

Electrical Repairs

HM101 January 2008

Peter Cooper

PBE, MIT Dept of Facilities

Electrical Work

- YOU SHOULD NOT
- Install new electrical work
- Its against the law. Must be licensed electrician.
- Too much at stake if the installation is unsafe and a fire results
- YOU SHOULD BE ABLE TO
- Diagnose a problem
- Repair end-of-wire devices
- Know when to call for expert help

Receptacle replacement

- Cover plate missing: message to inspector
- Broken plastic
- Contacts loose/unspringy: hot spot results
- Kill the power before starting work
- Wires: hot (black), neutral (white), ground (green) get it right
- Restore power
- H-N-G test on this receptacle and any downstream receptacles
- If wiring cooked and brittle, call electrician to install new wiring.

Lighting

- Don't upsized bulbs: heat will fry the fixture
- Compact Fluorescents: 25% energy, 7-10X life, less heat
- No CFLs on dimmers; remove dimmers or use special CFLs \$\$
- Fluorescent fixtures: bulbs, ballasts (many types not available at Home Depot, electricians have access to professional suppliers)
- Halogen torchieries run very hot. Install CFL retrofit or replace lamp.

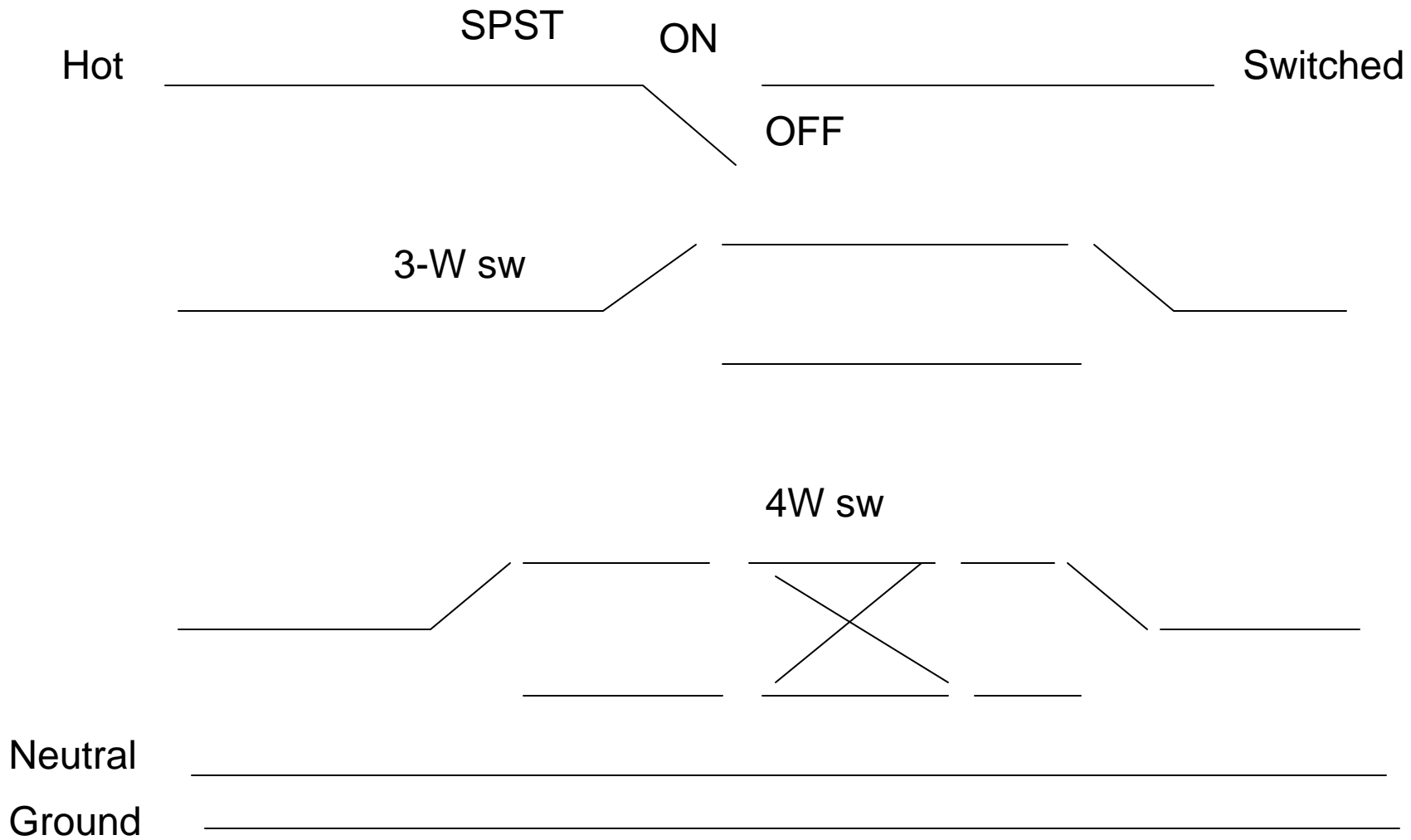
Bad breaker

- To reset, switch off then on.
- If it won't latch; bad breaker
- If closing into a shorted circuit: it latches, 1 sec. delay, then it trips again. Breaker OK. Call electrician to find short

Blown fuse

- Glass fuse: can see burned element
- Cartridge fuse: need to test. On mains or major circuits; call electrician
- Don't upsize replacement fuse, may cook wiring
- 15 amp #14 wire
- 20 amp #12 wire
- 30 amp #10 wire
- Single phasing can burn out 240v motors: can be your main fuses or NSTAR's (one fuse blows but not the other). Can happen when NSTAR restores power.

Bad switch- 3 types



Switch replacement

- Kill the power
- Mark wiring (especially for 3-way and 4-way switches)
- Continuity test bad switch to confirm it was bad
- Terminate wiring, reinstall in box, re-energize
- If the wiring is cooked and brittle it is unsafe. Call an electrician to install new wiring.

Trouble shooting

- What else is out? How widespread?
- One room: light, switch, receptacle
- Whole floor(s): check breaker tripped
- Half the house but breakers not tripped: SINGLE PHASING, one fuse blown in house or in NSTAR equipment. Open double pole breakers to prevent single phasing damage to motors
- Whole house plus neighbor, street lights: NSTAR outage.
- Have NSTAR and electricians trouble number at the ready (stick it on the main panel)
- TDC call MIT, not NSTAR (fed thru Baker)