NA/NB KMiata All-In-One Wiring Harness
Installation Instructions
KPower Industries
www.kpower.industries

Published February 2023

Updated September 2023 with A/C instructions

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KMiata All-In-One Wiring Harness Installation

Thank you for purchasing our wiring products. This major enhancement to KMiata swap wiring is sure to take your build to the next level. Please note that this is an installation *guide* only, and still requires the installer to have a basic knowledge of automotive wiring. **Please read through the entire guide before proceeding.**

KPower recommends that this conversion be completed by a professional performance shop. KPower assumes no liability for products that are installed incorrectly, or for any resulting damage to your car, engine, or other parts due to improper installation.

Please take advantage of this by carefully reading the entire guide before beginning the project and before contacting us with questions.

Many of the questions we receive are already covered in our installation guides. If you have a question that isn't answered in this guide, we'd love to help. Please call or email us at info@kpower.industries and we'd be happy to assist in any way we can.

Note that this installation guide has details and pictures from an NB (USDM, left-hand drive) with a K24A2 engine. It is also designed to pair with a **Haltech Elite 1500** ECU. As outlined on our website, installation is similar between the NA and NB, but NA owners will need to add a 2" round hole in the firewall in roughly the same location as the NB firewall opening.

Your all-in-one harness is made up of two sections. The smaller subharness with the flying leads remains completely inside the cabin. It gets connected to switched 12V power, the fuel pump, clutch switch, and gauges.

The larger harness with the fuse box connects to the engine, constant 12V power, and radiator fan. It also has connectors that easily allow the addition of an A/C system and a ethanol flex fuel sensor.

Chassis Preparation and Cabin Subharness

Before beginning, make sure the battery is disconnected. On an NA, it's best to drill out the firewall hole with a 2" hole saw before the engine is in the vehicle. Otherwise, both sections of the harness can be installed with the engine already in place.

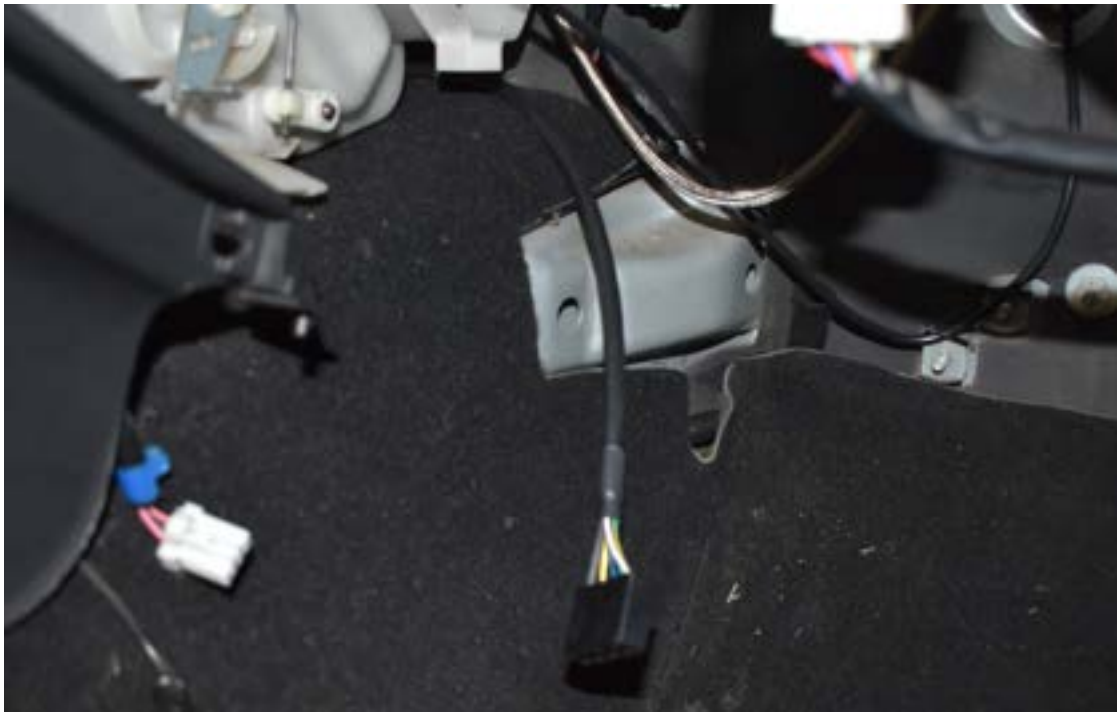
Assuming this is being installed in a vehicle with full interior, remove the gauge cluster, center armrest, glove box, blower motor, and black A/C condenser box from under the dash. This will give you room to feed the engine bay portion of the harness through the firewall. While our original KMiata conversion harness requires the entire dash to be removed, this all-in-one

