Manitowoc®

SERVICE COMMUNICATOR

Subject: Expansion Valve Sensing Bulb Insulation

To function properly a thermostatic expansion valve must have the correct insulation around the sensing bulb. Incorrect insulation causes the expansion valve to overfeed (flood) during the freeze cycle. Factors such as high ambient around a self-contained air-cooled ice machine will affect operation to a greater extent. A combination of high ambient and heat discharged from the condenser will cause erratic operation when the sensing bulb insulation does not contain enough dead air space.
Flooding expansion valves due to incorrect insulation will usually affect the harvest cycle before a thin at evaporator inlet (flooding) ice fill pattern is detected.

EXAMPLE SYMPTOM - An ice machine stops on safety limit #2 at night.
The service technician resets the ice machine in the morning, and the ice machine appears to function normally.
The service technician starts looking for causes that would occur at night.
Actual cause is an incorrectly insulated expansion valve bulb. The expansion valve is over feeding each freeze cycle, which lengthens the harvest cycle. (The heat necessary for the harvest cycle is generated in the freeze cycle and stored in the compressor windings). The compressor will lose temperature each freeze cycle and the harvest cycle time will continue to increase. The ice machine will run until the compressor cools to a temperature that can no longer maintain a harvest cycle with-in the 3.5-minute time limit.
The ice machine is actually shutting off after extended run time, and night is not a factor (resetting the ice machine in the evening instead of the morning, would cause the ice machine to shut off during the day).

Acceptable Types Of Sensing Bulb Insulation:

Only Manitowoc insulated boots are approved for the Sensing Bulb.
Expansion Valve Sensing Bulb Insulation (P/N 40-0720-3)

Unacceptable Types Of Sensing Bulb Insulation:

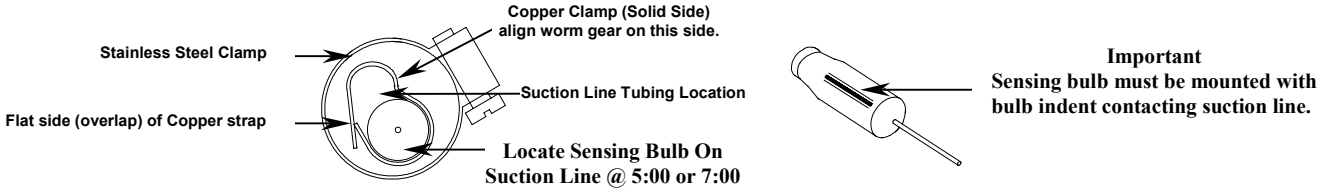
Foam Tape – Wrapping foam tape around a sensing bulb will leave gaps in the insulation.
Cork Tape – Cork tape does not contain any dead air space and has insufficient insulation value.

Before Replacing A TXV Always Verify The Following:

- TXV sensing bulb insulation is secure, airtight and sealed on all sides.
- TXV sensing bulb is securely mounted and correctly positioned.

  ALCO Valves - position on suction line @ 10 or 2 o'clock.
  (Shine a flashlight between the suction line and the bulb. If light is visible, secure the bulb and recheck operation).

  DANFOSS Valves - position on suction line @ 5 or 7 o'clock
  (Grasp bulb with fingers and attempt to rotate. If loose secure the bulb and recheck operation).
  - Verify sensing bulb indent is in contact with the suction line
  - The copper bulb-mounting strap is installed and secured with a stainless steel hose clamp.
  - The stainless steel clamp worm gear is aligned with the flat side of copper strap.
  - The stainless steel clamp was not over tighten and deformed the suction tubing. (Only tighten until the bulb will not twist on the suction line).



Always insulate the expansion valve body to prevent condensation.
Expansion Valve Body Insulation
Danfoss P/N 40-0036-3
Alco P/N 40-0721-3

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