



Installation Guide MX-5 NA/NB/NBFL MFA2.0

Preface

Thank you for purchasing the MFA 2.0 for installation in the Mazda MX-5 Type NA/NB/NBFL instrument cluster. The pictures shown here are of the type NB. The pictures for the type NA may differ slightly, but are the same from the work steps.

During the development of the MFA was paid attention to the highest accuracy of fit and quality. The MFA has been tested and continuously improved by several testers with these installation instructions, so that you will not have any problems when converting your instrument cluster.

Despite the greatest care and testing, unforeseen difficulties and problems can always occur. On the one hand, this results from the many different versions of the instrument cluster, which cannot all be taken into account in advance. On the other hand, the MFA 2.0 has very little installation space available. We apologize for this in advance.

Required Tools

- Phillips screwdriver small
- Slotted screwdriver small
- Ø10mm drill
- File

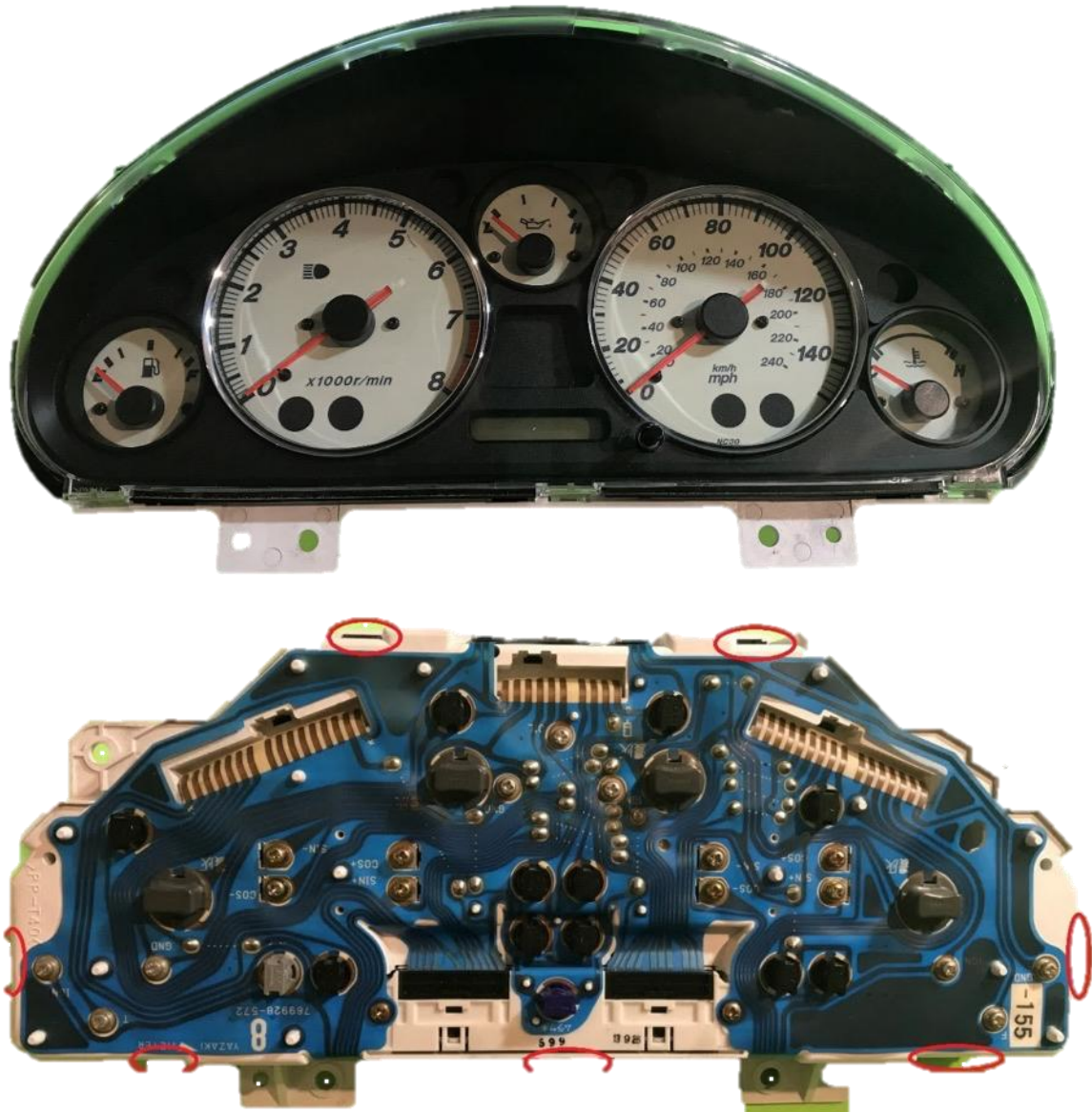
Advices

The conversion kit is a very sensitive device. You should work on an antistatic surface and wear a grounding wrist strap. Any strong pressure or touching the display during operation is not recommended. This can lead to the destruction of the sensitive OLED screen.

