

# TECH TIP # 36



One of a series of dealer contractor technical advisories prepared by HARDI wholesalers as a customer service.

## **POTENTIAL EXPLOSION --- THAT'S A GOOD REASON NOT TO OVERCHARGE A SYSTEM**

On rare occasion's compressor "tin cans" have exploded, resulting in separation of the compressor shell at the weld and causing additional damage to surrounding unitary components. Overcharging coupled with a combination of other conditions is believed responsible. What follows is from Tecumseh's sales bulletin entitled "Overcharging Refrigeration and Air Conditioning Systems can be Dangerous."

"If a system refrigerant overcharge is sufficient to immerse the major parts of the motor and compressor in liquid refrigerant, a situation has been created which, when followed by unusual circumstances, can lead to compressor housing seam separation or rupture."

"The sequence of circumstances which can lead to compressor housing seam separation or rupture may occur in the following manner:"

- "The system overcharge immerses the compressor motor, pistons, connecting rods, and cylinders in liquid refrigerant --- thereby effectively forming a hydraulic block preventing the compressor from starting. This condition is known as locked rotor."
- "Electric current continues to flow through the compressor motor windings which become, in effect, electric resistance heaters. The heat produced begins to vaporize the excessive refrigerant liquid overcharge, causing a rapid increase in system pressure."
- "If the system compressor protective devices fail for any reasons prior to or during this locked rotor heating cycle or cycles, liquid refrigerant may be vaporized sufficiently fast enough to raise the pressure within the system to extremes far in excess of the housing or weld seam design limits."
- "In some instances where the amount of refrigerant overcharge is critical in proportion to the system internal volume, the pressure reached can cause a compressor housing seam separation or rupture which can be hazardous."

To avoid this unusual but still potential hazard, technicians must: 1) follow industry recommended charging techniques; and 2) adhere strictly to the amount of refrigerant recommended by the manufacturer of the equipment.

Published by the Independent Study Institute, a division of the Heating, Airconditioning & Refrigeration Distributors International. The Institute offers accredited, industry training courses in HVAC/R technology. Direct inquiries to HARDI 3455 Mill Run Drive, Ste. 820, Columbus, OH 43026. Phone 888/253-2128 (toll free) · 614/345-4328 · Fax 614/345-9161

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