harness can be installed without complete dash removal.

NB owners can unplug the OEM Miata engine harness and remove it from the car, but NA owners cannot, because the engine harness is fully integrated into the body harness. We recommend getting the car up and running, and then cutting and terminating all of the old engine wiring that's no longer needed, while retaining the wiring and connectors for functions that you do still need, such as headlights, etc.

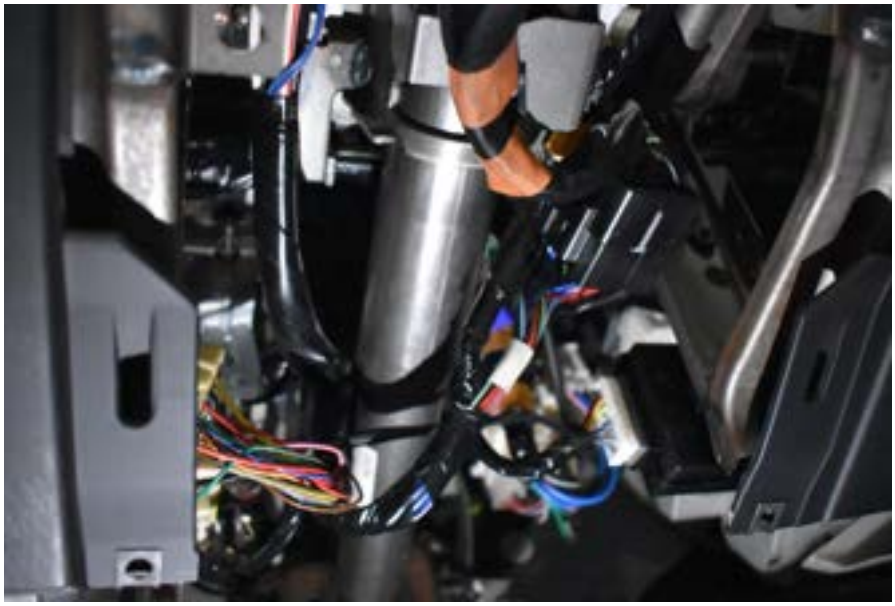
To begin installation, feed the main subharness connector through the opening behind the gauge cluster. This connector will either be off-white or black depending on the harness version.

Pull the connector behind the heater core and over to the passenger side of the cabin.