CANchecked assumes no liability for this conversion or for any damage during the conversion or during operation. The instructions have been prepared to the best of our knowledge and belief.

There are two board variants of the MFA2.0 for the MX5. The old variant had small connectors on the board, the new variant uses the proven Molex connectors of our other products. The connection and installation of the two variants hardly differ, which is why only the installation of the new variant is described in this manual. The instructions can be used analogously for the old variant.

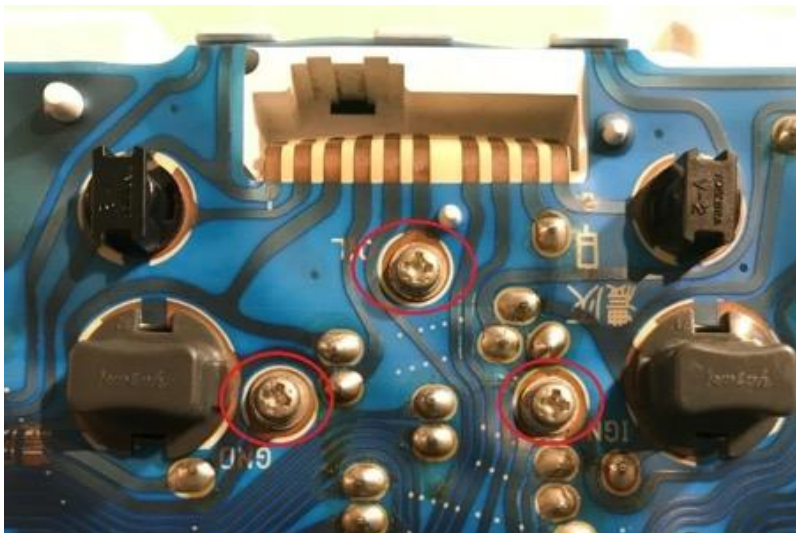
Preparation



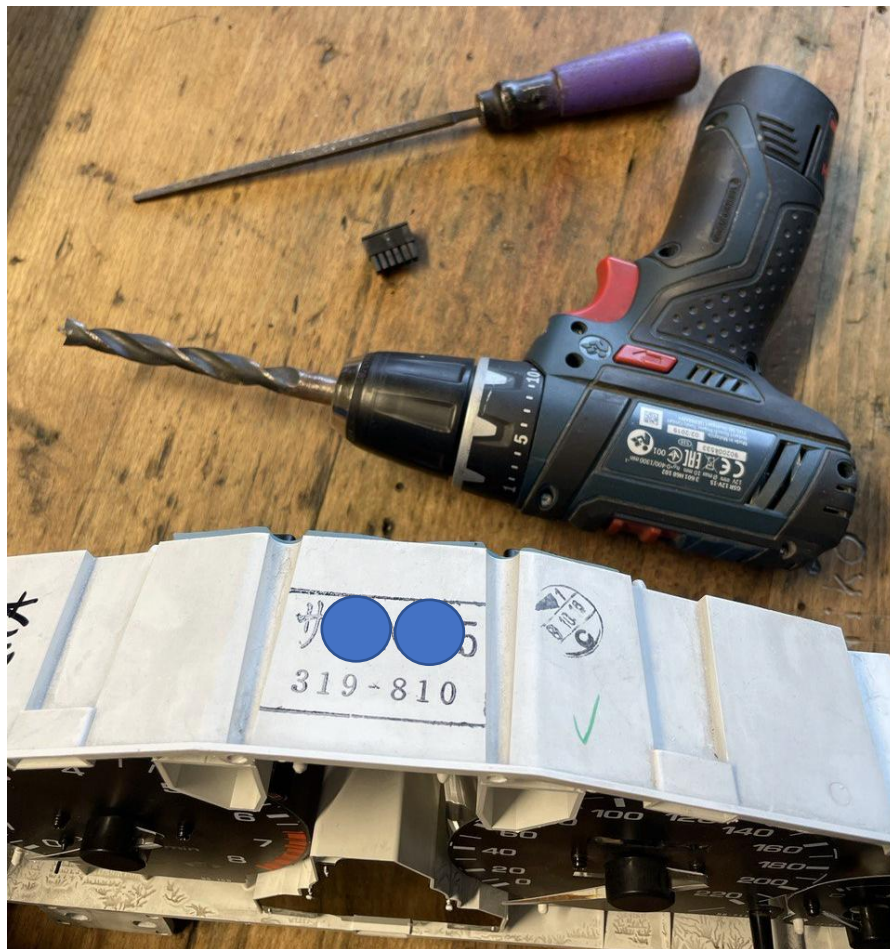
Push out clips of the disc and frame (marked red) to separate the disc and frame from the instrument cluster



