



## **KMiata Air Conditioning Installation Guide**

**KMiata Inc.**  
**[www.kmiata.com](http://www.kmiata.com)**

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## NA and NB Miata A/C Installation for K20 and K24 Swaps

Thank you for purchasing a KMiata A/C kit for your K swapped Miata. After extensive development, we're excited to offer this kit to our customers to help take the guesswork out of installing an A/C system in your K swapped 1990-2005 Miata.



Your KMiata A/C kit includes the following items:

- 86" rubber hose with #10 fittings and charge port
- 57" rubber hose with one #8 fitting, one machined fitting, and pressure switch port
- 18" rubber hose with one #6 fitting and one machined fitting
- Aluminum hard line with fittings and charge port
- Machined aluminum compressor manifold with hardware
- GM pressure switch with pigtail
- Set of two powder coated steel compressor brackets
- KRC 6-rib large diameter alternator pulley
- 6-rib accessory belt
- Rod bearing belt tensioner
- Hardware kit
- Hose mounting clamps

In addition to these this kit, you will need the following items to complete the installation, regardless of the year of your vehicle:

- Universal A/C compressor, part # **CO 7176C**. It is readily available from Sanden, UAC, and other manufacturers. It must be the model with the 6-rib pulley.
- 1990-2000 Miata evaporator (located under your dash with two ports sticking through the passenger side firewall). Users with 2001-2005 cars will need to swap to the older style evaporator that doesn't use the fragile Miata clips to attach the hoses.

- 2001-2005 A/C condenser, located in front of the radiator.
- R134a refrigerant (we recommend having a professional shop charge your A/C system with 1 pound of refrigerant once the installation is complete).
- 16 gauge wire and either butt splice connectors or solder and heat shrink wrap

The reason for the mixed years between the OEM Miata parts is two-fold:

1) the 01-05 evaporator is a pain thanks to the newer style hose fittings and fragile plastic clips. Since the dash needs to be removed to do the K swap wiring anyway, 01-05 users can easily swap to a 99-00 evaporator at this time. The old style fittings are less bulky and much easier to service.

2) Due to the manufacturing costs of building custom A/C hoses and fittings, we had to standardize the parts for all year cars. 90-97, 99-00, and 01-05 condensers are all different, and require different fittings. We chose to go with the 01-05 condenser because it is the newest, most compact, and most efficient. The dryer is permanently attached to it and only weighs 4 pounds. The older condensers have much larger dryers. Additionally, most 20+ year old Miatas have old, worn out condensers with damaged fins that reduce cooling efficiency. This is a great opportunity to refresh these parts. Earlier year cars have different mounting points for the condenser, so we either recommend building new mounting tabs, or using universal radiator zip strips to mount the condenser directly to the front of the radiator.

At the time of this writing (June 2018), a new 99-00 evaporator can be purchased on Rockauto.com for around \$40, and a new 01-05 condenser is around \$65. The CO 7176C compressor can be found on eBay, Amazon, or UACparts.com.

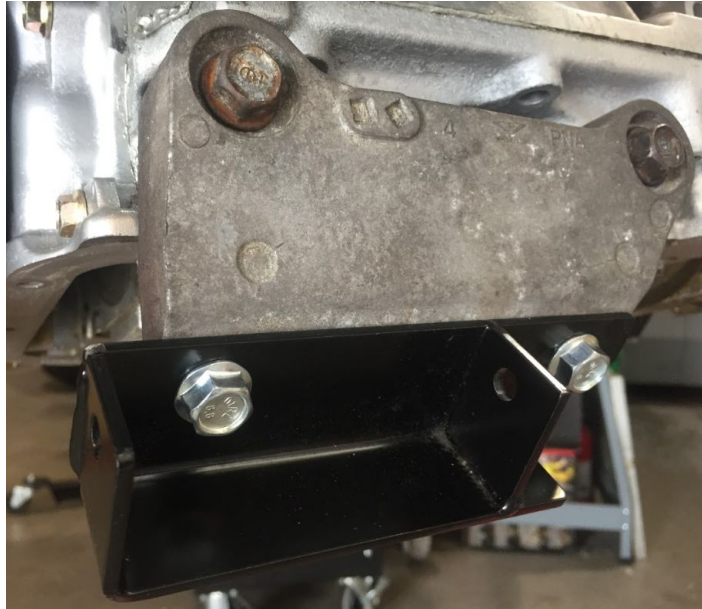
### **A/C Compressor Installation**

Once your new evaporator and/or condenser have been installed into the chassis, you can begin installing the A/C kit. For ease of photographing, we are showing installation on an engine stand, but it can also easily be installed with the engine already in the bay.