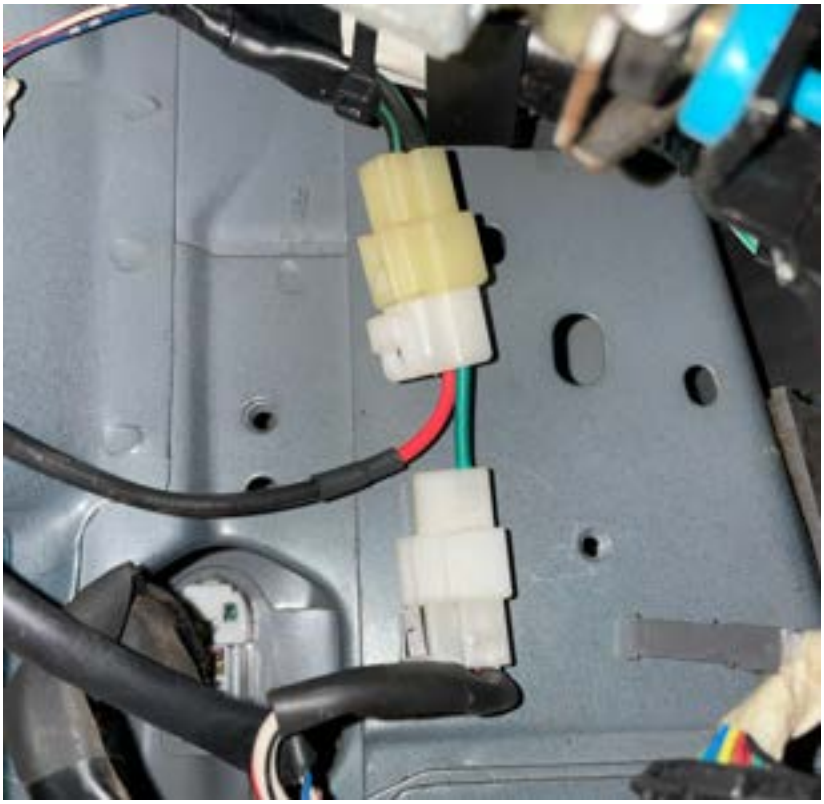
The remaining portion of the harness will still be hanging out of the gauge cluster opening.

With the lower dash drop panel removed, feed the fuse adder over to the dash fuse box on the far left side of the lower dash.



Replace the engine fuse with the fuses on the harness.

Next, locate the two white connectors for the clutch switch. Unplug the OEM connector from the switch, and add the connectors from our harness between the two.



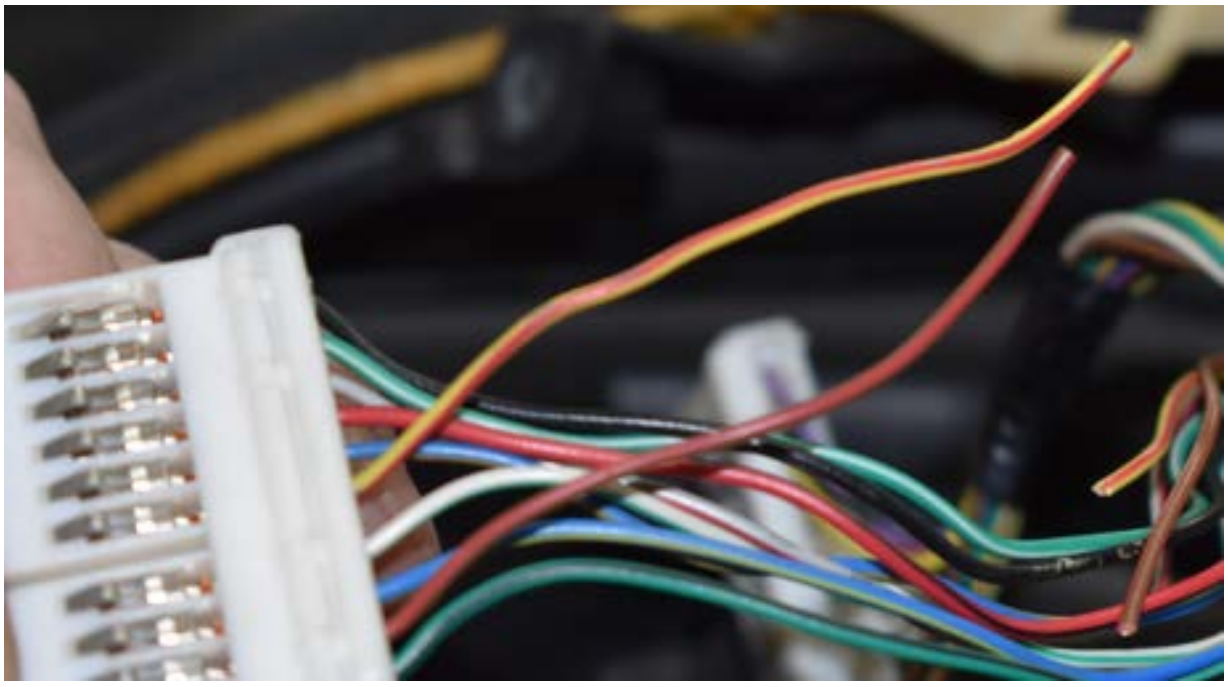
Gauges and Dash Lights

Since the connectors for the factory gauge cluster are not available for purchase, five wires need to be spliced to the back of the cluster for full OEM functionality.

