

VHC-36, -42 and -50 Start-up Form and Checklist

IMPORTANT

- Complete this form for each unit and email, fax or mail to Venmar CES immediately after start-up to validate warranty and to provide valuable information for personnel performing future maintenance or for factory assistance to address below.
- Read the Installation, Operation and Maintenance Instructions Manual and the VHC-36, 42 and 50 DDC Controls Package Manual (if equipped) before proceeding.
- Leave a copy of this report with the Owner and at the unit for future reference and permanent record.
- To ensure proper operation of each unit qualified personnel should perform the start-up, complete the checklist and form.
- All units are factory run tested. Blowers, heat wheel and compressors (if equipped) are set up to run correct when power is connected. If any blower is running backwards or compressor is making loud noises disconnect power and switch two leads (on three-phase power) to ensure proper rotation and avoid damage.
- If units are equipped with compressors, power must be turned on for 24 hours prior to a call for cooling for the compressor crank case heaters to be energizing to prevent possible damage.
- The BacStat II interface module (if equipped with DDC controls package and mounted remotely) may be temporarily connected at the unit for checkout. Ensure it is connected to the Net 2 contacts otherwise it will not give readings.

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Unit Identification Information

Project: _____
Model Number: _____
Serial Number: _____
Tag: _____
Jobsite Contact: _____
Job Name: _____
Job Address: _____
Telephone: _____
Email: _____

Serial Number: _____

Table J1: Pre Start-up Checklist

	Checklist Item	Yes	N/A
1	Is the electrical disconnect set to the 'Off' position?		
2	Have obstructive packaging, objects, tie downs on fans and heat wheel been removed?		
3	Are fans and enthalpy wheel rotating freely?		
4	Are fan wheels and drive set screws tight?		
5	Are belt alignment and tension correct?		
6	Are air filters installed, clean or replaced? If filters are equipped with optional differential pressure switch, check desired setpoint does not exceed factory setting of 0.8" w.c. [200 Pa].		
7	Have coils been checked for fin damage and dirt, straightened and cleaned?		
8	Are refrigerant components and piping in good conditions, no damage or leaks caused by shipment or installation?		
9	Is the minimum clearance around air cooled condenser met and is discharge clear?		
10	Has a water strainer been installed for WSHP with brazed heat exchanger?		
11	Is ductwork connected and complete?		
12	Are condensate drain connections trapped, installed correctly and filled?		
13	Are all shipped loose or field supplied components correctly installed and wired and are the start interlocks completed for the ventilation control desired?		
14	Has the field wiring terminal diagram been marked up accordingly and left with the unit?		
15	Has power supply and control wiring been inspected and approved by the Local Authorities?		
16	Have factory and field wiring connections been checked and tightened?		
17	Check that any pipe chase or access opening to extend piping or wiring through the casing or floor has been sealed air- and water-tight.		
18	Are all fuses properly installed in holders?		
19	Is voltage at the disconnect switch within 10% of nameplate and phase-to-phase readings within 2% of nameplate?		
20	Are field piping and venting installation and connections for heating and cooling options completed and tested?		
21	Are heating and cooling enable switches set to the 'Off' position?		

Serial Number: _____

Table J2: Start-up Checklist

	Checklist Item	Yes	N/A
1	Before proceeding, complete the pre start-up checklist.		
2	Close all access panels or doors.		
3	Turn the main disconnect to the 'On' position.		
4	Set the timer, selector switch or BMS to close the contact for the scheduling mode desired and check operation and sequence.		
	<i>Occupied ventilation (Ov):</i> With the occupancy contact closed or a jumper placed across terminals, heat wheel starts (not in free cooling), defrost recirculation damper closes (if equipped), outside and exhaust air dampers (if equipped) begin to open; after outside air damper opens fully the blower starts and after the exhaust air damper opens fully the exhaust blower starts.		
	<i>Unoccupied recirculation (Ur):</i> With the unoccupied recirculation contact closed or a jumper placed across terminals, heat wheel stops, defrost recirculation damper opens, outside and exhaust air dampers (if equipped) begin to close and supply blower starts.		
	<i>Occupied recirculation (Or) (DDC controls package only):</i> With the occupied recirculation contact closed or a jumper placed across terminals, heat wheel starts (not in free cooling), defrost recirculation damper closes (if equipped), outside air damper (if equipped) opens; after outside air damper opens supply blower starts, exhaust air damper (if equipped) opens. After exhaust air damper opens exhaust blower starts, occupied recirculation damper opens, outside and exhaust air dampers modulate to the damper minimum setpoints.		
5	Are dampers operating properly?		
6	Are fans and heat wheel rotating in the correct direction?		
7	For occupied recirculation mode adjust outside air and exhaust air damper positioner to achieve the required air volume.		
8	Re-check the voltage at the disconnect switch against the nameplate and against phase-to-phase readings on three-phase with all blowers operating. If the voltage is not within 10% of rated or 2% of phase-to-phase have the condition corrected before continuing start-up.		
9	Check amperage draw to each motor on each phase against motor nameplate FLA. If significantly different check ductwork static and/or take corrective action.		
10	Before activating the compressor on WSHP units, are water shut-off valves open and is water circulating through the water-to-refrigerant heat exchanger.		
11	Enable cooling and check if the sound of the compressor is normal or if there is excessive vibration.		
12	Check all field and factory refrigerant and water piping connections for leaks and correct.		
13	On units with gas-fired furnace module, check the manual reset high limit switch is closed (press reset button) and check supply air proving interlock switch setting to ensure minimum supply airflow prior to burner operation. Set the switch to open below the minimum supply airflow on the furnace rating plate.		
14	Enable heating options, see start-up and check out instructions in Appendix K for gas furnace and Appendix L for electric coil and complete.		
15	Check the operation of the control options provided on the unit.		
16	Check the setpoints on the DDC Points Reference; adjust and record changes as required.		
17	When unit has achieved steady state take measurements and complete readings section of Start-up Form for each operating cycle to verify all components are functioning properly.		

