

Advanced Scroll Temperature Protection (ASTP)



EMERSON™

COPELAND SCROLL™

Advanced Scroll Temperature Protection (ASTP)

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 manage

RELIABLE

- Protects against all typical causes of scroll overheating

Advanced Scroll Temperature Protection (ASTP)

Cause of Scroll Overheating

- Typical causes of scroll overheating:

System malfunctions

- Fan failures, loss of charge, blocked expansion devices

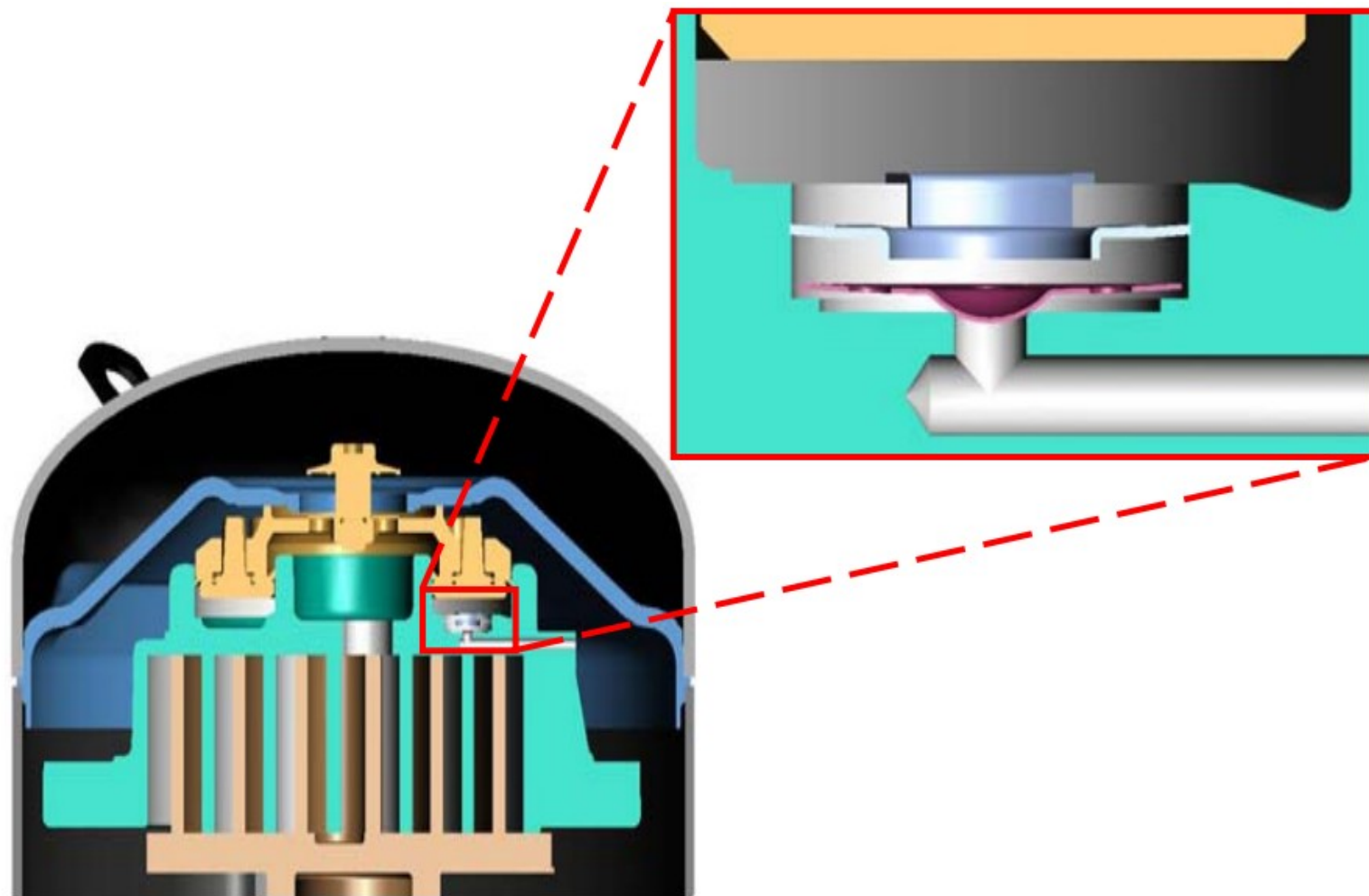
Low suction pressures (no gas flow; heat not carried away)

