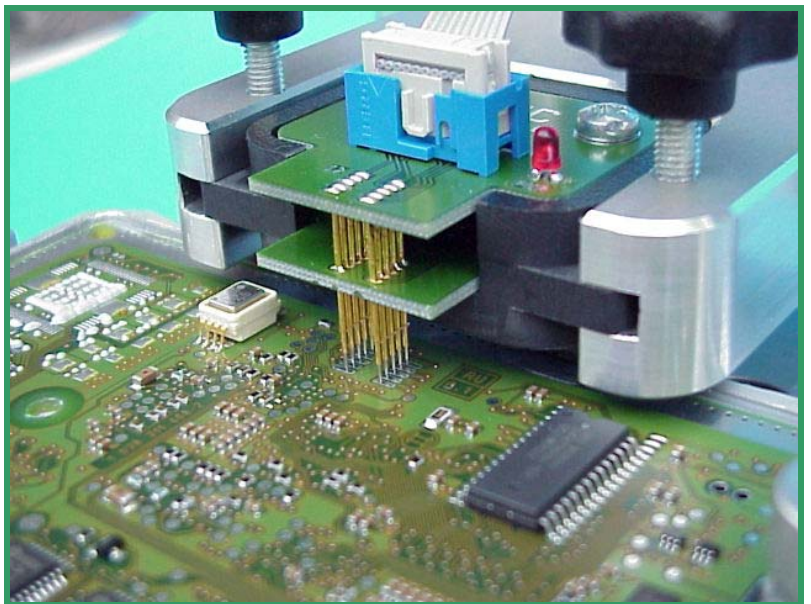
Pict. 39: This way the BDM141 probe contacts the Bosch ME9.7 ECU board..

On the most ECU Boards the location of pin 1 of the BDM-port pads are not marked in any way. This application note will demonstrate how you can estimate the location of Pin1 of the BDM-port pads in the very most cases.

The figure on the right shows the Motorola (TM) standard pinout of the BDM-port:
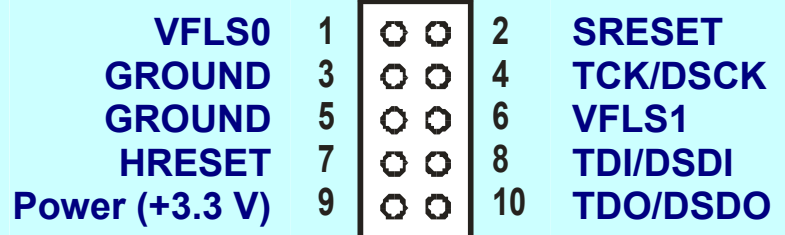
Regarding the pinout of the standard BDM-port it is obvious that two of them are grounded. These are the pins 3 and 5. So the pin 1 is above them.

Which of the pads are grounded you can find out simply using an ohmmeter or a diode-tester.

VFLS0	1		2	SRESET
GROUND	3		4	TCK/DSCK
GROUND	5		6	VFLS1
HRESET	7		8	TDI/DSDI
Power (+3.3 V)	9		10	TDO/DSDO

Fig. 1: This is the standard BDM-port pinout.

Finally let us demonstrate this again in the next three steps using a SMD footprint of the BDM-port pads:
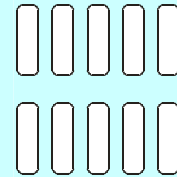
1st. step:
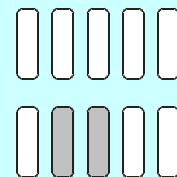
Fig. 2: This the typical arangement of the BDM pads.

2nd. step:

Fig. 3: Then estimate which pads are grounded
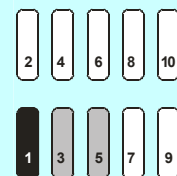
3rd. step:

Fig. 4: The pin1 is left of the two grounded pins, as agreed.