Unscrew the oil pressure gauge in the top center by unscrewing the three Phillips screws on the back (marked red) and then remove it

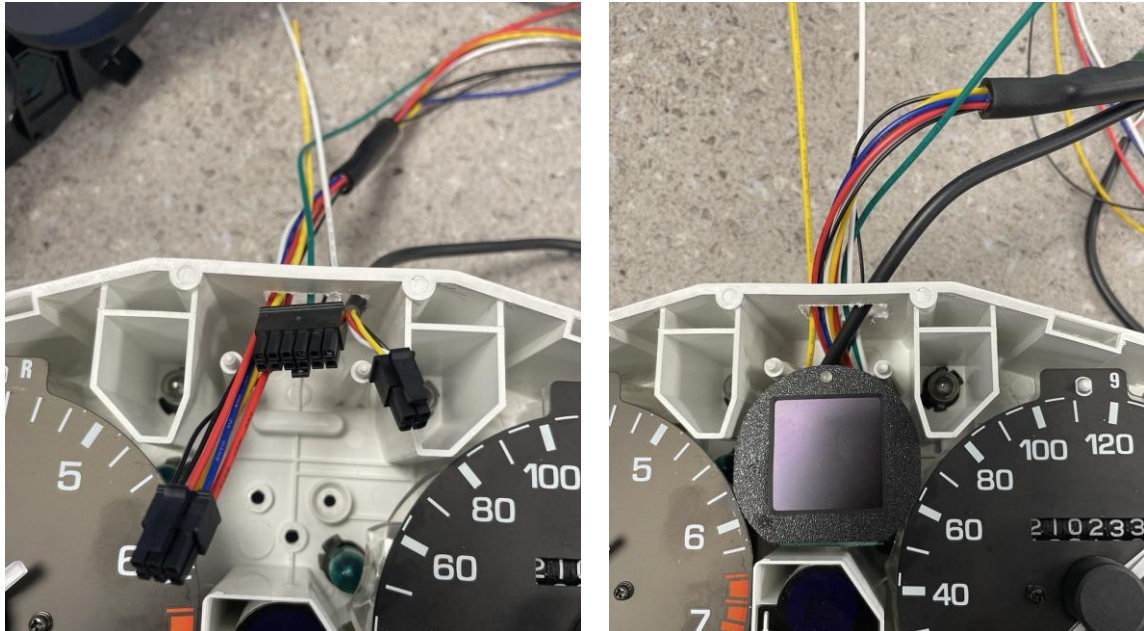


Now you need to drill two 10mm holes side by side (blue) and then work them out with the file so that the largest plug fits through the cutout.



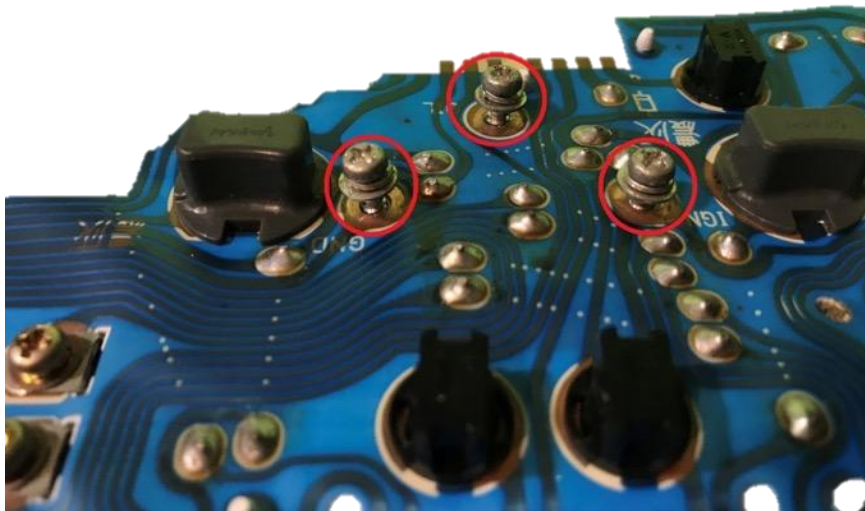
Installation MFA 2.0

Then insert the display into the speedometer. First guide the cables through the previously made cutout.



