



# PRODUCT bulletin

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## REQUIREMENT FOR LOW AMBIENT COMPRESSOR PROTECTION

Several of Carlyle's Product Information Manuals specify the system refrigerant charge above which crankcase heaters must be used. The purpose of this bulletin is to add the requirement of crankcase heater usage or continuous pump down control in any application where the compressor can be called upon to start up in ambients below 30°F. This requirement applies to all Carlyle compressors.

One obvious application where compressors can be called upon to start up and operate in ambients below 30°F is the Heat Pump System, and with the expected increased demand of the Heat Pump, operation at low ambients will become more common.

Compressors without crankcase heaters that can be called upon to start up in ambients below 30°F are subjected to a special reliability risk due to a phenomena called "Phase Separation." Refrigerant 22 or 502 oil mixtures separate into layers with varying degrees of concentration, to complete separation, with refrigerant at the bottom and oil at the top. Upon start up the compressor will attempt to lubricate with a fluid which may be almost pure refrigerant; and since R-22 is a very poor lubricant, severe bearing damage may result. The protection against "Phase Separation" is to prevent migration of the refrigerant into the oil.

For systems utilizing non-bleed expansion devices, the best method of limiting refrigerant migration into the oil is the use of continuous pump down control. If this is not practical, the next best method is the use of crankcase heaters.

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