Idaho Power Heating and Cooling Efficiency Program

Air-Source Heat Pump Installation Worksheet

IDAHO POWER®
An IDACORP Company

This worksheet verifies that an air-source heat pump has been installed to program requirements.

A copy of this completed form must be submitted with the air-source heat pump incentive application.

Official Use Only: ID number

Customer Information

Name (as listed on the Idaho Power account) _____

Installer Information

Installer name _____ Installer HVAC license # _____

Company name _____ Company phone ( ) _____

New Unit Data

Manufacturer _____ AHRI reference # _____ Outdoor unit model # _____

Indoor unit model # _____

HSPF _____ Outdoor unit tonnage _____

System run-time ☐ Home occupied during day (9 a.m. - 5 p.m.) ☐ Home unoccupied during day (9 a.m. - 5 p.m.) ☐ Other _____

Other Information

When system fan is turned on, does air flow from all supply registers? ☐ Yes ☐ No
If No, then provisions must be made for disconnects to be fixed.

Existing Primary Cooling Source
☐ Ducted Air Source Heat Pump ☐ Central A/C ☐ Window A/C ☐ Evaporative Cooler ☐ None ☐ Other

Home Type
☐ Site Built Single Family ☐ Manufactured Home ☐ Duplex ☐ Triplex ☐ Fourplex

Year Built _____ House Sq Ft _____

TrueFlow® Test (see step by step instructions on Page 3)

Tested in ☐ Heating ☐ Cooling — Filter size (16x20 etc) _____	1 Stage/capacity tested?
2 _____ tons tested	3 Insert plate size ☐ 14 ☐ 20
4 Note where plate installed ☐ Filter slot @ ID unit ☐ Filter grille	5 Measure normal supply operating pressure (NSOP) _____
6 Measure supply pressure with plate in (TFSOP) _____	7 Correction factor (found in Manual) _____ or $\sqrt{\frac{\text{Box 5}}{\text{Box 6}}}$
8 Plate pressure _____	9 Raw flow (CFM) _____
10 Corrected flow (CFM) _____ Box 9 x Box 7	11 CFM/ton _____ or $\frac{\text{Box 10}}{\text{Box 2}}$

Notes

Acceptance of terms

I hereby certify that all information on this worksheet is accurate, and the items on the worksheet were completed at the time of the installation. I certify that we have complied with all the terms outlined in the Idaho Power Heating and Cooling Efficiency Program HVAC Contractor Participation Agreement.

Authorized signature _____ **Date** _____

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Air-Source Heat Pump Refrigerant Charge Procedure

Performance Check (Run system at least 15 minutes before taking readings.)

- Make lineset adjustment as needed.
- To check charge, the preferred method is to measure subcooling in either cooling or heating mode. Subcooling is liquid line temperature minus high side saturation temperature (found on gauge head).
- If manufacturer's subcooling target is not available, compare measured suction and discharge pressure to manufacturer's targets (at the measured outdoor temperature.) Measured values must be within manufacturer's tolerances (typically +/- 5 psig suction, +/- 15 psig discharge).
- When the temperature split is measured in heating mode, auxiliary heat must not operate.

	Measured	Manufacturer's Target
Tested In ☐ Heating ☐ Cooling Note: Tests performed in cooling mode must be performed at outdoor temperatures of 65°F or above.		
Outside temp (°F)		
Suction pressure (psig)		
Head pressure (psig)		
Condenser saturation temp (from gauge °F)		
Liquid line temp (°F)		
Subcooling (°F) (Condenser saturation temp—liquid line temp) **Note:** Applied in cooling mode for systems with TXV on indoor coil or in heating mode for systems with TXV on outdoor coil.		
Supply dry bulb temp (°F)		
Return dry bulb temp (°F)		
Temperature split (°F)		
Amount of refrigerant added (+)/removed (-) if adjustment is needed after initial readings taken _____		

Control Setup/Checkout (all systems)

Auxiliary heat cannot operate at outside temperatures above 35°F.

