

Advanced Scroll Temperature Protection



Advanced Scroll Temperature Protection

Goals

Discharge temperature (overheat) protection that is:

Internal

- In direct contact with key components
- Unable to be bypassed

Automatic

- No wires, relays, or circuitry to deal with

Reliable

- Protects against all typical causes of scroll overheating

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Causes of Scroll Overheating

Typical Causes of Scroll Overheating:

System Malfunctions

- Fan failures, loss of charge, blocked expansion devices

Low Suction Pressures (No gas flow; Heat not carried Away)

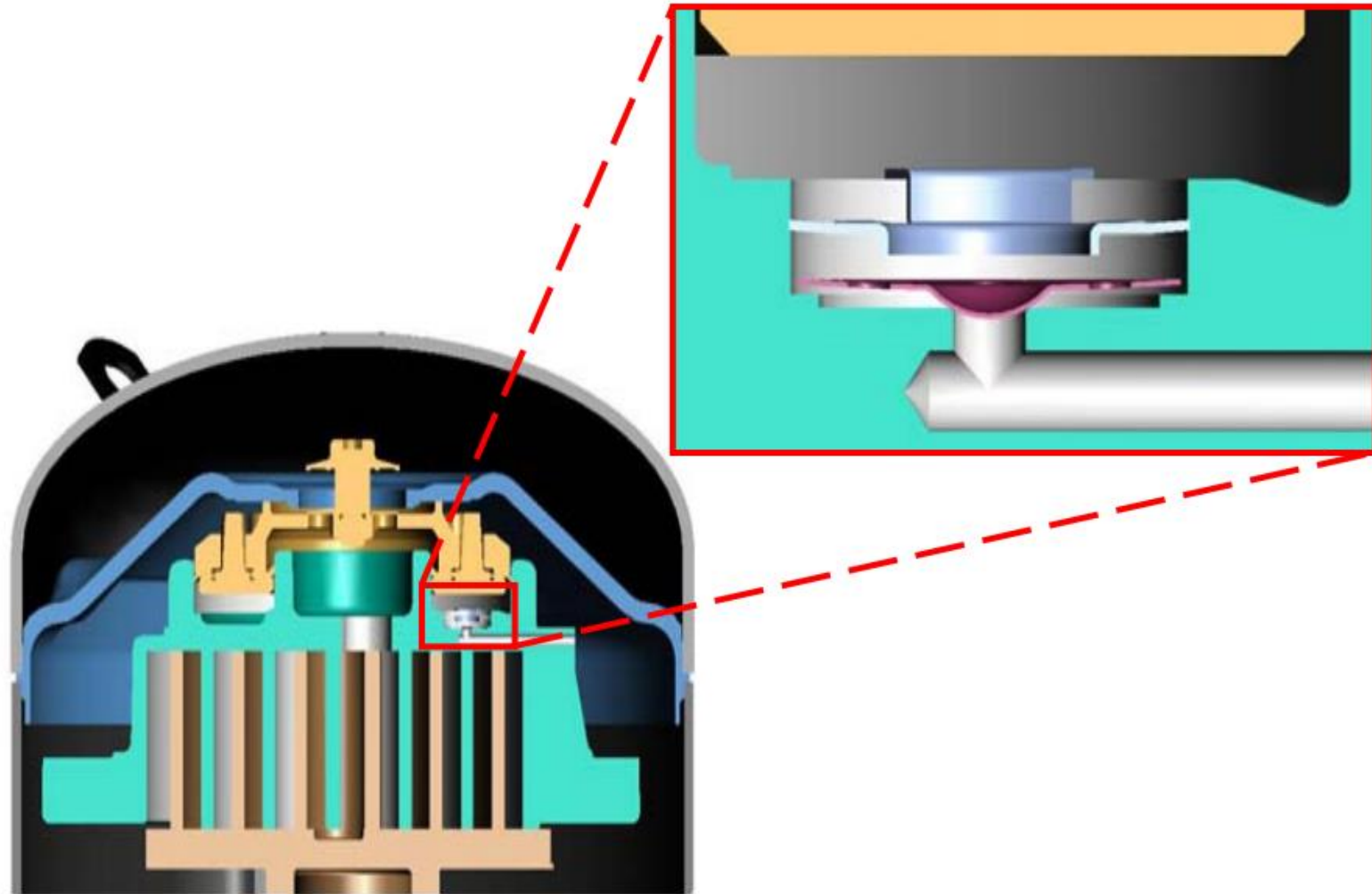
- Improper system charging (see page 8)
- Out of envelope operation
- Bypassed low pressure controls