Start-up Readings

Serial Number: _____

- Allow unit to reach steady state before taking readings.
- Complete based on options included with the unit.

Table J3: Start-up Readings

Mode of Operation			Heating	Cooling
Power supply	Nameplate voltage			
	Voltage at disconnect no motors	L1-L2		
		L2-L3		
L1-L3				
Power supply with all loads connected	Voltage at full load L1/L2/L3			
	Supply fan	Fan load amps		
		Amp draw L1/L2/L3		
		Overload amp setting		
		RPM		
		Hertz		
	Exhaust fan	Full load amps		
		Amp draw L1/L2/L3		
		Overload amp setting		
		RPM		
	Enthalpy wheel	Full load amps		
		Amp draw L1/L2/L3		
		Overload amp setting		
Condenser fan #1 amp draw – L1/L2/L3				
Condenser fan #2 amp draw – L1/L2/L3				
Airside	Airflow CFM	Supply		
		Exhaust		
		Occupied recirculation		
	Temperature °F db/wb	Outdoor entering		
		Supply enthalpy wheel entering		
		Supply enthalpy wheel leaving		
		Cooling coil leaving		
		Heating coil leaving		
		Re-heat coil leaving		
		Supply leaving		
		Return entering		
	Static pressure inches w.c.	Exhaust enthalpy wheel leaving		
		Outdoor duct		
		Supply enthalpy wheel entering		
		Supply enthalpy wheel leaving		
		Supply fan entering		
		Supply duct		
		Return duct		
	Exhaust enthalpy wheel entering			
	Exhaust enthalpy wheel leaving			
Exhaust duct				
WSHP waterside	US GPM			
	Entering temperature – °F			
	Leaving temperature – °F			
	Entering pressure – PSI			
Leaving pressure – PSI				

Serial Number: _____

Table J3: Start-up Readings

		Mode of Operation				Heating	Cooling
Compressor refrigerant side	Circuit #1	Discharge pressure – PSI					
		Suction pressure – PSI					
		Discharge temperature – °F					
		Suction temperature – °F					
		Superheat – °F					
		Sub-cooling – °F					
		Site glass oil level				<input type="checkbox"/> 1/2 <input type="checkbox"/> 3/4 <input type="checkbox"/>	
		Site glass clear				<input type="checkbox"/> Yes <input type="checkbox"/> No	
		Amps – L1/L2/L3					
	Circuit #2	Discharge pressure – PSI					
		Suction pressure – PSI					
		Discharge temperature – °F					
		Suction temperature – °F					
		Superheat – °F					
		Sub-cooling – °F					
		Site glass oil level				<input type="checkbox"/> 1/2 <input type="checkbox"/> 3/4 <input type="checkbox"/>	
		Site glass clear				<input type="checkbox"/> Yes <input type="checkbox"/> No	
		Amps – L1/L2/L3					
Gas-fired furnace module	<input type="checkbox"/> Natural gas <input type="checkbox"/> Propane						
	Inlet pressure – inches w.c.						
	Low fire manifold pressure – inches w.c.						
	High fire manifold pressure – inches w.c.						
	Supply air inlet temperature – °F						
	Supply air discharge temperature – °F						
Electric heating	Stage	1	2	3	4	5	6
	Amp draw – L1						
	Amp draw – L2						
	Amp draw – L3						

This unit has been checked out and started according with the above procedures and completed forms and is operating satisfactorily.

After 24 hours of satisfactory operation, shut down the unit and check all foundation bolts, shaft bearings, drive set screws, valve train and terminals. Tighten where required.

Additional Comments:

Start-up

By: _____
 Date: _____
 Email: _____
 Company Name: _____
 Telephone: _____

Email to Tech Support (venmarservice@venmarces.com) or fax to 306-244-4221.