How is auxiliary (strip) heat controlled? ☐ Discharge air sensor (not allowed in single compressor systems) ☐ Add-on outdoor thermostat ☐ OD sensor

Confirm auxiliary (strip) heat does not operate at outside temperatures above 35°F (or lowest possible temperature allowed by thermostat) ☐ Yes Indicate how strip heat checkout was performed:

* If outdoor sensor is used, check its output and compare to expected value.

Outdoor temperature during test _____ Temperature indicated on indoor thermostat _____

Is compressor Low Ambient Lockout set no higher than 0°F (or not enabled at all)? ☐ Yes

* If temperatures do not agree within 2°, check wiring or replace sensor.

Systems Using Discharge Air Sensors

Note: Discharge air sensors cannot be used on single stage compressor systems.

Compressor stages: ☐ Single stage ☐ Multi stage **Zoning Panel Installed?** ☐ Yes ☐ No

Single Stage Compressor Systems

Confirm discharge air sensor disabled or uninstalled ☐ Yes ☐ No

Multi-Stage Compressor Systems

If discharge air sensor is used to control auxiliary (strip) heat, confirm it is set no higher than 85°F ☐ Yes

OR

If staging temperature is set above 85°F, confirm resistance heat cannot operate at outside temperatures above 35°F ☐ Yes

Indicate how strip heat checkout was performed:

TrueFlow® Meter Test Instructions

1. Turn on air handler (by using fan-only switch or by turning on heat/AC). It is best to call for the flow that will be used during most of the year (probably heating). Make sure you know which stage is operating so you will divide the measured flow by the right number of tons. Check size of outdoor unit to get capacity (tons). Record which stage (if multistage compressor) that you test (Box 1) and the tons tested (Box 2). Note TrueFlow plate size (Box 3) and where you will install the TrueFlow (Box 4). Normally you will install the TrueFlow in place of the filter, but you can also install it at a return filter grille if needed.

2. Place static pressure tap in supply plenum; drill hole if needed. The hooked end of the tap should face into the air stream. Note it is generally better to place tap at least 6" away from any take-off or turning vane. If this position was used to measure static pressure as part of the external static pressure measurement, the tap does not need to be moved. If the system tested is a manufactured home, access the supply system through the nearest supply register. Temporarily remove the magnet from the static pressure tap, reach down into the supply boot (look out for sharp edges) and toss the tap back toward the furnace. You can also put this tap in another place on the supply side (refrigerant line penetration into air handler cabinet, for example).

3. Connect other end of hose (that leads to the pressure tap) to the Input side of the pressure gauge (Channel A). Turn on gauge (if using DG-700 or similar). If using DG-700, switch to inches of water mode by using Units switch. Keep gauge in pressure/pressure mode for all tests.

4. Record normal supply operating pressure (NSOP) on worksheet in (Box 5). If reading is very "jumpy", press the Average key and wait at least 5 seconds for the average value to display.

5. Now remove system filter and replace with TrueFlow outfitted with any needed spacers. Plate should be positioned so side with labels faces oncoming air flow. Connect plate hoses to Channel B of pressure gauge (if using DG-700); otherwise, connect plate hoses so they will read pressure drop across plate. If TrueFlow is installed on a non-ducted return (on the top/front of the furnace cabinet or on a return grille), you will need to apply a 1.04 multiplier to the raw flow in addition to any Correction Factor.

6. Look at the pressure in supply system with TrueFlow installed (TFSOP). This will read from Channel A on the gauge; record on worksheet in (Box 6).

7. Look at NSOP and TFSOP. If they differ by more than 3 Pa or 0.02" water, look up a Correction Factor. Use look up table on TrueFlow laminated card to figure any needed correction. Record Correction Factor $\sqrt{\frac{NSOP}{TFSOP}}$ on worksheet in (Box 7).

8. Read pressure across plate; record on worksheet in (Box 8).

9. Using plate pressure, look up Raw Flow on laminated card. Make sure you look up the flow for the correct plate (#14 or #20). Record Raw Flow on worksheet in (Box 9).

10. Multiply Raw Flow (Box 9) by Correction Factor (Box 7); this is Corrected Flow. Record on worksheet in (Box 10).

11. Divide Corrected Flow (Box 10) by Tested Tons (Box 2) to get CFM/ton. Record in (Box 11). If flow is more than 350 CFM/ton, the system meets program specs.

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