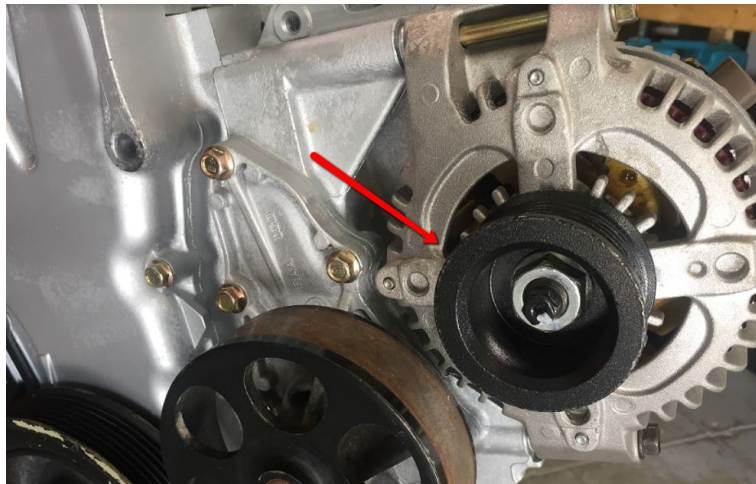
If not already attached, begin by installing the OEM K series compressor mount, which likely came with your engine:



Using the supplied M8x1.25 bolts, attach the larger of the two steel brackets to the bottom of this mount:



Next, use a 22mm socket on an impact gun to remove the OEM alternator pulley:

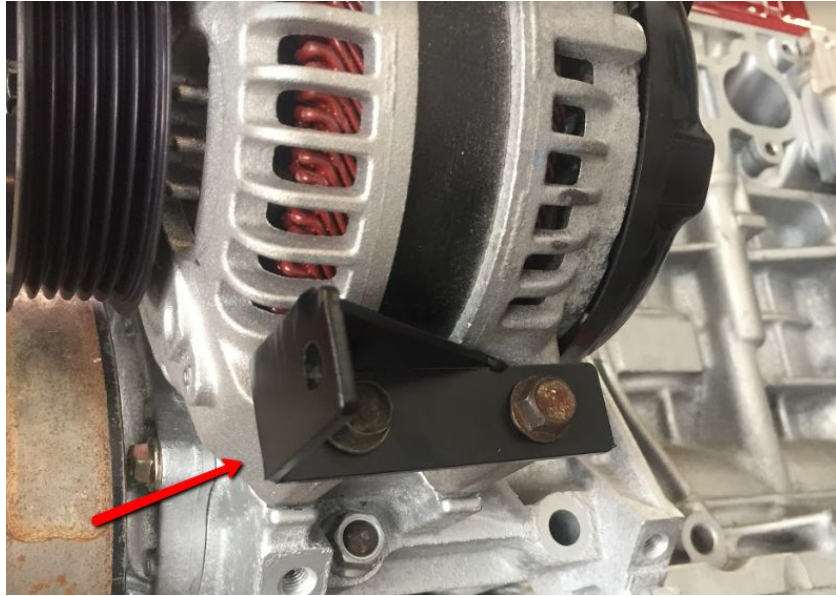


Replace this pulley with the supplied KRC 6-rib pulley:

