

## BEST PRACTICES FOR INSTALLING DUCTLESS HEATING AND COOLING SYSTEMS

Quality service and installations generate referrals, increase sales and improve customer satisfaction. Make sure your customers get the most from their ductless system by following installation best practices and educating homeowners. This guide does not replace manufacturer's specifications. Follow manufacturer's installation instructions and building code requirements.

### BEFORE YOU BEGIN

- Review the existing heating and cooling system location and layout with your customers. Consider occupancy, usage and climate when integrating the ductless system as the primary heating and cooling system in the home.
- If there is an electric furnace, determine if it is the best backup heat source or if other backup options are more appropriate.
- Review utility rebates and tax credits. Consult [GoingDuctless.com](http://GoingDuctless.com) for up-to-date information.

### OUTDOOR UNIT (COMPRESSOR)

- Set the unit on a stable, level surface
- Use adjustable risers to prevent debris and snow buildup and allow better drainage
- Secure outdoor units to the pad, risers and/or resting surface using bolts and/or adhesive

### REFRIGERANT TUBING

- Create new flares using appropriate R410A flaring tool and measurement gauge; DO NOT USE manufacturer-provided tubing flares and fittings
- Apply refrigerant oil to the end of each flare
- Connect tubing with R410A nuts (supplied with your outdoor unit) and tighten to manufacturer's specifications

### REFRIGERANT CHARGE

- Adjust refrigerant charge ONLY IF NECESSARY; most installations do not require adjustment

- Gauges are not needed to verify refrigerant levels; if adjustments are necessary, use a scale when adding/removing refrigerant
- Consult the manufacturer's installation manual to verify refrigerant protocols

### LINE SET INSULATION AND PROTECTION

- Insulation must cover entire line set length to avoid condensation and decreased efficiency
- Protect the outdoor line set from insulation damage with rigid line hide and building code-approved line set protection
- An insulative sealant must seal penetrations through the shell of the home; return any insulation disturbed by installed line set to original (or better) condition

### CONDENSATE DRAIN

- Must slope downhill; can be routed with line set and run to a suitable termination point, away from crawl spaces and walkways

### COLD CLIMATE RECOMMENDATIONS

- Avoid installing outdoor unit along pathways; freezing discharge can pose a slip hazard
- Use a pan heater to prevent defrost discharge from freezing inside the compressor
- Use wall-mount brackets to maximize clearance under the outdoor unit for easy drainage and reduced snow and ice buildup

### REQUIRED TOOLS



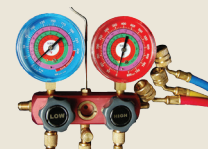
RATCHET FLARING TOOL



PROGRAMMABLE REFRIGERANT CHARGING SCALE



TORQUE WRENCH



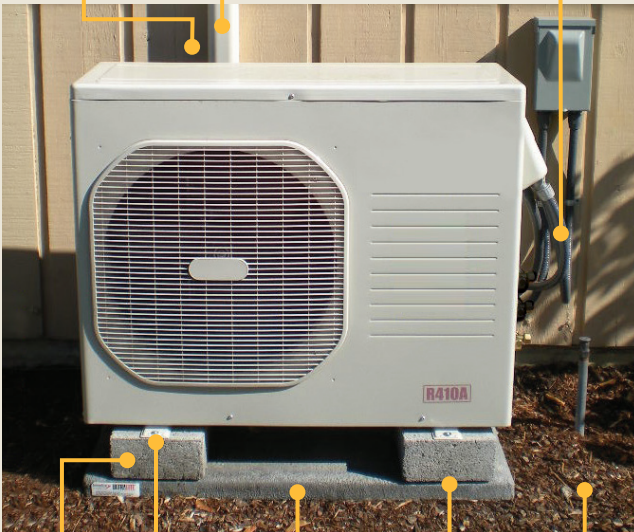
R410A GAUGE AND HOSE SET

# PROPERLY INSTALLED OUTDOOR AND INDOOR UNITS

Wall penetrations sealed with insulative sealant at point of entry

UV protected insulated line set and power connection.

Rigid line cover



Riser block

Pad

Adhesive

Anchor foot to riser

Compact ground

Indoor unit centrally located in home for best air circulation

Indoor unit installed high on wall



Indoor unit located away from thermostats

Indoor unit level

# KEEP YOUR CUSTOMERS COMFORTABLE AND REDUCE CALLBACKS

## INSTALLATION TIPS FOR MAXIMUM EFFICIENCY

- For homes with electric furnaces, consider shutting off the furnace at the breaker or set back the furnace thermostat to prevent competition with the ductless system.
- For homes with zonal electric heat, consider shutting off the heaters at the breaker or set back the zonal heater thermostats to prevent competition with the ductless system.

## FINISH WITH CUSTOMER EDUCATION

Reduce callbacks, generate referrals and ensure customer satisfaction by educating homeowners about the proper use of their ductless system. Ask your satisfied customers for a testimonial for your website and marketing materials.

Emphasize cleaning and maintenance requirements to ensure long life and efficient performance.

Ensure homeowner has a copy of the manufacturer's operation manual; refer to the manual during your unit operation walk-through or training.

Provide your customer with a copy of NW Ductless Heat Pump Project's Homeowner's Guide and remind them that [GoingDuctless.com](http://GoingDuctless.com) has more information.

If you install a system in a home with electric resistance heating, discuss ways the homeowner can ensure the new ductless system acts as the primary heating and cooling system, providing optimal comfort and savings

Visit [GoingDuctless.com](http://GoingDuctless.com)

or call 503.467.2159 for more information.

For complete information regarding ductless system features, benefits, operation, maintenance and installation requirements, review the manufacturer's installation manual and attend a manufacturer training. Images of specific manufacturer product lines are not endorsements, and this guide does not guarantee their quality.

The NW Ductless Heat Pump Project is an initiative of the Northwest Energy Efficiency Alliance (NEEA), an alliance of more than 140 Northwest utilities and energy efficiency organizations working to accelerate the innovation and adoption of energy-efficient products, services and practices in the Northwest. 01/16