IA: THE CURRENT THE DEVICE NEEDS TO OPERATE, AND THE TIME/CURRENT GRAPHS

DOES MORE FAULT CURRENT MEAN A FASTER TRIP?

IA: THE CURRENT THE DEVICE NEEDS TO OPERATE

This is the one people get backwards. For a **Type B** circuit breaker, the current required to operate it in the required time is **five times its rating**:

$$I_a = 5 \times I_n \quad \text{(Type B)}$$

READING IT OFF THE TABLE

```
6 A Type B   →  5 × 6  = 30 A
20 A Type B  →  5 × 20 = 100 A
32 A Type B  →  5 × 32 = 160 A
```

✋ **It is a threshold, not a race.** It's tempting to think more fault current means a faster trip. In fact the device needs a **minimum** of 160 A to operate in time. 198 A passes because it clears the threshold, not because it is bigger.

I_a and breaking capacity are different numbers entirely.

A B6 needs 30 A to trip in time, but can carry a fault of several thousand amps before it is destroyed. One is the floor, the other is the ceiling.

THE TIME/CURRENT GRAPHS

The table above is not something to memorise — it is printed. Known as "the graphs of doom": **BS 7671** · Appendix 3, time/current characteristics for Type B circuit-breakers to BS EN 60898 and RCBOs to BS EN 61009-1.

Beside the curves is a table giving the current required for **0.1 s to 5 s**:

RATING	CURRENT	RATING	CURRENT
6 A	30 A	40 A	200 A
10 A	50 A	50 A	250 A
16 A	80 A	63 A	315 A
20 A	100 A	80 A	400 A
25 A	125 A	100 A	500 A
32 A	160 A	125 A	625 A

Worth tabbing.

The Type B page in Appendix 3 is one you will want to find instantly in the exam.

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