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# **III. Basic Theory of Operation**

- 1 Basic Operation
- 2 Freeze Protection
- 3 Overheat Protection a.k.a Steamback
- 4 Air Removal

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#### 3. Overheat Protection

Schuco High Limit Temperature Protection

- 1. Under stagnation fluid temperature rises
  - Stagnation temp = 381°F
- 2. Water boils before heat transfer fluid becomes corrosive and flashes steam
  - High limit temp ~ 250°F (1 bar ~ 15 psi)
- 3. Water vapor forces glycol from collectors down toward expansion tank
- 4. Only water vapor remains in collector
- 5. When collectors cool down water vapor returns to liquid state

Note: This is true for Schuco Tyfocor solar fluid only. Tyfocor fluid is mandatory inside Schuco systems.

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#### 3. Overheat Protection

Schuco High Limit Temperature Protection

### Requirements

- •Serpentine Collectors
- •Knowledge of Antifreeze Chemical Make-Up
- •Larger Expansion Tank

Note: This is pre-configured in all Schuco kits

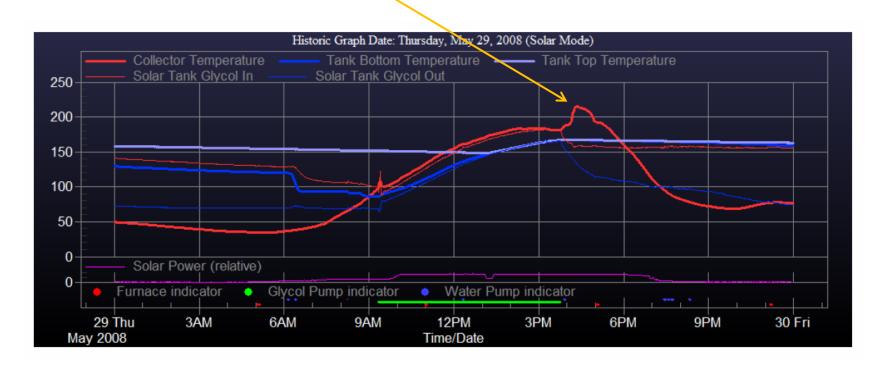




#### 3. Overheat Protection

## Schuco High Limit Temperature Protection

Steamback Illustrated



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#### 3. Overheat Protection

### Schuco High Limit Temperature Protection

#### **Benefits**

- 1. Higher maximum operating temperature
- 2. No new oxygen introduced to oxidize inhibiters
- 3. Corrosion significantly reduced
- 4. Typical interval for fluid change: 12-15 years (should check annually)
- 5. No call backs or problems when customers are away or power goes out