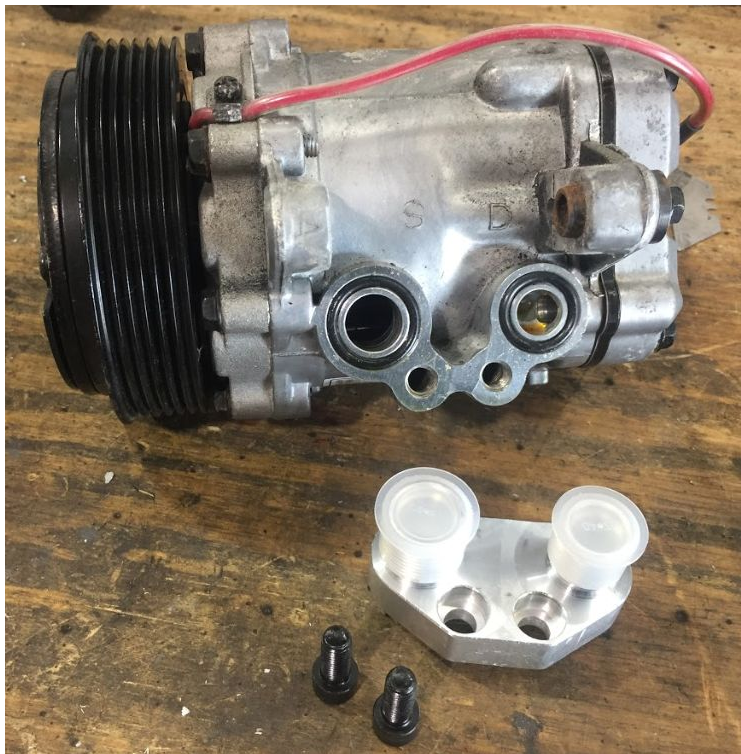


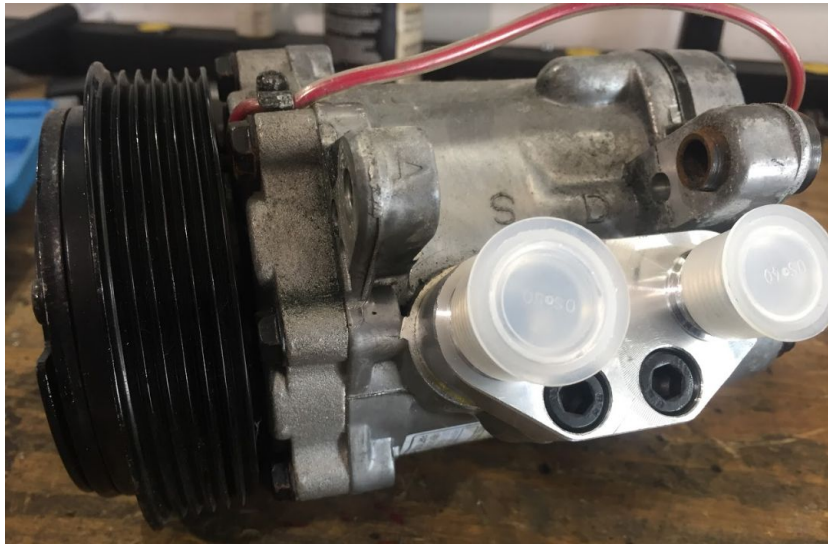


Next, remove the two lower alternator bolts to install the upper compressor bracket behind them:

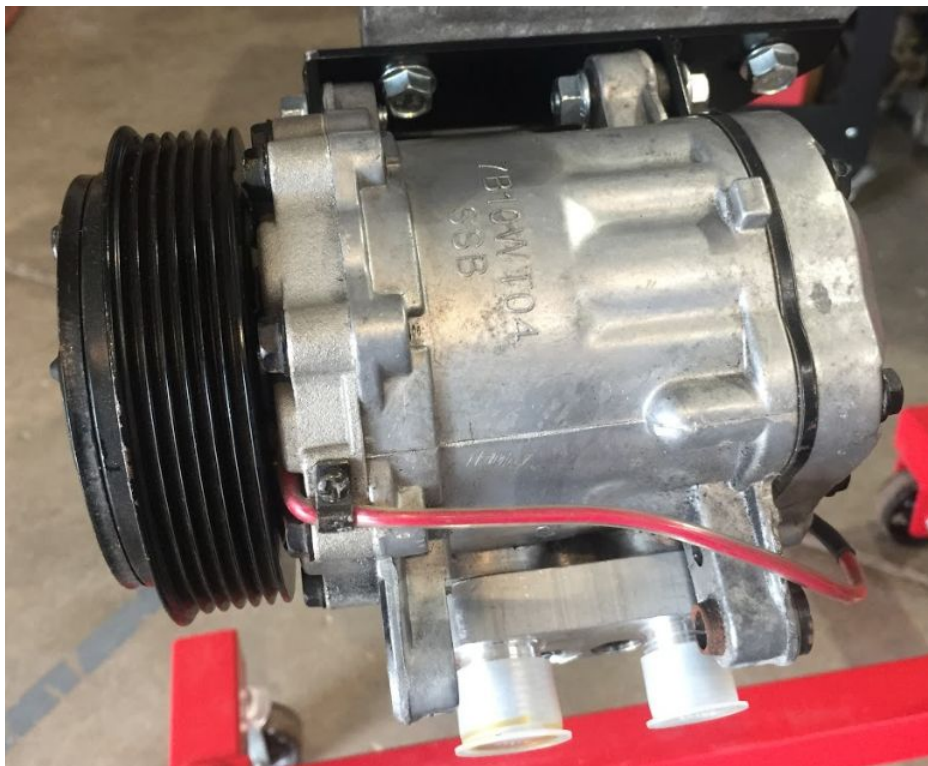


The compressor manifold can now be installed on the compressor. Remove the plate that comes attached to the compressor and install the manifold in its place. We recommend keeping the plastic caps on until you're ready to install the hoses so the compressor oil does not leak out:



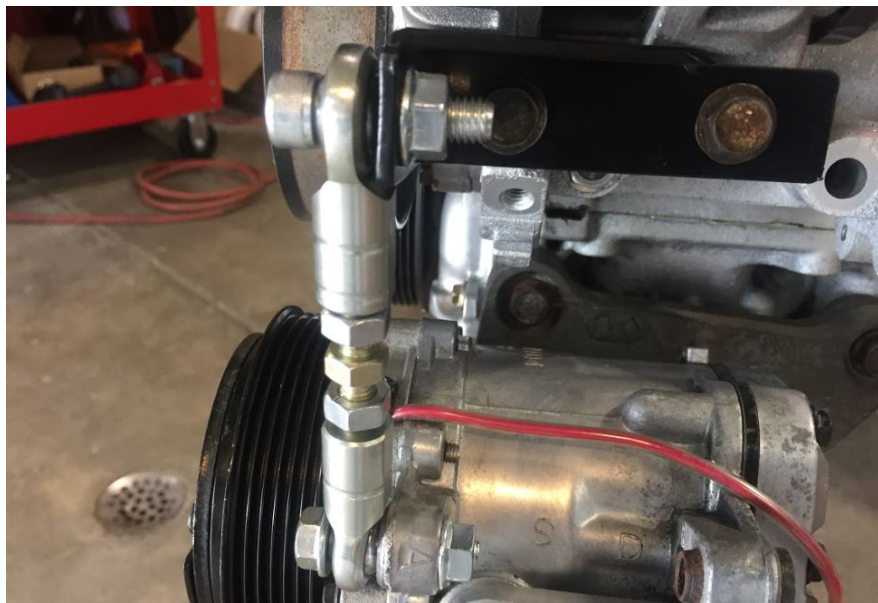
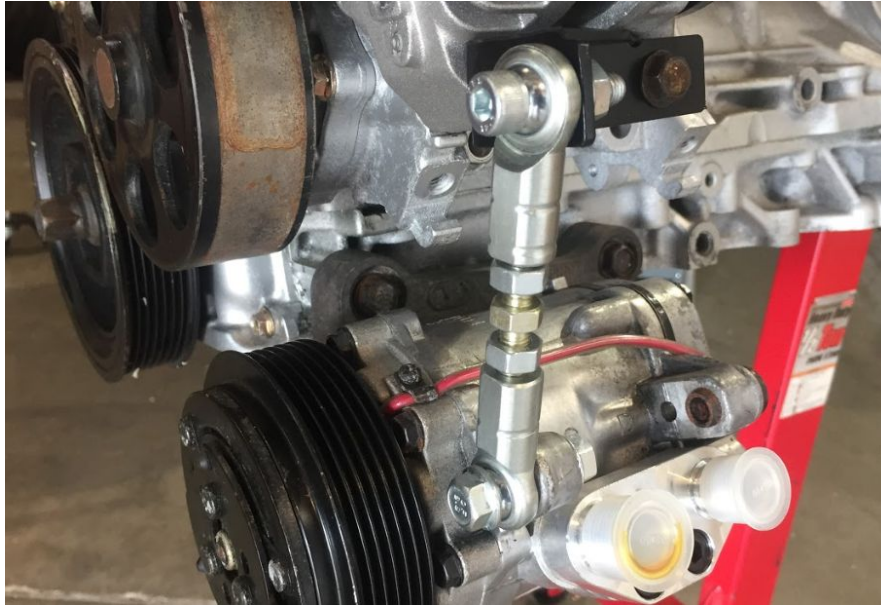


The compressor can now be hung on the lower bracket using the supplied hardware. If you're installing in the engine bay, the compressor will rest on the steering rack (the reason why the OEM K series compressor can't be used in the Miata). For now, keep the bolts loose so the compressor can swing up and down.





The tensioner can now be attached to the compressor and the upper steel bracket:



To install the belt, the tensioner should be turned to its shortest possible length. It may be easier to remove the upper tensioner bolt to slip the belt over the pulleys.

