

How to Install & Vacuum a Mini-Split Line Set Like a Pro

by Bill Davis







With the right parts and tools, owners of almost any brand or type of Mini-Split can now self-install their system.

IMPORTANT: This how-to guide is not written to add, remove, or adjust refrigerant levels. It's only written purpose is to explain how to install the line set and remove air from the system. All refrigerant used comes pre-charged from the factory in the condenser unit. If adding, removing or adjusting refrigerant is necessary, please **STOP** immediately and contact a licensed HVAC technician for assistance.

Parts Needed to Complete this install:

- (1) HVAC vacuum pump
- (1) Pump oil
- (1) 60" length of hi-pressure charging hose
- (1) Threaded charging adapter
- (1) Low-pressure access tee
- (1) 5-Piece Copper Flaring Drill Bit Set
- (1) Pressure gauge with quick coupler
- (1) Copper line cutting tool

Tools needed:

-  (1) Phillips-head screwdriver
-  (2) Adjustable wrenches or channel lock pliers
-  (1) AC power for vacuum pump operation
-  (1) Power Drill for Flaring Kit
-  (1) 5mm hex key
-  (1) Soapy water or leak detection solution

IMPORTANT: It is assumed that the indoor unit(s) is mounted, the outdoor unit is mounted, and the refrigerant line set is run, but not yet attached to the units.



STEP 1 On the outdoor unit of your mini-split, locate and remove the plastic refrigerant line cover. This is usually attached to the unit with one or more Phillips-head screws. Put cover and screws aside until self-installation is complete.

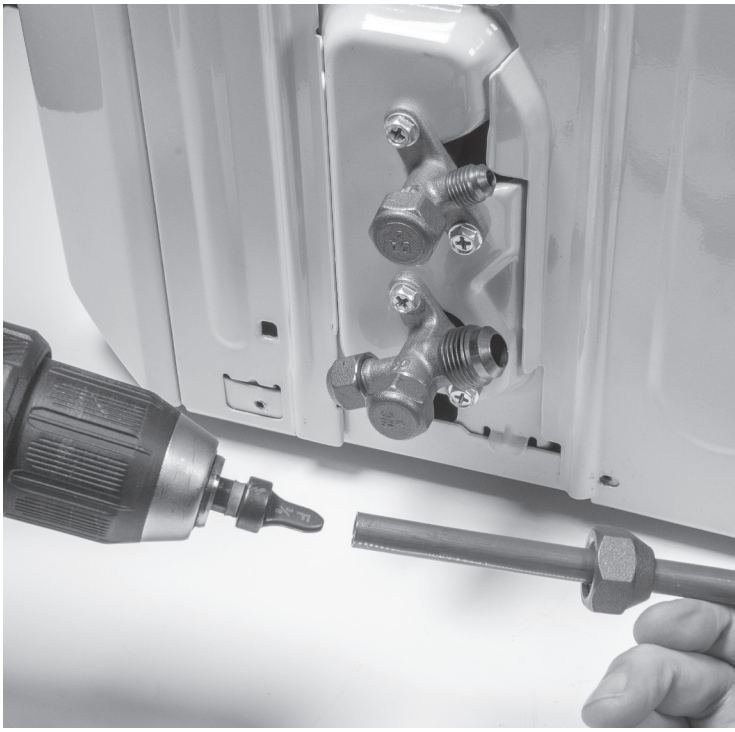


STEP 2 Once the proper length for the line set is determined, leaving enough room for the final connections, use the copper line cutting tool to remove the factory flare and fitting, so that the copper line set ends are bare. Remove any burrs as needed. Repeat this step for all copper lines to be attached to the outdoor unit.



STEP 3 Locate and remove the protective threaded caps on the "in" and "out" refrigerant ports on the outdoor unit.

NOTE: These caps are actually fittings with a plastic insert. You may remove the insert and use these fittings, or use the fittings removed in Step 2.



STEP 4 Slip the fitting onto the cut copper line and using the appropriate size flaring bit with a power drill, flare the end of each copper line.



STEP 5 Gently insert the flared end of the copper refrigerant lines into the sockets, making sure the line is fully seated in the socket, using 2 wrenches to tighten the fittings.

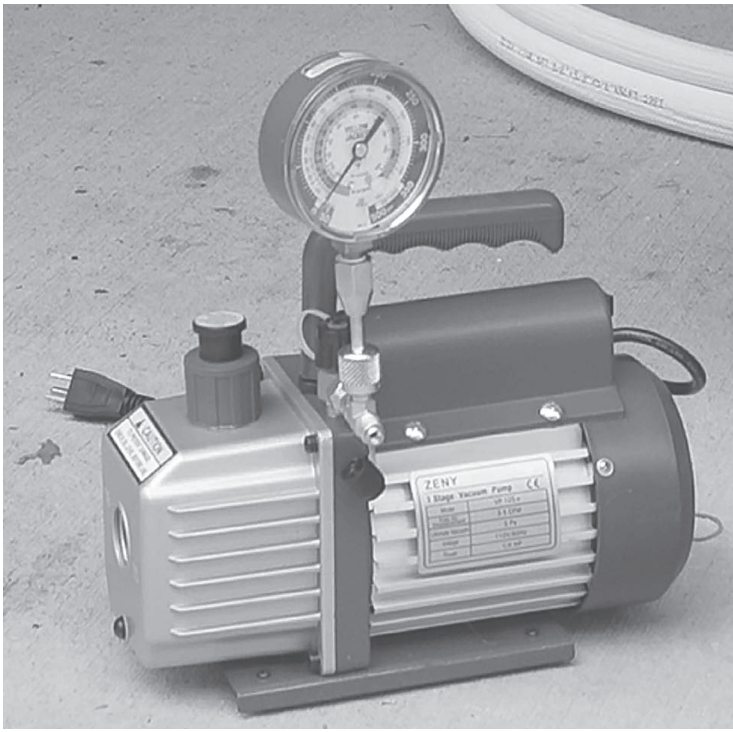


STEP 6 Prepare the vacuum pump by unscrewing the oil reservoir cap and filling with the pump oil. Use the sight glass on the side of the pump to fill to the indicator lines.

