

Commissioning a Packaged Rooftop Unit

When a packaged rooftop is “started” (commissioned), all the operating data should be recorded on a start-up sheet. It is important to use these so you have a document that contains the operating conditions when the unit was commissioned. Attached is a copy of the Allied Commercial “Start-up Report/Field Report”.

The following is a very general checklist of things to be checked when setting and starting a packaged rooftop unit.

- Check power supply to make sure it matches the unit name plate. If the unit is a 208/230 volt unit, and the measured power is 208 volts, move the tap on the transformer to the 208 volt tap.
- Check all electrical connections for proper tightness.
- If the unit has a scroll compressor, check for the proper rotation of compressor on 3-phase units. (On small units, blower is single phase so it could be turning correctly and the compressor could be running backwards. On larger units with 3-phase blower motors, the compressor and motor are phased at the factory.)
- Make sure all shipping braces, straps and all other packing materials are removed. Check the compressor for any “tie downs” and mounting bolts used by the manufacturer.
- Check incoming gas pressure. If “high pressure” gas; be sure reducing regulator is installed. Be sure the reducing regulator has a proper vent installed on it to prevent water from getting in to it. Check with local codes and /or authority.
- Make sure the air intake and vent hoods are properly installed with the top lip inside the cabinet to prevent water getting in behind the hood.
- If the unit has an economizer, make sure the hoods are properly installed. Check all the linkage for proper tightness and alignment.
- Check and adjust settings for economizer operation and minimum position if equipped.
- Check belts for proper tension, alignment, set screws, rotation and check blower speed.
- Turn on the heat and check for proper manifold pressure to the burners and adjust as needed.
- Check temperature rise over heat exchanger, or use blower CFM charts provided by the manufacturer to make sure there is proper airflow.
- Make sure trap is installed properly and primed, if they are needed.
- Check refrigerant charge on each system. Even in winter, run the cooling just to make sure that it is working (it can be run for a few minutes).
- Replace all panels that were removed and be sure **ALL** screws are replaced in the panels and doors.

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Start-up Form

		Start-up Report Field Report												
JOB INFORMATION														
Job Name			Date											
Address														
City	Zip/Postal Code	Phone												
Contact Person	Filled out By													
UNIT INFORMATION														
RTU Number	Control System type		DDC / Thermostat											
Model Number	Ambient Temperature		F / C											
Serial Number	Heat Fuel Type		Nat Gas / LP Gas / Electric / NA											
C/N Number	Air Filter Type		Standard / Pleated											
	Air Filter Condition		Clean / Dirty											
ELECTRICAL SYSTEM														
Unit Voltage and Phase	T1 Transformer Output Voltage													
Incoming Voltage Reading L1 - L2	T18 Transformer Output Voltage													
Incoming Voltage Reading L2 - L3	T43 Transformer Output Voltage													
Incoming Voltage Reading L1 - L3														
COOLING SYSTEM														
Blower Motor	Motor Power	Rotation Verified	AMPS L1-L2	AMPS L2-L3	AMPS L1-L3	Suction Pressure	Disch. Pressure	Temperature Readings All Stages F / C		Delta T				
	High Speed	Correct / Corrected / NA						Return	Supply					
Compressor	Low Speed	Correct / Corrected / NA												
	Stage 1	Correct / Corrected / NA												
	Stage 2	Correct / Corrected / NA												
	Stage 3	Correct / Corrected / NA												
	Stage 4	Correct / Corrected / NA												
HEATING SYSTEM														
GAS						ELECTRIC								
Stage	Inlet Pressure	Stage	Manifold Pressure		Relief Tray F / C	Supply Tray F / C	Temp Rise Full Heat F / C	Electric Heat Stages	AMPS L1 - L2	AMPS L2 - L3	AMPS L1 - L3	Relief Tray F / C	Supply Tray F / C	Temp Rise Full Heat F / C
			Low	High										
1		1						1						
2		2						2						
OUTDOOR AIR														
Outdoor Air Type			Economizer / MOAD / Manual / NA					Power Exhaust Installed			YES / NO			
Econ Operation Mode			TMP / Enthalpy / NA					Power Exhaust Type			Prop Type			
OPERATIONAL RUN TEST														
Run test cooling system			YES / NO					Run test free cooling			YES / NO			
Run test heating system			YES / NO					Run test power exhaust			YES / NO			
NOTES & DEFICIENCIES														

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3-Phase AMP Imbalance Sheet

3 PHASE AMPERAGE IMBALANCE SHEET

L1 _____

L2 _____

L3 _____

TOTAL _____

Divide Total above by 3 = _____ (Average Amperage)

Deviation of average amperage from actual amperage read for each leg.

Average Amperage	_____	minus	L1 actual	=	_____	Amp deviation
Average Amperage	_____	minus	L2 actual	=	_____	Amp deviation
Average Amperage	_____	minus	L3 actual	=	_____	Amp deviation

Take the Maximum Amp deviation (highest one) and plug it into the following formula

Maximum Amp Deviation divided by Average amperage times 100.

$$\frac{\text{_____}}{\text{_____}} \times 100 = \text{_____} \% \text{ Imbalance}$$

10% Amperage Imbalance can be damaging to three phase equipment

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3 Phase Voltage Imbalance Sheet

3 PHASE VOLTAGE IMBALANCE SHEET

L1 - L2 _____

L2 - L3 _____

L1 - L3 _____

TOTAL _____

Divide Total above by 3 = _____ (Average Voltage)

Deviation of average voltage from actual voltage read for each leg.

Average Voltage	_____	minus	L1 - L2 actual	=	_____	Voltage deviation
Average Voltage	_____	minus	L2 - L3 actual	=	_____	Voltage deviation
Average Voltage	_____	minus	L1 - L3 actual	=	_____	Voltage deviation

Take the Maximum Voltage deviation (highest one) and plug it into the following formula

Maximum Voltage Deviation divided by Average Voltage times 100.

_____ ÷ _____ X 100 = _____ % Imbalance

2% Voltage Imbalance can be damaging to three phase equipment

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