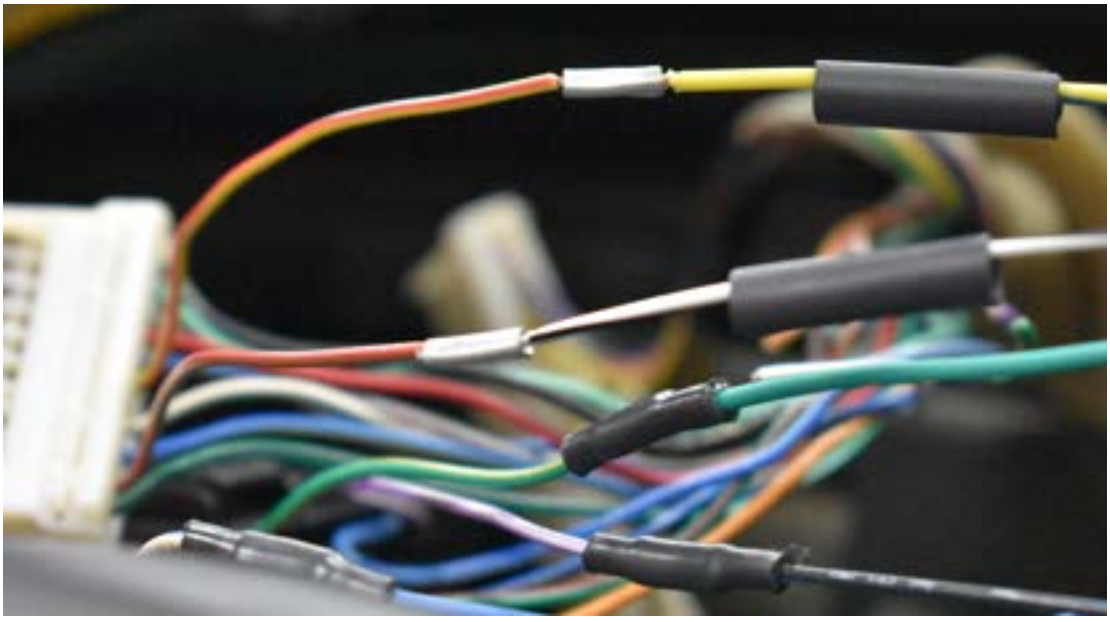
The five wires are in the same location and same color for all NAs and all NBs, so use this chart to locate the correct wire for each function:

	RPM	**MIL**	**Oil pressure**	**Coolant temp gauge**	**Alternator light**
NA	yellow/blue - cluster 1H	yellow/black - cluster 1C	yellow/red - cluster 2B	black/blue - cluster 2L	white/black - cluster 1G
NB	green/orange - cluster 2K	white/blue - cluster 2O	yellow/red - cluster 3E	purple/white - cluster 2A	brown/red - cluster 3B

Locate the wires listed, and then cut them with enough length so the wires from our harness can easily be spliced to them. These pictures show an NB.



Use appropriate butt splice connectors or solder to connect the wires as shown. Be sure to use heat shrink to ensure a safe and permanent connection.



Once the wires have been connected, the gauges can be plugged back in. We recommend waiting to fully reinstall the gauges until you've confirmed everything is functioning correctly.

Brake and Clutch Switches

You have two additional flying leads in your cabin subharness: one for the brake pedal switch, and one for the clutch pedal switch.

Both of these functions are optional and the car will run without them connected, but they are required if you plan to use certain features in this ECU, like auto blip downshifts and flat foot upshifts. If you plan to utilize either of these features, both wires need to be spliced to the factory brake and clutch switches.

The brake pedal switch can be found at the top of the pedal arm, and looks like this:

The brake wire on our harness needs to be spliced to this switch. On our NB, it is a green wire.
The clutch pedal switch looks like this:

The clutch wire on our harness needs to be spliced to this switch. Again, on our NB this wire is brown/white.