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

Missing, bypassed, or poorly placed external protection devices

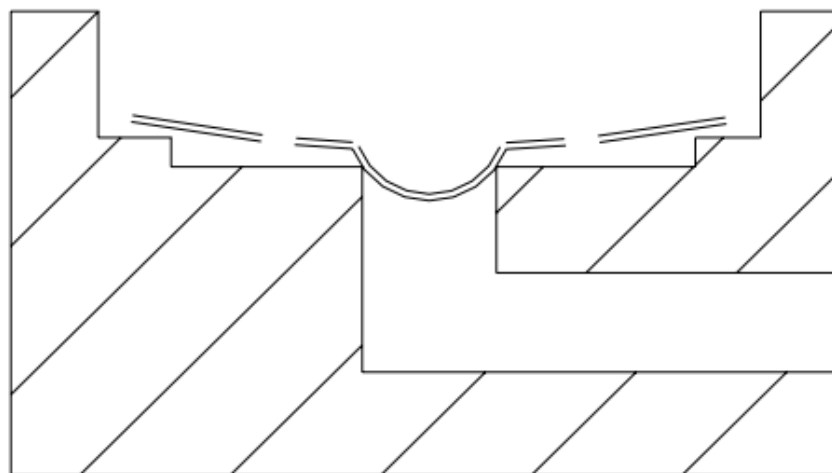
- External devices inaccurate, internal temps; often much higher
- Temporarily bypassing devices leads to damage (initial damage results in failures later)

Advanced Scroll Temperature Protection (ASTP) *Internal View*

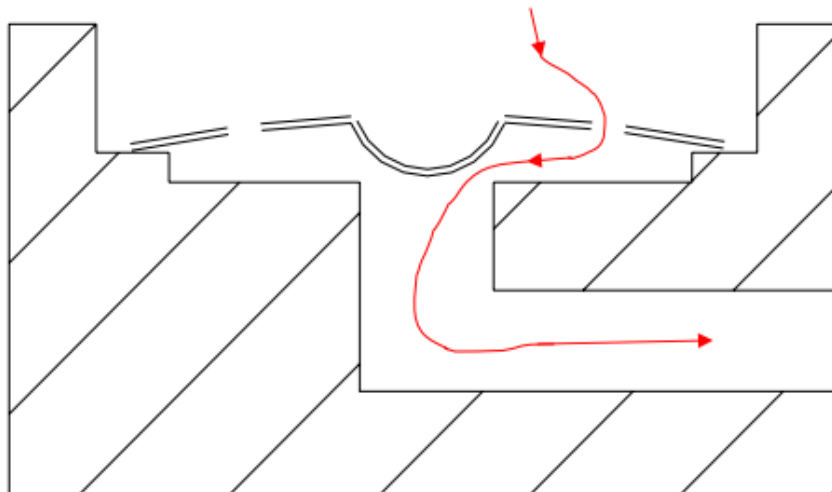


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Bi-metal Disk Positions



Closed



Open

Advanced Scroll Temperature Protection (ASTP) Operation

Bi-metal disk opens when critical internal temperature is reached (around 300°F/150°C)

