CIRCUIT BREAKER TYPES AND FUSING FACTOR

WHAT CURRENT TRIPS A B6 IN 0.4 SECONDS?

TYPE	TRIPS INSTANTLY AT (WITHIN 0.4 S)	USED FOR
B	up to 5 × In	Domestic and small commercial
C	up to 10 × In	Commercial and light industrial (motors, fluorescent lighting)
D	up to 20 × In	High inrush loads: X-ray machines, welders, transformers

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WORTH TABBING: YOU USE IT A LOT

In is the device's **rated current**, e.g. 6 A or 32 A.

WORKED EXAMPLES

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B6 lighting circuit (domestic lighting):
  current to trip within 0.4 s = 5 × In = 5 × 6 = 30 A

B32 ring final circuit (domestic sockets):
  current to trip within 0.4 s = 5 × 32 = 160 A

A non-delayed RCD must trip within 300 ms (0.3 s) at its rated residual curre
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A CB has two ways of tripping:

- A **magnetic coil** handles big fault currents fast.
- A **bimetallic strip** heats up and bends under overload, so it trips more slowly.

FUSING FACTOR

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Circuit breakers have a fusing factor of 1.45
→ I2, the current that ensures effective operation
  of the device on overload, is 1.45 × In

B6:  6 × 1.45 = 8.7 A
So between 8.7 A and 30 A the B6 trips on a time curve;
at 30 A or more (5 × In) it trips within 0.4 s
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For lighting, work out the circuit current from the lamps' power, e.g. 10 × 20 W = 200 W, then I = P ÷ V.

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