Fuel Pump

To accommodate large fuel pumps needed for high HP applications, we incorporated a fuel pump solution that bypasses the factory fuel pump wiring, so any high flow pump can be used. Our fuse box has its own fuel pump relay built in as well. The long red wire with a terminal and seal crimped on the end is designed to replace one of the pins in the factory fuel pump connector on the top of the fuel tank. This wire can be routed under the center armrest on a street car, or secured directly to the tunnel in a caged race car.

The wire can also be routed through the factory grommet.

Unplug the main gray connector to the fuel pump, depin the stock wire and terminal, and replace it with the new wire and terminal. The stock fuel pump wire can be taped out of the way (red/blue in this picture).

Once all of the connections have been made on the cabin harness, the rest of the installation is plug and play. Thanks to this subharness, the engine harness does not need to be permanently attached to the car and can be removed for future service.

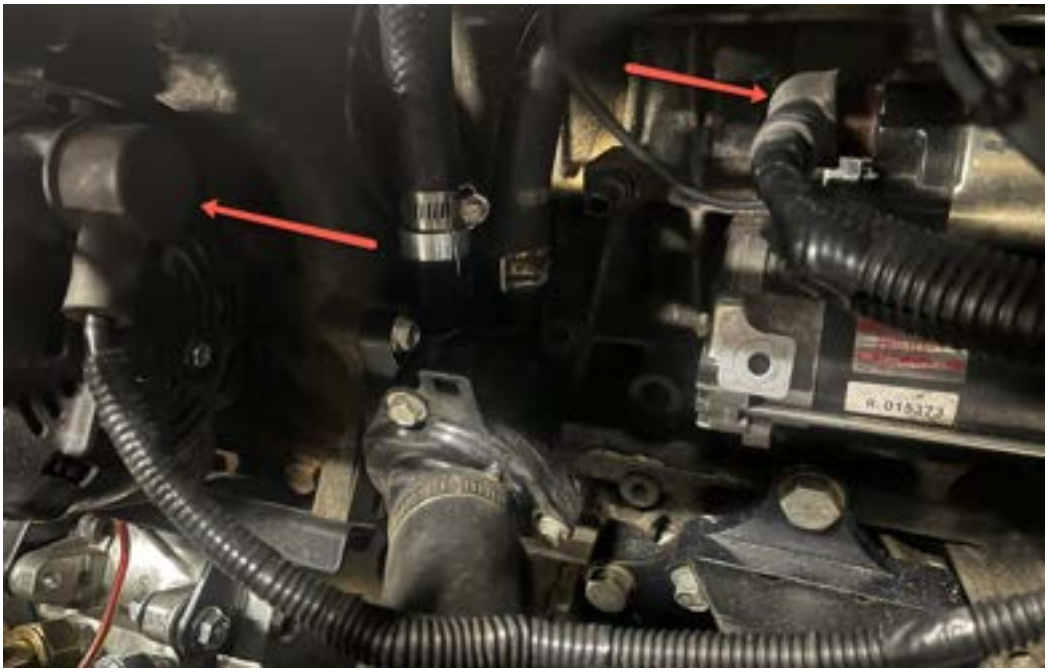
Charge Harness

Most of the OEM K series charge harness functions are integrated into our all-in-one engine harness. The only wires that need to be run separately are the two large 12V power wires that supply battery power to the starter and alternator.

The OEM Miata charge harness has both of these wires, which were originally connected to the Miata starter and alternator. These can be connected to the corresponding K series accessories in two ways.