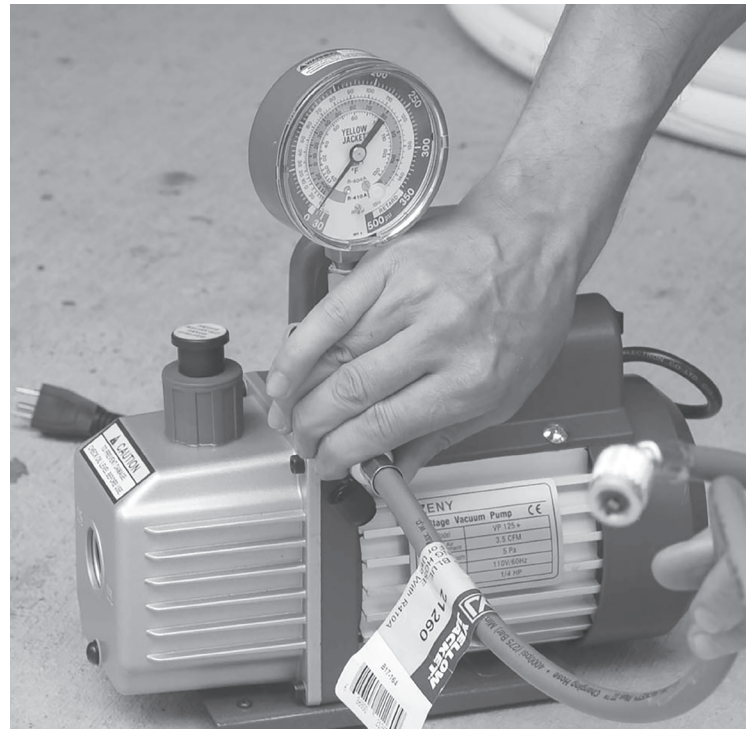


STEP 7 On the vacuum pump, remove the inlet cover and thread on the low-pressure tee to hand tight.

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STEP 8 On the vacuum pump, thread on the Pressure gauge to hand tight on one side of the low-pressure tee.



STEP 9 On the vacuum pump, thread on the 60" length of flexible hi-pressure hose to hand tight on the other side of the low-pressure tee.



STEP 10 Thread on the adapter to the flexible hi-pressure tubing.



STEP 11 On the mini-split outdoor unit, remove and set aside the protective cap on the refrigerant port. Thread on the other end of the hi-pressure tubing to hand tight to the refrigerant port.

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STEP 12 On the vacuum, remove the exhaust cap that says “REMOVE EXHAUST CAP BEFORE OPERATING”. With the vacuum pump plugged into AC power, turn on the pump and allow to run. You will see mist coming from the exhaust port.

This is normal and harmless; it is the water vapor being expelled from the empty refrigerant lines.



STEP 13 Continue running the vacuum pump until the included pump gauge reads a negative pressure of around -30 psi. The mist will also begin to slow down or become absent.

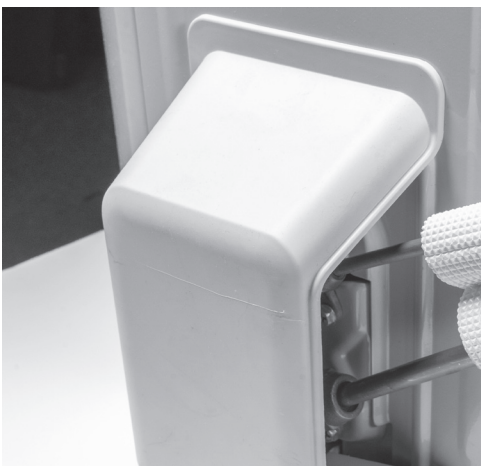
Depending on the length of the line set, that process could take 15-30 minutes or more. The longer the line set, the more time is needed to completely vacuum the lines. When the vacuum gauge indicator needle holds steadily in the negative pressure zone for several minutes, turn off the vacuum pump and watch the gauge for another minute.

If the indicator needle remains steady, the line is successfully vacuumed. If the indicator needle moves towards the positive range, check for leaks, and continue vacuuming.



STEP 14 Locate and remove the refrigerant valve caps on the outdoor unit and set aside. Using a 5mm hex key, open the valves to release the refrigerant into the line set(s).

You will hear clicking, popping, and hissing sounds as the refrigerant fills the system, but these will fade as the system pressure equalizes. If you hear any prolonged, loud hissing sounds, double check and tighten all fittings. Use the soapy water solution to check for leaks, tightening as needed.



STEP 15 Remove the vacuum line and replace all the caps on the outdoor unit, tightening with the crescent wrench or channel lock pliers. Be sure to replace the plastic refrigerant line cover and screws.

The mini-split is ready to power up and begin operation - Congratulations!

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