Interoffice Letter

UNITED TECHNOLOGIES CARRIER

To: Branch Service Managers

District Service Managers

District Service Engineers

Mike DeChiaro

Regional Engineers

Regional Managers

Date: June 12, 1984

From: Mike DeChiaro

Office: CBS - CRANFORD

Subject: 19C, CB MOTOR VIBRATIONS
F.E.R. 84-6

We have been hearing about an increasing number of 19C, CB vibration problems being caused by refrigerant carryover into the motor. This problem is not new and this F.E.R. is an attempt to combine the remedies used in the past which have been used in limiting this problem.

It should be stressed that this is not a widespread problem and the fix should only be used when the following symptoms develop.

1. The vibration severity builds substantially after approximately 15 minutes time.
2. The machine vibrates the most at full load, part load vibrations are much lower.
3. When the load is reduced the associated vibrations are also reduced.

The theory behind this problem is explained very well by Robert Romano's letter dated 9/29/78. He states that, "heavy economizer carryover is directly related to an increase in vibration. As the machine loads and the rotor heats up, thermal expansion of the rotor can result in slight movement of the rotor bars which would result in increased vibration. The heavy carryover results in motor overcooling which can cause temperature changes which can affect vibration."

Therefore, in order to reduce the vibrations, liquid carryover must be minimized. This can be done using different methods depending upon the refrigerant used with the machine.

R-11 - The low side float can be elevated by placing 1/8" washers underneath the float assembly. This will lower the liquid level and lessen the associated carryover. The one constraint used with this fix is that the machine should run with a 30% load or greater, otherwise the liquid seal may be lost. (See attachments).

R-114 - Machines using this refrigerant utilize an economizer damper which limits the amount of flash gas entering the second stage wheel. Attached is a fix which allows the damper to further throttle the gas entering the motor. Tubing will be attached to the existing line between the cooler and bellows. (See attachments). To calibrate the damper refer to F.E.R. 71-1.

One note when using this fix is that you will begin to see higher oil temperatures. When temperatures begin to approach the 175° range you should allow for more motor cooling. Adjustments will be necessary to reduce the carryover and at the same time maintain desired bearing temperatures.

If there are any further questions or comments please call.

Regards,

Mike DeChiaro

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MD/lg