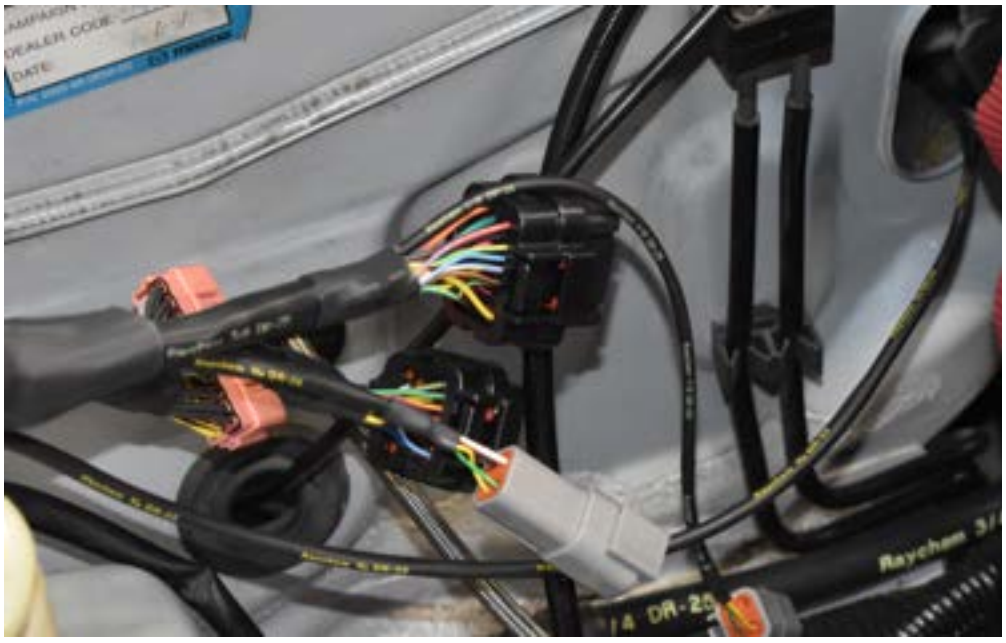
In either configuration, the starter wire can be reached over to the K series starter with minimal adjustment. Once that's done, the alternator wire can either 1) be lengthened with some extra wire and a large butt splice connector, or 2) terminated with heat shrink, and a 12" jumper wire can be used to connect the starter 12V and alternator 12V points together, so no splicing is needed.

Either configuration works just fine on these cars. The first option is closer to OEM, but both are effective. Regardless of configuration, both wires should be well protected and ideally wrapped in loom and secured so they do not rub on anything and short to ground.



Engine Harness

To begin installing the engine harness, locate the two ECU connectors and feed them through the firewall opening, along with the black or white dash subharness connector and gray 4 pin Deutsch connectors.



The Haltech ECU can be mounted in a variety of places under the dash depending on your preferences and usage for the car. For a street car, we prefer to mount it in the glove box or in the passenger air bag tray (assuming the airbag is deleted). A USB cable can stay plugged in and rolled up in the glove box as well.

Connecting the Cabin and Engine Harnesses

Once this is done, the engine and cabin harnesses can be connected together.

If you're using the Haltech CAN wideband and controller, it can also be connected to the ECU and the engine harness at this time with the gray 4 pin Deutsch connectors.

Drive-By-Wire Throttle Pedal

If you have a Drive-By-Wire version of the harness, you have an additional 6 pin connector that goes through the firewall and gets connected to a Honda Fit DBW pedal (second generation, 2009-2014). We offer a machined throttle pedal adapter to make installing this pedal in the Miata easy.

Our shop car with this pedal setup is a race car with no dash, but it installs the same way in a car with a full dash:

If you are using a cable throttle body, your harness does not have this connector.

Fuse Box

Once everything is connected under the dash, you'll be left with the engine portion and fuse box in your engine bay.

The grommet can be popped into the firewall hole.

The fuse box gets mounted right in front of the stock fuse box thanks to the supplied stainless bracket.

As you can see in this photo, the fuse box is supplied with constant 12V power thanks to the black wire and eyelet that extends out of the box. Connect this wire directly to the main fuse under the OEM fuse box. Remove the bolt that secures it and tighten it back down with the eyelet below it.