Compressor “unloads” but continues to run

“Balanced pressure” operation

Motor heat builds inside compressor

No refrigerant flow to carry motor heat away

Motor protector opens

Compressor turns off, cools

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

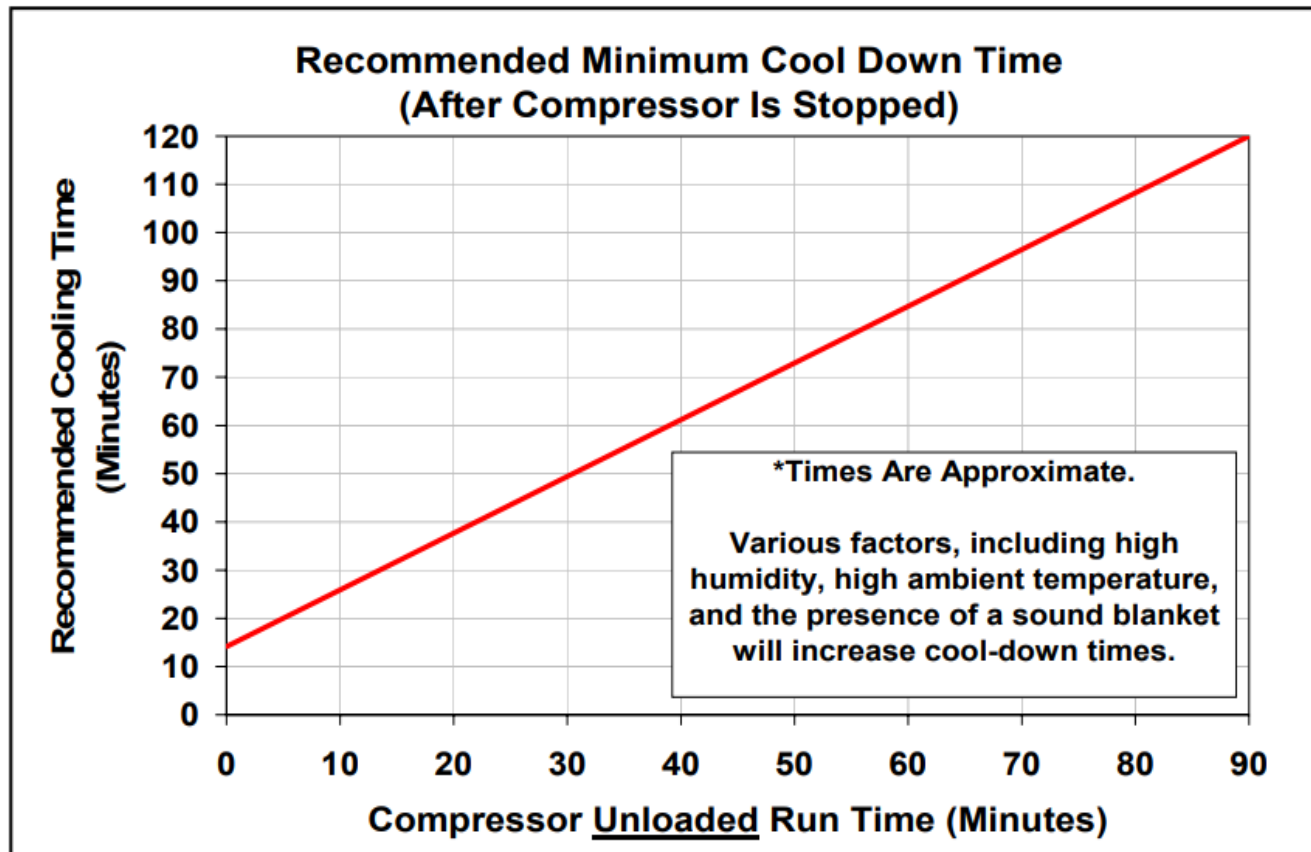
RESTART PUMP AND CHECK FOR NORMAL OPERATION

**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 pressure 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 and reset

Advanced Scroll Temperature Protection (ASTP) *Availability*

- ASTP is in various commercial scroll models that will be identified with a label on the compressor

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Advanced Scroll Temperature Protection

Compressor may stop pumping with motor running.
Turn off and wait until cool. May need more than one hour to reset.

*El compresor puede dejar de comprimir, aun con el motor funcionando.
Apáguelo y espere a que se enfríe. Puede requerir más de una hora para restablecerse.*

052-2246-00

Climate.Emerson.com/ASTP