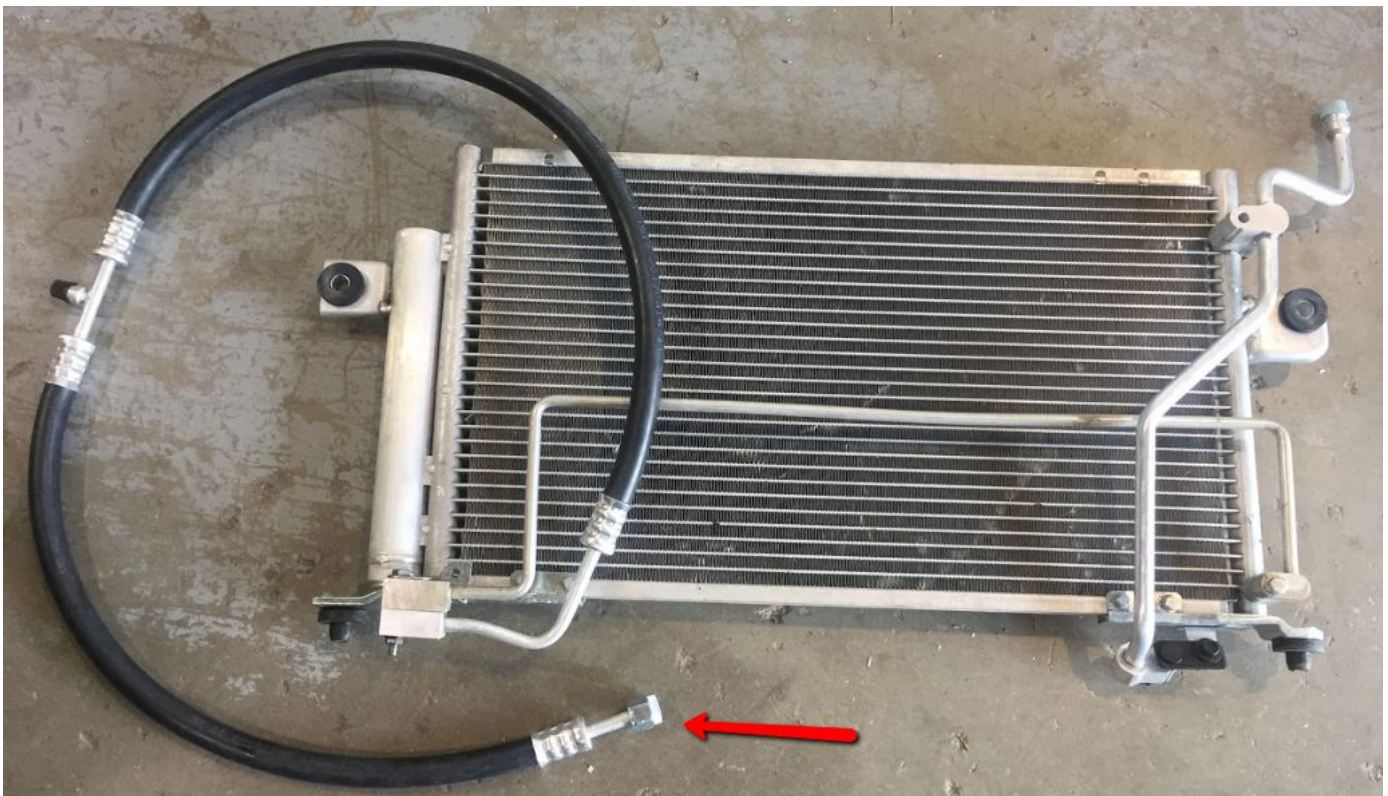




On the crank pulley, be sure that the 6 ribs closest to the timing chain cover are used so the belt is in proper alignment with the rest of the pulleys. The center 12mm nut in the tensioner can now be tightened to snug up the belt, and the outer 13mm RH and LH jam nuts can be tightened to lock the tensioner height in place. Don't forget to tighten the lower two compressor bolts once the tensioner is locked.

### **A/C Hose Installation**

Now that the compressor, belt, and tensioner are all in place, the supplied hoses can be connected. The smaller hoses connect to the condenser like this:



The #8 hose end indicated above runs along the passenger side frame rail and connects to the #8 port on the firewall.

The small 18" hose connects to the lower driver side corner of the condenser, and gets attached to the compressor:



Use the supplied 10mm head nuts to bolt all of the aluminum fitting blocks onto the condenser.

Lastly, the large 86" #10 hose can be installed. The straight end connects to the evaporator on the firewall, and the 90 degree end connects to the compressor:

Here are installed pictures of the hose locations:









(01-05 fittings with Mazda clips are pictured from our initial prototype hoses, but you'll be using the #8 and #10 hoses supplied)

Use the supplied hose clamps to secure the lines in the engine bay. Lastly, cut the Mazda pressure switch connector off the harness and install the pressure switch on the line. Wait to splice the pigtail back on to the harness until reviewing the wiring instructions that follow.





## A/C Kit Wiring

Now that the A/C components have all been installed, the necessary wiring can be completed. These instructions and wire colors are based on a 2001 Miata wiring diagram. Please be sure to look up the diagrams for your specific year vehicle.

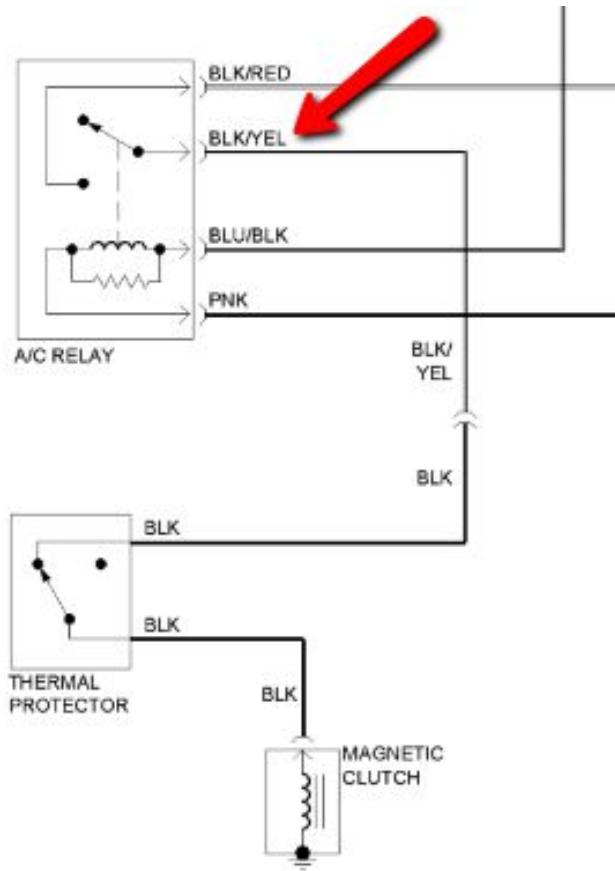
Note that A/C wiring varies based on the ECU used in your swap. We include specific instructions for Hondata Kpro and KTuner engine management below.

