Idaho Power Heating and Cooling Efficiency Program

Open Loop Water Source Heat Pump Installation Worksheet

An IDACORP Company

This worksheet verifies that an open loop water source heat pump has been installed to program requirements.
A copy of this completed form must be submitted with the incentive application.

Official Use Only: ID number

Customer Information

Name (as listed on Idaho Power account) _____

Installer Information

Installer name _____ Installer HVAC license # _____

Company name _____ Company phone ( ) _____

New Unit Data

Manufacturer _____ AHRI reference # _____ Unit model # _____ Nominal tonnage (Btu/h) _____

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	

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Open Loop Water Source Heat Pump Procedure

Measure and record loop and air-side temperatures and compare to manufacturer's expected values.

Flow Rate in GPM

WATER IN pressure	a. _____ psig	Pressure drop = a - b	c. _____ psig	e. calculate gpm/ton _____
WATER OUT pressure	b. _____ psig	Look up flow rate in table*:	d. _____ gpm	

*Use Mfr's startup instructions or value from installed flow gauge, or measure directly with a flow-through system such as a creek.

Temperature Rise / Drop Across Water Loop (All tests shall be conducted with desuperheater disconnected.)

	As Found Cooling	As Found Heating		After Adjustment Cooling	After Adjustment Heating
WATER IN temperature	_____ °F	_____ °F	WATER IN temperature	_____ °F	_____ °F
WATER OUT temperature	_____ °F	_____ °F	WATER OUT temperature	_____ °F	_____ °F
Temperature difference	_____ °F	_____ °F	Temperature difference	_____ °F	_____ °F
Target difference**	_____ °F	_____ °F	Target difference**	_____ °F	_____ °F

Temperature Rise / Drop Across Air Coil

	As Found Cooling	As Found Heating		After Adjustment Cooling	After Adjustment Heating
SUPPLY AIR temperature	_____ °F	_____ °F	SUPPLY AIR temperature	_____ °F	_____ °F
RETURN AIR temperature	_____ °F	_____ °F	RETURN AIR temperature	_____ °F	_____ °F
Temperature difference	_____ °F	_____ °F	Temperature difference	_____ °F	_____ °F
Target difference**	_____ °F	_____ °F	Target difference**	_____ °F	_____ °F

**Refer to manufacturer install guide for target loop and air-side temperature splits. If measured splits do not meet Mfr specs, repair and retest until specs are met.

The following tests are only needed if a charge problem is suspected:

	Superheat (S.H.) / Subcooling (S.C.) Test was done in ☐ Heating ☐ Cooling Before Charge Adjustment	Superheat (S.H.) / Subcooling (S.C.) Test was done in ☐ Heating ☐ Cooling After Charge Adjustment	Amount of Charge Adjustment
Suction pressure	_____ psig	_____ psig	_____ oz.
Suction saturation temperature	s. _____ °F	s. _____ °F	
Suction line temperature	t. _____ °F	t. _____ °F	
Superheat = t - s	_____ °F	_____ °F	
Head pressure	_____ psig	_____ psig	
High pressure saturation temperature	w. _____ °F	w. _____ °F	
Liquid line temperature*	x. _____ °F	x. _____ °F	
Subcooling = w - x	_____ °F	_____ °F	

Target superheat** _____

Target subcooling** _____

* Liquid line is between the water loop and the TXV in cooling mode and between the air coil and the TXV in heating mode.

**** Installers: Look up targets.**

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 service. I certify that we have complied with all the terms outlined in the Idaho Power Heating and Cooling Efficiency Program HVAC Contractor Participation Agreement for 2010.

Authorized signature _____ **Date** _____

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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 325 CFM/ton, the system meets program specs.

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