Engine Ground and Sensors

Once this is done, the rest of the engine harness connectors lay out onto the engine in a self-explanatory manner. This valve cover ground is extremely important:

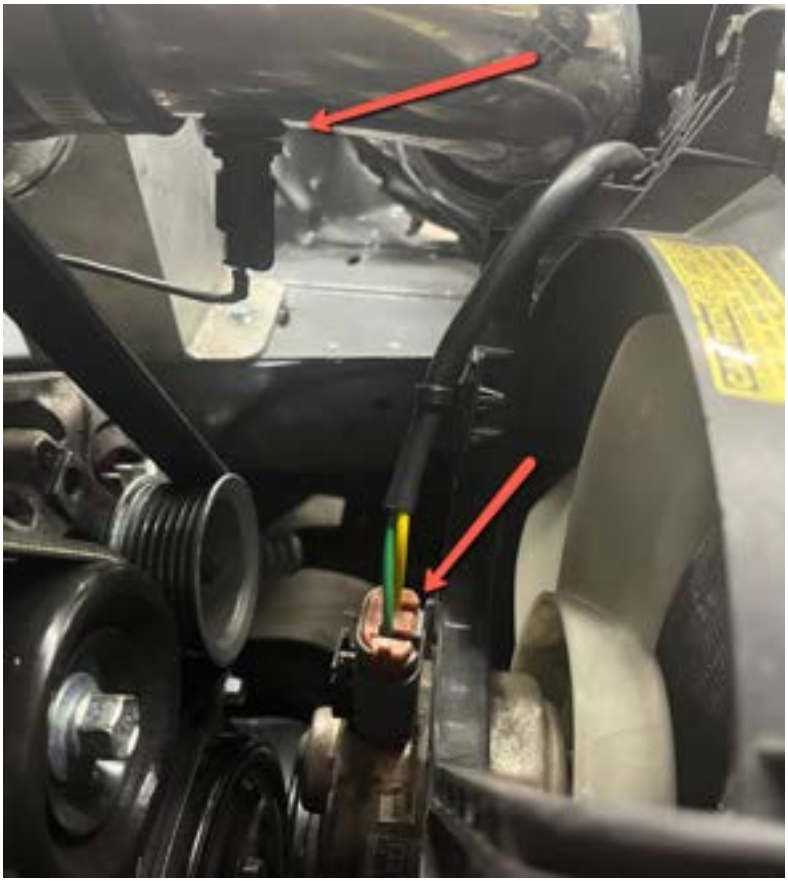
Both the K series ECT (engine coolant temp) and Miata ECT (for the stock gauge) thread into the right side exit water neck, and plug in like this:

If you’re swapping an NA, you will need to source the three pin ECT sensor from an NB.

We carry various injector subharnesses (OEM, RDX, Bosch EV1, Bosch EV6) and they connect to the black and yellow 8 pin connector behind the cylinder head.

Once the subharness and remaining connectors are installed, your engine bay will begin looking like this (cable throttle body pictured):

A fan relay is built into the harness as well. We recommend routing this long two wire connector around the driver side of the engine bay and connecting it directly to the OEM fan. In this picture, the IAT (intake air temp) sensor can also be seen. Regardless of intake setup, drill a hole in your piping and use a universal grommet to mount any 2002-2008 K series IAT into the pipe.



Also, note that this harness is designed to work with the Bosch 5 pin oil pressure and temperature sensor we carry on our site, along with the adapter to install it where the OEM K series one wire oil pressure switch is normally installed. If you ordered the complete KMiata electronics package, this sensor and adapter are both included.

