Compressor Health Checklist

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The compressor is the heart of the air conditioning system and needs looking after to keep in good health. You should perform maintenance periodically to ensure that it runs optimally for as long as possible.

Here's a handy installation and start-up checklist of recommended guidelines for keeping your compressor healthy.

Check	Guideline	Rationale
	Make sure that the piping is installed per the manufacturer's recommendations. *Disclaimer: The ultimate responsibility for piping line size selection and design is that of the installing contractor or design project engineer. The Manufacturer (Data Aire) does not assume this responsibility. For installation guidelines above 200 feet, consult ASHRAE or similar references	If the piping selection or design is incorrect, it can result in excessive noise, high vibration frequency or even multiple compressor failures due to the lack of oil return.
	Install a check valve 6'-10' from the compressor on the discharge line.	Prevents unit from having a liquid migration on high side of system on cold days during the off cycle.
	Install traps on the vertical rise of the suction line and discharge line (hot gas line) for proper oil return, at every 15-20 feet in height.	In a gaseous state, the refrigerants are poor carriers of oil. Oil will begin to fall back down at vertical heights above 20 feet.
	Install an inverted hot gas line trap at the top of every riser and at the condenser in equal the height of the condenser coil.	To contain the charge and oil within the condenser coil during the "off" cycle.
	Slope horizontal lines downward in the direction of the refrigerant flow. *The recommended slope is 1/2" (12 mm) for every ten (10) feet (3 m) of line length.	To help with oil return and to keep the oil from draining back in the off cycle.
	Insulate the liquid line.	The heat gain across the liquid line may cause the refrigerant to flash in the liquid line upstream of the metering device.
	Do not install the condenser more than 10 feet below the evaporator.	Excessive liquid line pressure drop can cause poor evaporator performance. When the condenser is installed more than 10 feet below the compressor, you run into the possibility of creating flash gas at the top of the riser because of the increased pressure drop. This also puts more strain on the compressor since the compressor must push more weight of liquid up stream to the evaporator unit, so you might see a quicker wear and tear on the compressor.
	Keep the design pipe size for a pressure drop equivalent to a 2°F saturation temperature drop. Discharge line pressure drop should not exceed 6 PSI for R-407C and 9 PSI for R-410A. The liquid line pressure drop for R-407C should not exceed 5 PSI or 9 PSI for R-410A.	Excessive liquid line pressure drop can cause poor evaporator performance. A huge temperature drop can indicate the presence of flash gas.

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(continued)

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	Make sure there is sufficient airflow across the evaporator coil.	If the airflow is very minimal, the liquid refrigerant traveling in the evaporator will not boil off. This liquid refrigerant then travels to the compressor crankcase washing out the oil, leaving the compressor bearings without lubrication and potentially causing the compressor to fail.
	Triple evacuate and dehydrate the system before start-up.	Moisture prevents the proper operation of both the compressor and the refrigeration system. Non-condensable moisture reduces service life and increases condensation pressure, which causes abnormally high discharge temperatures that can degrade the lubricating properties of the oil. The risk of acid formation and possible copper plating is also increased by non-condensable moisture. These phenomena may cause both mechanical and electrical compressor failure.
	Charge the unit according to the manufacturer's recommendation.	If the unit is under charged or over charged, it can result in starving or flooding the evaporator. This can decrease the pressure and velocity and cause insufficient oil return to the compressor. Under these conditions it can cause the compressor to overheat and draw high current, resulting in overheating the oil which then can damage the insulation and contaminate the system.
	Wash condenser coil and change indoor air filters periodically. Efficiency and capacity of the system all depend on the efficient heat transfer through the evaporator and condenser coil.	When the condenser is clogged the pressures and temperatures can increase and break down the oil and cause restriction and contamination. When the air filters get clogged, it can block the airflow and heat transfer across the evaporator coil and prevent from liquid from boiling off.
	Verify crankcase heater operates correctly.	The crankcase heater's sole purpose is to help prevent refrigerant migration to the compressor and to help to boil refrigerant in the crankcase when the compressor is in the off cycle.
	Verify voltage is correct.	To prevent overheating the oil which can damage the insulation and contaminate the system.

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