Missing, bypassed, or poorly placed external protection devices

- External devices inaccurate, internal temps. Often much higher
- Temporarily bypassing devices leads to damage
 - Initial damage results in failures later

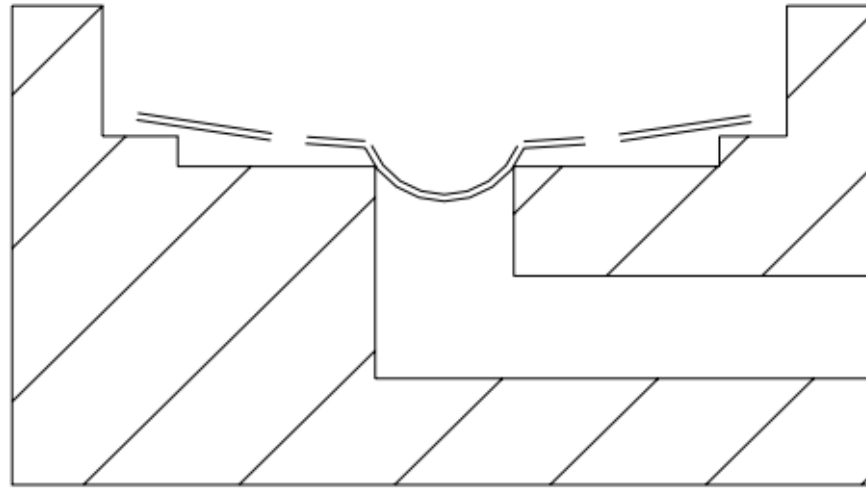
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Internal View

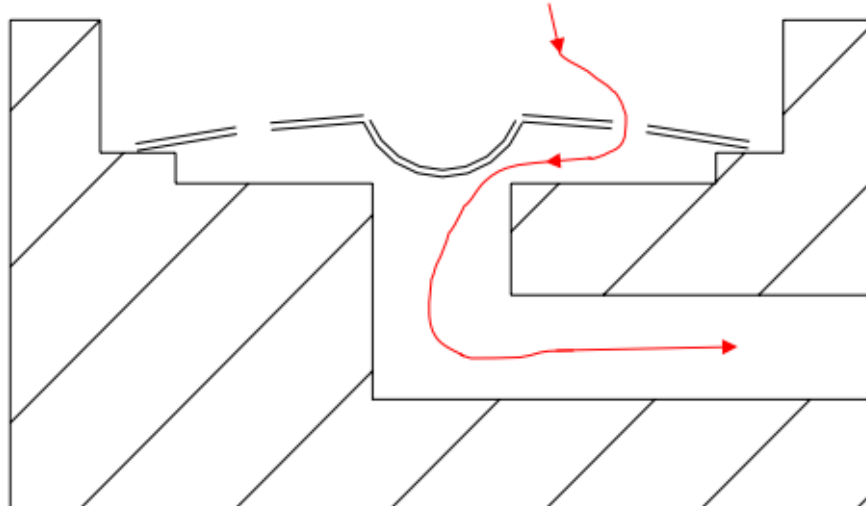


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Bi-metal Disk Positions



Closed



Open

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1. Bi-metal disk opens when critical internal temperature is reached [around 300°F/150°C]
2. Compressor “unloads” but continues to run
 - “Balanced pressure” operation
 - Motor heat builds inside compressor
 - No refrigerant flow to carry motor heat away
3. Motor protector opens
 - Compressor turns off, cools
4. Motor protector resets, compressor restarts
 - Bi-metal disk resets before motor protector
 - Cycle will continue until cause of overheat is fixed

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What to do?

If a protected compressor is identified:

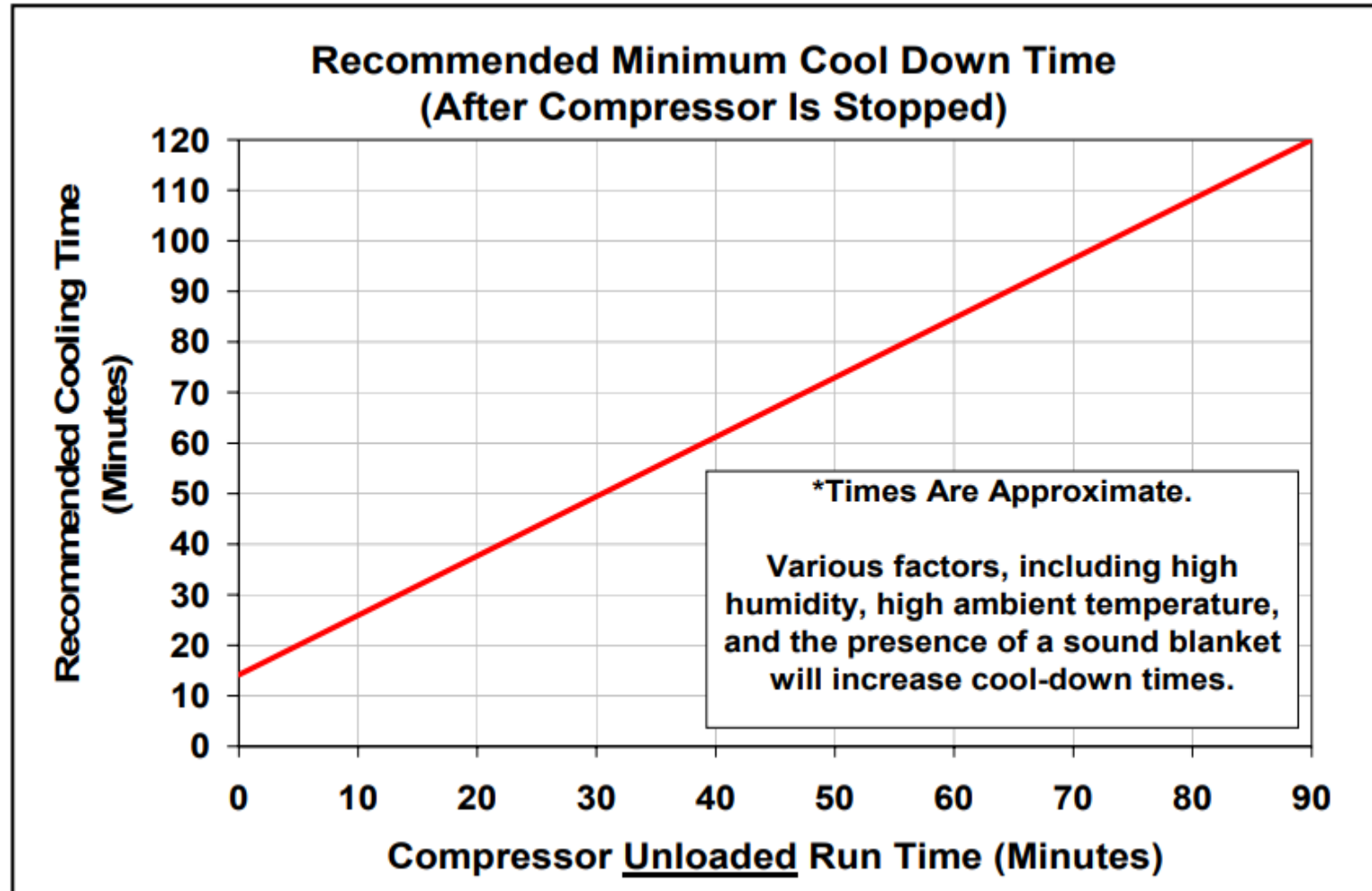
1. Stop the compressor
2. Allow to cool thoroughly
3. Restart pump and check for normal operation

**DO NOT ASSUME A COMPRESSOR RUNNING
UNLOADED (BALANCED PRESSURES) IS A FAILURE.**

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Recommended Cool-Down Time

The longer the compressor runs unloaded, the longer it must cool before the bi-metal disk resets



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Possible Field Scenarios

Likely situations where protection may activate:

1. Initial system charging (or recharging after servicing)

- Compressor is run with too little system charge
 - Very common on split systems
 - Will result in very low suction pressures (< 25 PSIG)
 - Do not disable low pressures cutouts while charging

2. Field servicing (system problem causes overheating)

- Technician will observe “balanced pressures”
- Risk of misdiagnosis as failed compressor
- Must stop pump, cool thoroughly, reset

Advanced Scroll Temperature Protection Availability

- Available on the following commercial scroll models:
 - ZR84 – ZR190KC/E
 - ZP90 – ZP182KCE
- Compressors will be labeled to identify new feature
- Education video available on YouTube:

https://www.youtube.com/watch?v=_D1OIE1yWoY

Compressor Label:

