

# Residential Central Air Conditioner and Heat Pump Installation Form – Airflow & Refrigerant Charge Documentation

(One complete form is required for each installed system)



## **A. PROGRAM REQUIREMENTS AND GUIDELINES**

1. All equipment must meet or exceed LIPA guidelines as to efficiency – see LIPA Cool Homes Incentive Application.
2. The installing contractor must properly size the equipment according to ACCA Manual J, version 8. It is highly recommended that the contractor employ ACCA Manual D and S for proper system selection and duct sizing.
3. The installing contractor must conduct a quality installation as outlined in the ACCA HVAC Quality Installation Specification – Standard Number: ANSI / ACCA 5 QI-2007
4. The installing contractor must document the sizing and installation factors, as well as the manufacturer's standards, on the LIPA Airflow and Charge Form.

## **B. QUALITY INSTALLATION REQUIREMENTS**

1. The contractor shall insure that all evaporators and condensing units are properly matched as identified by industry recognized certification programs such as AHRI, CEE, or GAMA. The LIPA incentive application will require the Reference number.
2. The installing contractor must verify and document that the airflow across the evaporator coil is within acceptable ranges. The airflow across the evaporator coil, at fan design speed and full operating load, must be within 15% of the airflow required per the system design and is within the range of the manufacturer specifications.
3. The installing contractor must verify and document the proper amount of refrigerant charge installed by using one of the following charging methods: Weigh In \*, Superheat, Subcooling, the Lennox Approach Method or other approved/acceptable charging method as determined by the manufacturer. Contractors must supply manufacturer recommended charging procedures.

\* The Weigh In method is to be used ONLY when the outside ambient temperature is not conducive to Superheat or Subcooling methods.

- a. For the Superheat method, system charge must be within  $\pm 5^\circ$  F of the OEM recommended optimal refrigerant charge.
- b. For the Subcooling method, system charge must be within  $\pm 3^\circ$  F of the OEM recommended optimal refrigerant charge.
- c. Superheat or Subcooling tests may be conducted when the outdoor ambient temperature is within OEM specified boundaries, (typically  $55^\circ$  F or higher for Superheat and  $60^\circ$  F or higher for Subcooling).
- d. The contractor must identify the OEMs weigh in method and parameters. A copy of the table or graph used to determine the proper amount of charge must be attached to the completed LIPA Airflow and Charge Form.

## **C. PROPER SIZING REQUIREMENTS**

**In order to assure that the equipment installed is properly sized, contractors/installers are required to complete and submit ACCA Manual J heat gain/loss calculations.**

Copies of both inputs used in the calculations and the resulting heat gain/loss load calculations must be submitted to LIPA in order for the customer to be eligible for a rebate. In reviewing the submitted sizing calculations to determine eligibility, LIPA will focus particular attention on the following:

### **1. Consistency between equipment capacity and sizing calculations.**

Sizing must be performed using ACCA Manual J. Block load calculations are acceptable for replacement systems and room-by-room calculations are required for new construction. Installed equipment capacity must be within either  $\pm 15\%$  or one half-ton of the calculated system load, (or the next higher commercially available size).

**Design temperatures.** Manual J sizing calculations must use an appropriate outdoor summer design temperature for the locale, (ASHRAE Handbook of Design Fundamentals or NY ECCC 2007). Indoor summer design temperature is recommended to be  $75^\circ$  F.

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Customer Name: \_\_\_\_\_ Application ID #: \_\_\_\_\_ (For LIPA Use)

Customer Address: \_\_\_\_\_

Contractor Name: \_\_\_\_\_ Contractor Phone (\_\_\_\_\_) \_\_\_\_\_

Contractor Mailing Address: \_\_\_\_\_

Reservation Number (Early Retirement ONLY) \_\_\_\_\_ Contractor Signature: \_\_\_\_\_

**AIR FLOW**

Rated Cooling Capacity (tons): \_\_\_\_\_ Target Airflow Volume (CFM) **PER TON**: \_\_\_\_\_

Static pressure drop in inches of water column W.C. measured across evaporator coil if newly installed: \_\_\_\_\_

True Flow CFM measured: \_\_\_\_\_ or external static pressure for fan coil unit: \_\_\_\_\_

Total Static Measured With:  Dry Coil (Blower only, fan on cooling speed)  Wet Coil (entire A/C unit operating)

CFM Air Flow Estimated From Total Static Measurement: \_\_\_\_\_  Existing Ductwork  Variable Speed

Installations must have visible and accessible ports for airflow and temperature measurements. Ports must be sealed with contrasting color plugs. Please indicate location of test ports: \_\_\_\_\_

**Note: Convert Pascals to inches of WC as pascals X 249.09**  
**Copy of table or graph supplied by manufacturer and used to estimate airflow must be attached to this form.**

**CHARGING METHOD USED:**  WEIGH IN  SUPERHEAT  SUBCOOLING  OTHER \_\_\_\_\_

**Note: Copy of table or graph supplied by manufacturer and used to estimate airflow must be attached to this form.**

**OPTION 1: WEIGH IN** Note: Can be used for any system ONLY when outdoor ambient temperature is below OEM specification.

Refrigerant type:  R-22  R-410A  Other: \_\_\_\_\_ (specify)

Outdoor unit capacity: \_\_\_\_\_ pounds \_\_\_\_\_ ounces

Does this capacity include an allowance for an evaporator  Yes  No

Does this capacity include an allowance for a line set  Yes  No

Allowed line set length \_\_\_\_\_ feet

(A) Suction Line Outside Diameter \_\_\_\_\_ inches, Net length\* \_\_\_\_\_ feet x \_\_\_\_\_ ounces/foot = \_\_\_\_\_ ounces

(B) Liquid Line Outside Diameter \_\_\_\_\_ inches, Net length\* \_\_\_\_\_ feet x \_\_\_\_\_ ounces/foot = \_\_\_\_\_ ounces

(C) Driers, Accumulator, and Evaporator Capacities (if not included above)

*Net Length = Measured Length Minus (-) Allowed Length	<b>Total charge weighed in</b>	<b>(A) + (B) + (C)</b>	_____ ounces
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**Note: Copy of table or graph supplied by manufacturer and used to estimate charge must be attached to this form.**

**OPTION 2: SUPERHEAT** Note: Can only be used for fixed orifice systems (Non-TXV) when outdoor temperature is greater than OEM spec. (Typ. 55 °F)

**CHARGING OPTIONS**

**INPUTS** Refrigerant type  R-22  R-410A  Other: \_\_\_\_\_ (specify)

**Manufacturer Specified Superheat:** \_\_\_\_\_ °F (from manufacturer service guide or as per manufacturer's specification or cut sheet)

Indoor Wet Bulb Temperature \_\_\_\_\_ °F

Outdoor Dry Bulb Temperature \_\_\_\_\_ °F

**MEASUREMENTS**

Vapor (suction) pressure \_\_\_\_\_ psig

(D) Saturation temperature for measured pressure \_\_\_\_\_ °F

(E) Vapor (suction) line temperature near compressor \_\_\_\_\_ °F

\*Measured Superheat (E minus D) \_\_\_\_\_ °F

\*Measured Superheat must be within 5°F of the manufacturer specified Superheat.

**Note: A copy of the documentation of the manufacturer's specified superheat for the installed equipment must be attached to this form.**

**OPTION 3 SUBCOOLING** Notes: Typical for most Thermal Expansion Valve systems when outdoor temperature is greater than OEM spec. (Typ. 60 °F)

**INPUTS** Refrigerant type:  R-22  R-410A  Other: \_\_\_\_\_ (specify)

Required Subcooling: \_\_\_\_\_ °F (from nameplate/manufacturer service guide or as per manufacturer's specification or cut sheet)

Outdoor Dry Bulb Temperature: \_\_\_\_\_ °F

**MEASUREMENTS**

Liquid line pressure \_\_\_\_\_ psig

(F) Saturation temperature for measured pressure \_\_\_\_\_ °F

(G) Liquid line temperature \_\_\_\_\_ °F

\*Measured Subcooling (F minus G) \_\_\_\_\_ °F

\*Measured Subcooling must be within 3°F of the manufacturer specified Subcooling.

**Note: A copy of the documentation of the manufacturer's specified subcooling for the installed equipment must be attached to this form.**