

# Role of Current Relays in Compressor Ignition

Category: Refrigeration

written by [www.mbsm.pro](http://www.mbsm.pro) | 29 January 2026

## CHARACTERISTIC TABLES OF VARIOUS START AND PROTECTION STEMS

### CURRENT RELAYS



Model	Compressor horse (HP)	Terminal	Apply current(I)	Applied current (A)
117U 2010	1/3	5	4.5	4.5
117U 2100	1/4	6	3	3.6
117U 2104	1/5	4	6.6	6.5
117U 2050	1/2	1	14	1.4

### THERMAL OVERLOAD PROTECTORS



Compressor power (HP)	1/2	1/3	1/4	1/5	1/6	1/2
Max Connect current (A)	12.5	9	9.8	7.5	7	5
Max Connect current (A)	19	16	14	3.5	3.5	3.5
Max release (A)	5	4.75	4	3.5	3	3.3



### THERMAL OVERLOAD PROTECTORS

Compressor power (HP)	1/2	1/3	1/4	1/5	1/6	1/2
Power Model 151	12.5	9	8	7.5	7.5	7
Max connect current (A)	6	4.05	3.65	4	3.5	3.5
Release current (A)	5	4.75	4	3.5	3	3

Compressor power (HP)	Compressor power (HP)	Max connect current (A)	Minimum release
	8583	6.83	1.93
1/2	BEA15	2.8	2.8
1/3	BEA10	3.8	3.6
1/4	BGA11	1.25	3.25
1/5	BGA11	1.75	3.55



### THERMAL OVERLOAD PROTECTOR CAPS

Compressor power (HP)	Overload current (A)	Movement temperature	Applied current (1133+10%)	Reply return nument temperatures
5	35	125±10°C	JET+TEW	60±10°C
1/2	30		JET+TEW	
1/4	25		JET+TEW	



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## Mbsmpro.com, Compressor Spare Parts, Relays, Thermal Overload Protectors, 1/2 hp to 1/6 hp, Start and Protection Stems, Characteristic Tables

Selecting the right electrical components is the heartbeat of refrigeration maintenance. When a compressor fails to start or constantly trips, the culprit is often a mismatched Current Relay or a fatigued Thermal Overload Protector.

Ensuring these parts align perfectly with the compressor's horsepower (HP) and amperage rating is not just about repair—it is about system longevity.

## The Role of Current Relays in Compressor Ignition

Current relays are electromagnetic switches that momentarily engage the start winding of a compressor. Once the motor reaches approximately 75% of its rated speed, the relay disconnects the start winding, allowing the motor to run on its main winding.

### Technical Specifications for Standard Current Relays

Model	Compressor Power (HP)	Terminal Pin	Applied Current (A)
117U 2010	1/3 HP	5	4.5 A
117U 2100	1/4 HP	6	3.6 A
117U 2104	1/5 HP	4	6.5 A
117U 2050	1/2 HP	1	1.4 A

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## Thermal Overload Protectors: The Safety Net

Thermal Overload Protectors (TOP) act as a bimetallic fuse. They monitor both the heat generated by the compressor and the current flowing through it. If the compressor stalls (locked rotor) or overheats due to a refrigerant leak, the TOP breaks the circuit to prevent the motor windings from melting.

### Performance Benchmarks for Overload Protectors

Compressor Power (HP)	Max Connect Current (A)	Release Current (A)
1/2 HP	12.5 A	5.0 A
1/3 HP	9.0 A	4.75 A
1/4 HP	8.0 A	4.0 A
1/5 HP	7.5 A	3.5 A
1/6 HP	7.0 A	3.0 A

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## Comparison: Mechanical Relays vs. PTC Starters

While the technical data above focuses on mechanical current relays, modern systems often use PTC (Positive Temperature Coefficient) starters.

- **Mechanical Relays (117U Series):** Highly reliable for heavy-duty applications. They provide a “snap” action that is better for high-torque starts.
- **PTC Starters:** Use a solid-state disk that increases resistance as it heats up. They are quieter but require a cool-down period before the compressor can restart.

# Engineering Advice for Field Technicians

1. **Never Oversize the Protector:** If you install a 1/2 HP protector on a 1/6 HP compressor, the protector will not trip during a fault, leading to a burnt-out compressor.
2. **Check the Return Temperature:** Thermal caps must operate within a return temperature range of  $60 \pm 10^{\circ}\text{C}$ . Anything higher indicates a system restriction or lack of airflow over the condenser.
3. **Terminal Integrity:** Ensure terminals are tight. A loose connection creates resistance, which generates heat and causes “nuisance tripping” of the overload.

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**Focus Keyword:** Compressor Current Relay and Thermal Overload Protector  
Characteristic Tables for 1/2 to 1/6 HP

**SEO Title:** Mbsmpro.com | Compressor Start Relays & Thermal Overload Tables

**Meta Description:** Comprehensive guide to compressor start and protection stems. Technical tables for 117U relays and thermal overload protectors from 1/2 HP to 1/6 HP. Essential data for HVAC engineers.

**Slug:** compressor-relay-thermal-overload-characteristic-tables

**Tags:** Mbsmgroup, Mbsm.pro, mbsmpro.com, mbsm, Compressor Parts, Start Relay, Thermal Overload, Refrigeration Repair, 117U Relay, HVAC Engineering, Compressor Protection.

**Excerpt:** Selecting the right electrical components is the heartbeat of refrigeration maintenance. When a compressor fails to start or constantly trips, the culprit is often a mismatched Current Relay or a fatigued Thermal Overload Protector. Ensuring these parts align perfectly with the compressor’s horsepower (HP) and amperage rating is vital for long-term system reliability.

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