Position the display with holder so that it sits above the screw connection points.

The display is now screwed on from behind using the original screws of the oil pressure indicator.



There is a little play in the screw holes of the speedometer, so make sure the display is seated squarely when tightening. Slight corrections can be made here. At the end you can install the frame and the glass with the original clips.

Finally, reinsert the speedometer frame and disk and clip them in place.

The next step is the electrical connection in the vehicle. Your instrument cluster should now look like the picture below.



Electrical connection

The electrical connection and pinout of the new variant is identical to the pinout of our MFD15. The Quickstart guide for the MFD15 is included in the packaging and can also be found in the download section (www.canchecked.de/downloads).

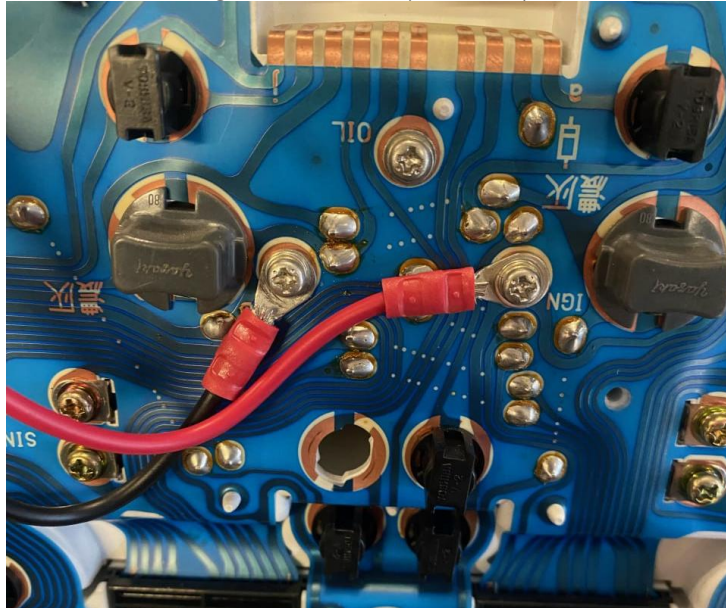
The cable colors of the new variant are identical to those of the old variant.

Power supply:

Red cable = switched positive (12V) – use a 5A fuse (not included)

Black cable = Ground

You can wire 12V switched and ground directly to the pins on the dash:



CAN-Bus connection:

White cable = CAN High
Yellow cable = CAN Low

Connect can high to the can high connection of your ECU and can low to the can low connection.

If the CAN-Bus termination needs to be activated within the display, please go to the display menu under "settings" and activate "Can term".

Most of the times there are no other devices in the CAN Bus available so the terminator needs to be set.

Analogue Inputs:

Orange cable = 5V output
black cable = ground out
4x green cable = analogue inputs 1-4

Encoder

To change settings/views within the display

Press = Select the particular menu item

Turn left/right = up/down in the menu or change the particular value

Micro-USB connection with update module (TTL-Adaptor)

For direct connection to your PC/laptop for software updates.

The update module (TTL adapter) should be disconnected from the cable harness when not in use for longer life!

Startup

You need to connect the power supply to start the display. In addition, you need to connect the display to your CAN-Bus or to your analogue inputs. Both are optional. You can also run the display with analogue inputs only.

After powering up the display, you can see the start logo and the display will change to the last selected view.

If you press the encoder, the menu will show up. Turning the knob will select the other views or lead you to the setup (“stp”), after confirm with a second press.

First of all you should go to the Setup („stp“) => „options“ => „CAN type“ and select the desired protocol. If the appropriate protocol is not included, please drop as an email (info@canchecked.de).

The CAN-Bus speed is set to 500kbps. Protocol and speed need to match to get the display working.

All other settings can be left default for now.

Behind the menu “sensors” are all sensors which have been implemented. Here you can change all minimum and maximum values. When exceeding these limits an alarm can be generated – either by popup or just a small yellow triangle at the top right of the screen.

“Update” is for firmware updates of the display.

„Reset“ puts all settings of the display back to default.

In the gauge on the top right you can find a tiny RED pixel. If the display receives data from the CAN-Bus it starts flickering red/green. If no messages are received it's steady red. This can be due to no CAN-Bus connection, Can-Bus within your ECU has not been activated or CAN-Bus termination (see chapter electrical connection) is wrong.

Operation

The operation of the display is done with the encoder – see chapter startup.

Analogue Inputs

Additional four 0-5V sensors can be connected to the display. On our homepage at [Downloads](#) is a list of tested sensors. Of course all other sensors with 0-5V output can be connected as well.

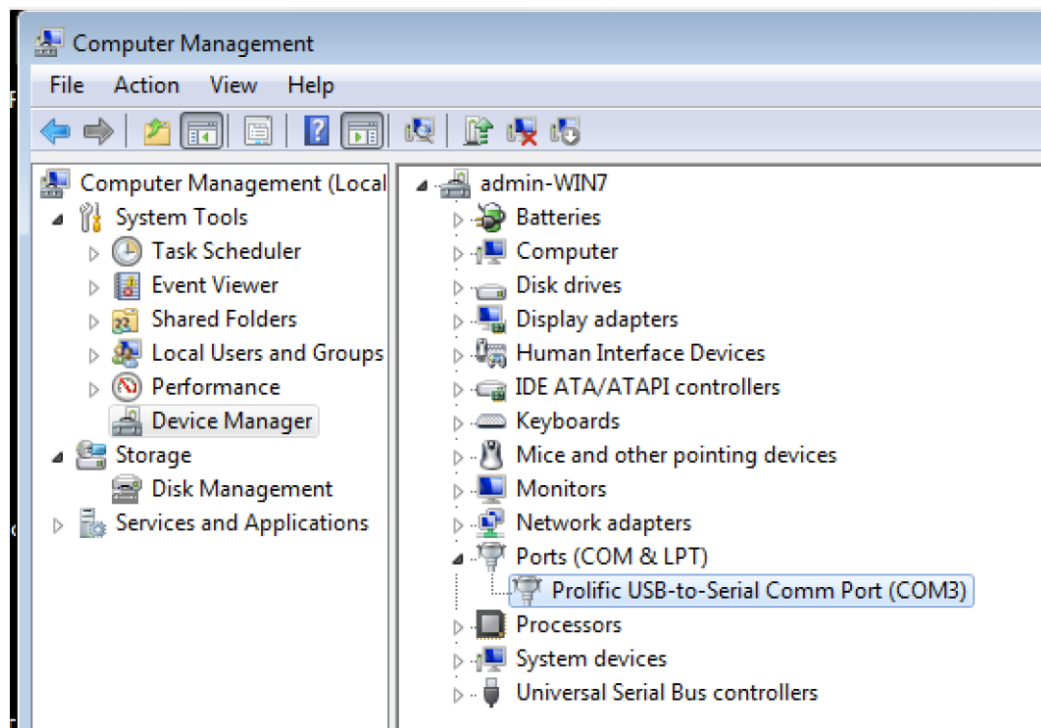
In the “sensors” section of the display the sensor can be mapped to its real values. Please use the datasheet of your sensor to get the 0V and 5V values to enter them into the display.

Updates (Gen1)

If new updates are available the customer receives them from CANchecked directly.

To update the display please use these steps:

- 1) Install driver: http://canchecked.de/updater/PL2303_1181.zip
Download software: http://canchecked.de/updater/CANchecked-52mm-updater_basic.zip
- 2) Disconnect display from car
- 3) Connect display to USB port of your PC/laptop
- 4) Make sure a COM port is found (see screenshot)



- 5) Start Update software, choose the COM port and leave baud rate at 115200
- 6) Use the encoder to go to menu „update“ and choose it

- 7) Click „Start Bootloader“ on your PC/laptop => the button turns green after successful connection – may be you need several retries.
- 8) „Select Hexfile“ => choose HEX Datei (received from CANchecked)
- 9) flash the display with „program flash“
- 10) „Exit Bootloader“
- 11) disconnect display and reconnect it – the new software has been loaded

Conclusion

We hope you have as much fun with your CANchecked display as we do. If you have any questions, you are welcome to contact us via the ticket system (<https://www.canchecked.de/ticket>) and discuss your concerns with us.

We have also created a group for the community on Facebook, where you can exchange ideas with other users and find the solution to one or the other question:

<https://www.facebook.com/groups/CANchecked/>