Pin Out BDM100 Module

Picture 37 shows the pinout of the 10way pin header located on the back of the BDM100 Module.

This pinout appropriates the standard BDM port pinout.

On ECUs equiped with a 10way BDM-port the interconnetion can made by using a simple 10way flat- wire cable. In this case the location of pin 1 of the BDM-port on the ECU board should be known.

**Pict. 40: The pinout of the 10way pin header**

Pin Out BOSCH System Programming Pads

The pad arrangement ot the BOSCH ECUs differs from the.MOTOROLA standard.
The 12Vcc clamp voltage from the battery and also the !2Vcc from the Ignition or wake up circuit are present in that pad array.
Picture 38 shows wich signals and voltages were assigned to the pads.

Please consider that in early EDC16 ECUs the 3.3V pad is driven by a 5V circuit.
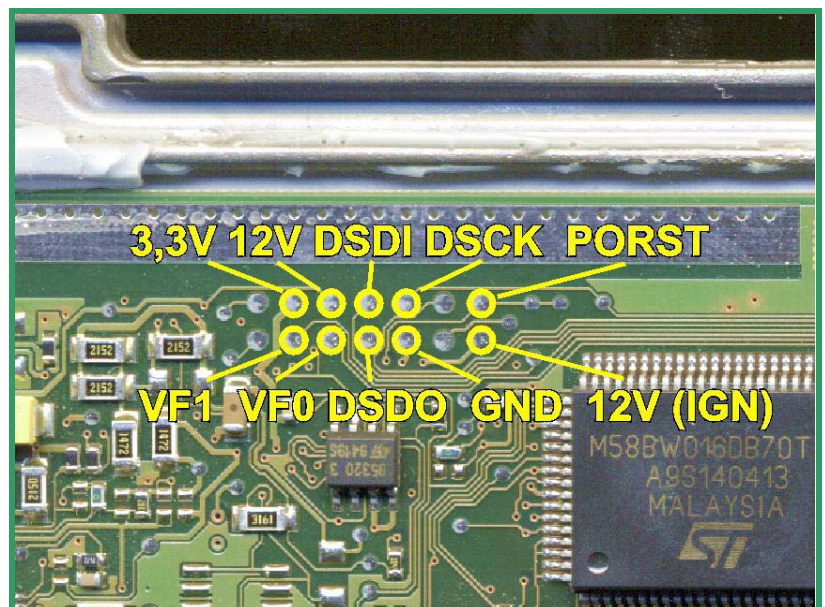
Pict. 41: The pinout of the BOSCH programming pads.

ECUs with BDM capability

Producer	Name	Cars (e.g.)	Processor	Interconnection
Bosch	EDC16	VAG Diesel	MPC556	BDM143
Bosch	EDC16+	PSA Diesel	MPC562	BDM143
Bosch	ME9 Volvo	Volvo Gasoline	MPC562	BDM143
Bosch	ME9 BMW	BMW v8	MPC555	BDM143
Delphi	-	Ford Mondeo	MPC555	BDM142*
Marelli	MJD	Opel, Fiat	MPC555	BDM144*
Siemens	SID201	Jaguar 2.7D	MPC563	BDM141*
Siemens	SID803	Volvo Diesel	MPC555	BDM141*
Siemens	MS45	BMW 6-Zyl	MPC555	BDM141*
Siemens	MSS65	BMW M5 V10	MPC555	BDM141+BDM144*
Siemens	SIM266	MB A200	MPC561	BDM145*
Siemens	Simos 6.x	Audi A6 2.4L V6	MPC561	BDM146*

* with this ECUs an external power supply is required. In the case of using a professional laboratory power supply the knowledge of the main connector pinout of the ECU is neccessary. These informations and the newest version of the previous table are available on the following page of our website: http://www.dashtune.com

BDM 100 Manual

Although we were efforted to describe all details with the highest possible precision, nevertheless we can not guarantee an errorfree content of this manual.