First, locate the A/C compressor relay and the condenser fan relay, typically on the passenger side of the engine bay. We like to remove them from the factory bracket and bolt them down directly to the frame rail here:

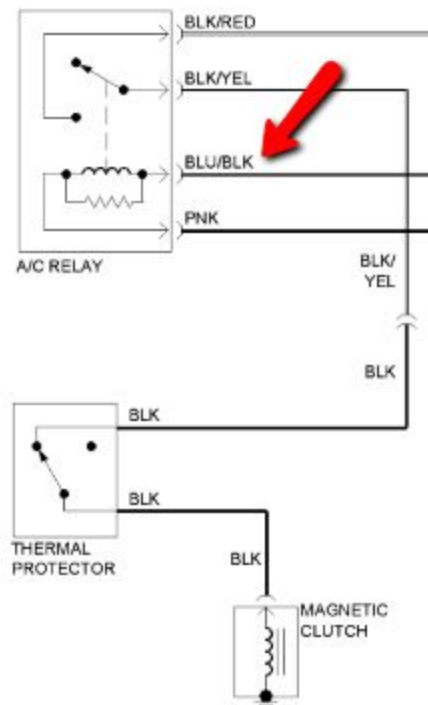


Peel back the wrap around the wires so they can be accessed. Label the relays so you can identify which is for the compressor and which is for the fan.

Behind the A/C compressor relay, connect the BLK/YEL wire to the single wire coming out of the compressor. While not necessary, it's best to use some sort of quick disconnect to make future servicing easier.

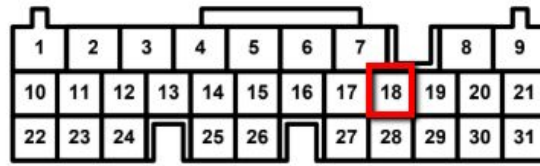


For both Kpro and KTuner ECUs, ECU pin E18 is the output, or trigger, for the A/C compressor clutch. This pin is located in the white E connector in the KMiaata jumper harness. Connect the BLU/BLK wire on the A/C relay to pin E18:



### Connector E

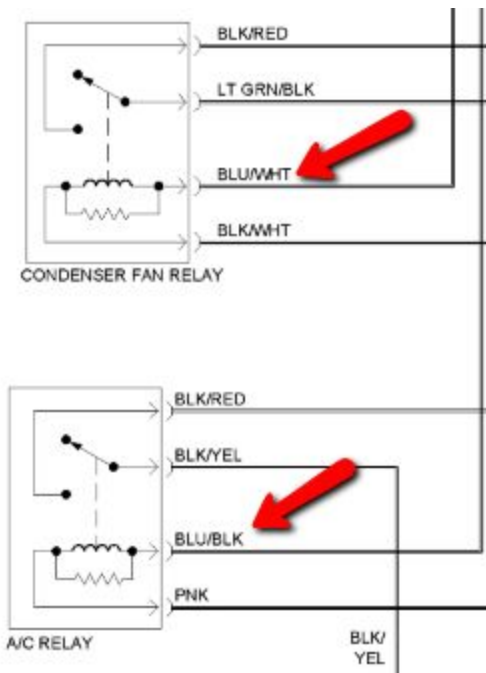
- White
- On ECM/PCM wire harness



- |                       |                      |
|-----------------------|----------------------|
| 1 —                   | 17 GRN/YEL (IMO FPR) |
| 2 A/T: WHT/BLU (SLS)  | 18 RED (ACC)         |
| 3 BRN/YEL (LG3)       | 19 LT GRN/RED (VSV)  |
| 4 WHT/GRN (SG3)       | 20 WHT/RED (SHO2S)   |
| 5 YEL/BLU (VCC3)      | 21 GRN/RED (SO2SHTC) |
| 6 —                   | 22 WHT/BLK (BKSW)    |
| 7 RED/YEL (MRLY)      | 23 LT BLU (K-LINE)   |
| 8 ORN (AFSHTCR)       | 24 —                 |
| 9 BLK/YEL (IG1)       | 25 BLU (NEP)         |
| 10 —                  | 26 BLU/WHT (VSSOUT)  |
| 11 —                  | 27 WHT (IM OCD)      |
| 12 GRN/WHT (FANC)     | 28 —                 |
| 13 YEL (SEFMJ)        | 29 BRN (SCS)         |
| 14 LT GRN (FTP)       | 30 RED/WHT (WEN)     |
| 15 GRN/BLK (ELD)      | 31 GRN/BLU (MIL)     |
| 16 LT GRN/BLK (PSPSW) |                      |