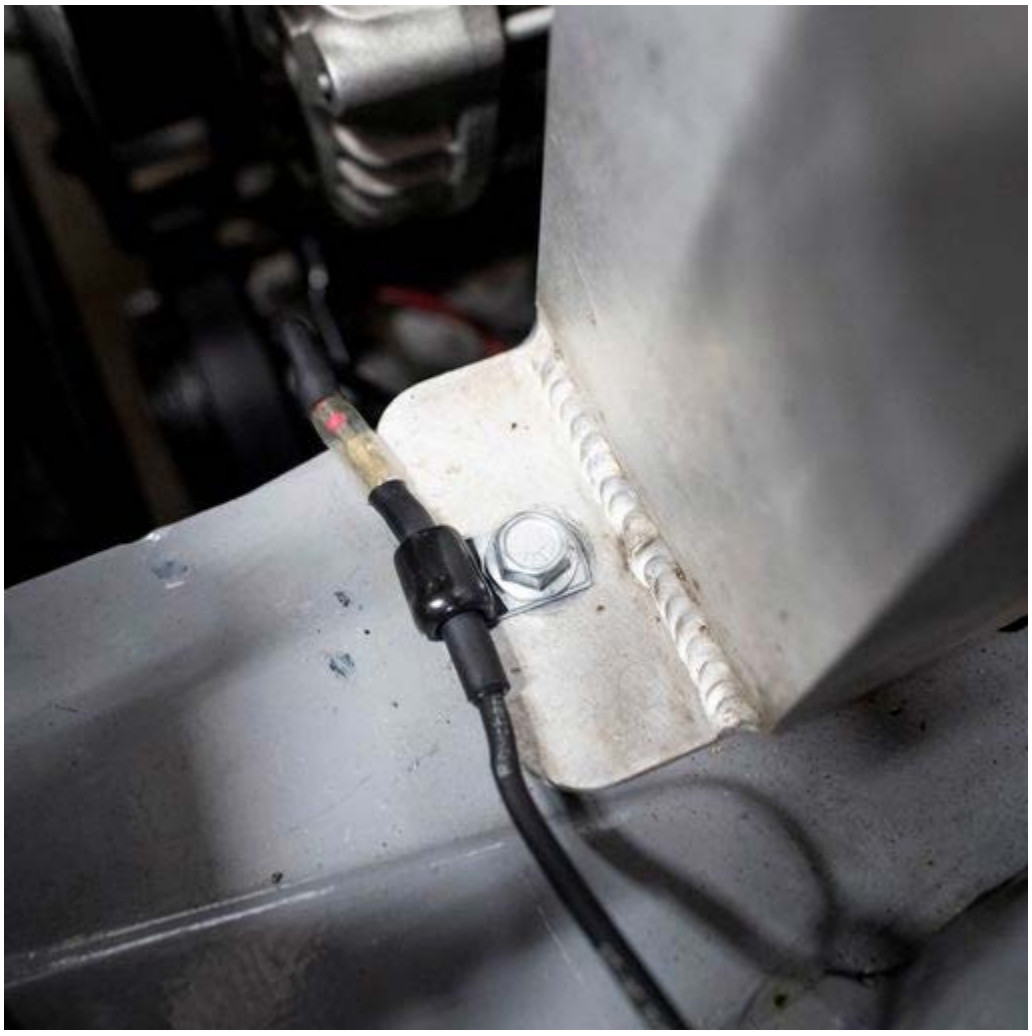
A/C Optional Kit

If you’re adding the optional air conditioning harness, it plus into the blue connector on all-in-one harness near the back of the head, by the intake and exhaust cam sensors.

Once connected, route the pressure sensor switch connector along the right side of the engine bay. Connect the pressure sensor and the long two pin connector to the stock wiring harness.

Route the relay jumper side through the left side of the engine bay. Connect the stock relays to the plugs on the harness in the orientation shown below.

Finally, connect the compressor to the A/C harness to complete the installation.



Notes for K24Z3 Users

This guide was done with a K24A2 engine, and K24Z3 versions of this harness have several different connectors. They all attach to the engine in the same location as what is pictured in this guide.

The only difference is that the K24Z3 has the crank sensor located on the lower back of the engine, on the exhaust side, near the flywheel. The trigger wheel is located on the crankshaft instead of behind the crank pulley like on the older K24A engines.

Our Hondata KPro powered K24Z3 swaps require our custom cast front timing chain cover and a K24A style crank sensor and pulse plate, but since Haltech supports both trigger wheel patterns, that cover and sensor is not needed when a Haltech ECU is used on a K24Z3 swap.

K24Z3 engine harnesses come with a crank sensor jumper harness (not pictured) that's needed to change connector styles as well as route the harness to the back right corner of the engine block. Be sure to use this jumper so your ECU sees crank signal.

Have any questions or feedback? Email us anytime at info@kpower.industries and we'd be happy to help. Thank you for choosing KPower products!