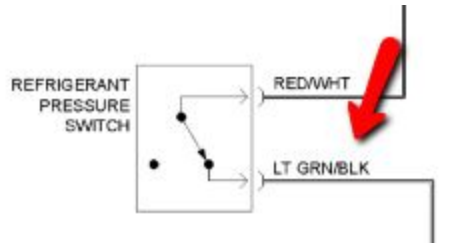
(03-06 Element pinout shown, but E18 is the same for 02-04 RSX as well).

Next, you'll connect the compressor and condenser relays so the A/C compressor and condenser fan turn on simultaneously when the A/C dash button is pressed. To do this, splice the BLU/WHT and BLU/BLK wires together.



The final connection is for the A/C input to the ECU. You need this so your newly-installed pressure switch can tell the ECU when to turn the compressor on and off.

Locate the wire on your Miata pressure switch pigtail that you cut off. Splice the RED/WHT to one of the GM pressure switch pigtails, and extend the other pigtail wire that was formerly the LT GRN/BLK wire back to the ECU:



**Kpro users:** connect this wire to pin B9 (The B connector is the middle ECU plug).

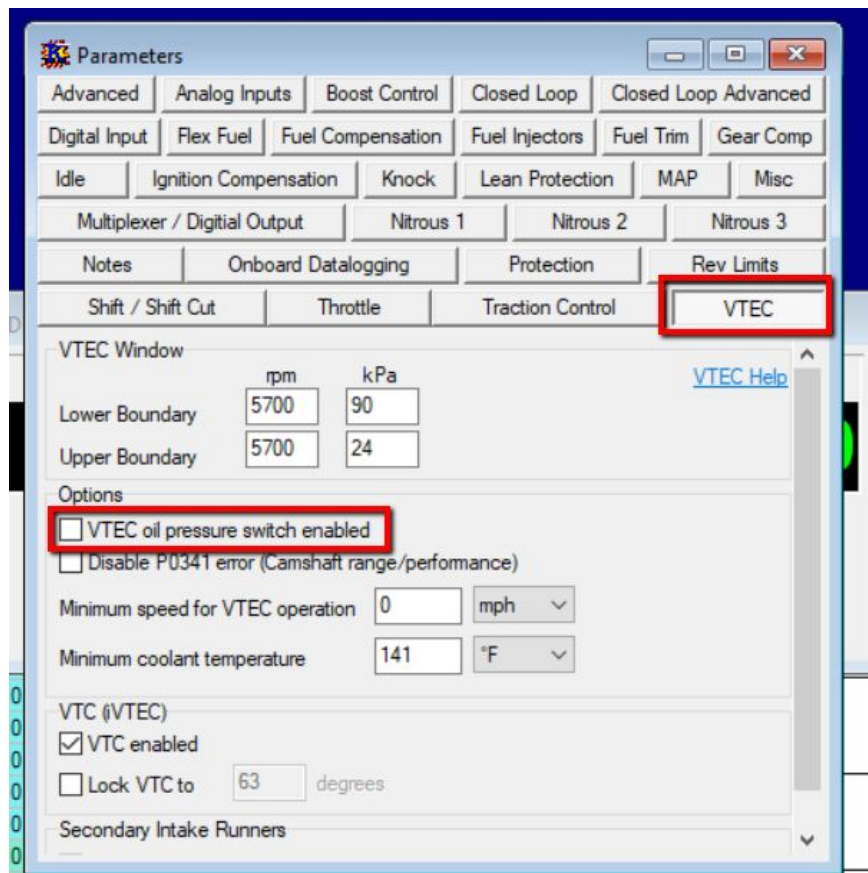
**KTuner users:** connect to pin E29 (see E connector diagram above).

### ECU Reprogramming

Now that the installation is complete and wired, settings need to be changed in the ECU to provide proper A/C functionality. Connect your laptop via USB and turn the key to the ON position. Download your current tune to the laptop. Once you're done with the following changes, the tune can be re-uploaded and you'll be all set.

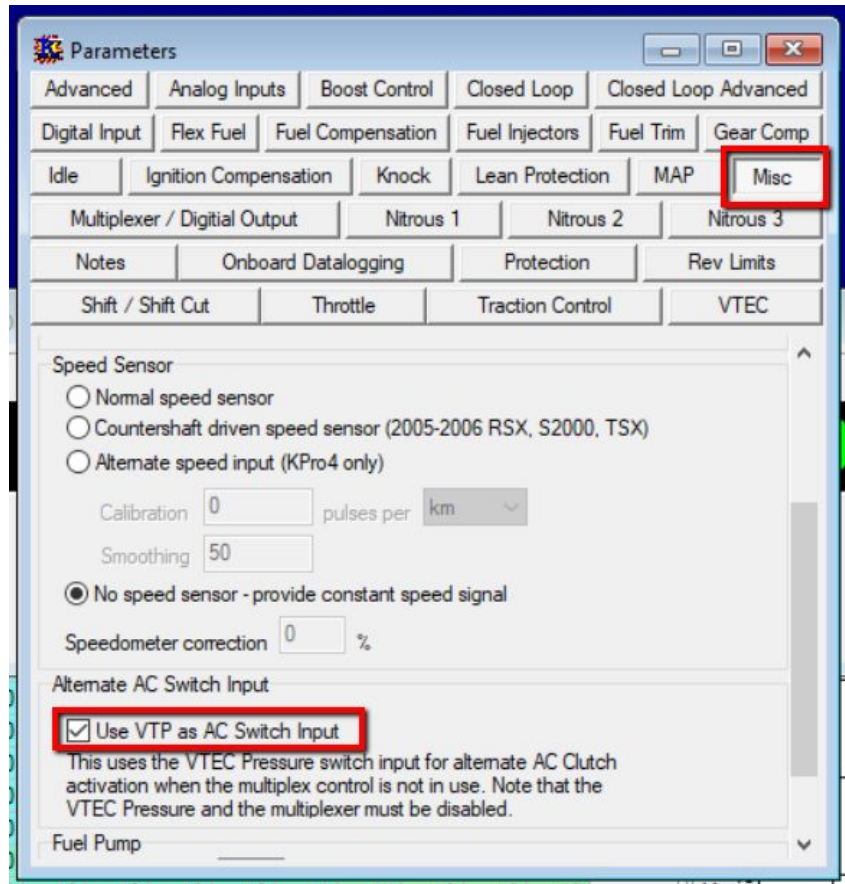
#### **Kpro ECU instructions:**

In the parameters window, click the VTEC tab, uncheck "VTEC oil pressure switch enabled":



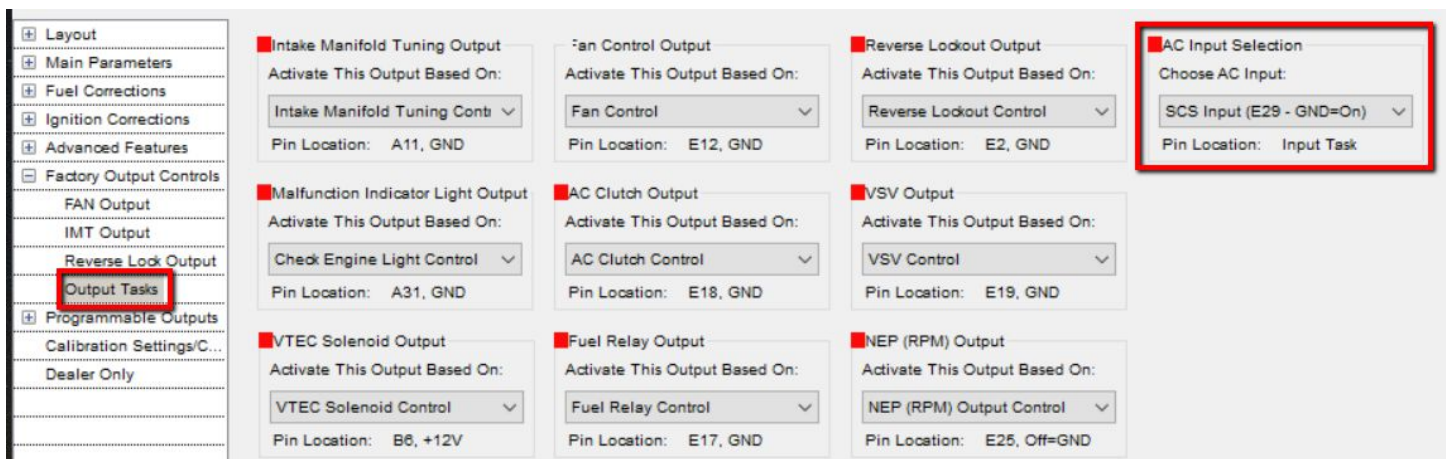


Next, under the Misc tab, check “use VTP as AC Switch Input”:



### KTuner ECU instructions:

Under Output Tasks, “Choose AC Input” needs to be changed to pin E29, as shown below:



That's it! Once the system is charged to one pound, your installation will be fully functional.

Have any questions or concerns? Email us at [sales@kmiata.com](mailto:sales@kmiata.com) and we'd be happy to assist. Enjoy your A/C!