Code Check® Electrical 8th Edition

Based on the 2017 NEC® – Including selected changes to the 2014 & 2017 NEC

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Code Check Electrical 8th Edition is a field guide to common code issues in residential electrical installations. It is based on the ***2017 National Electrical Code (NEC)***®. Significant changes in the 2017 NEC and the 2014 NEC are highlighted throughout the text and summarized on **p.31**, so this book is current for areas using either the 2014 or 2017 NEC**.** Before beginning any electrical project, check with your local building department to determine the code edition used in your area. In addition to a model code, energy codes and utility rules may also apply to electrical installations. The smoke & carbon monoxide alarm rules here are from the 2015 edition of the International Residential Code, published by the International Code Council.

KEY TO USING CODE CHECK ELECTRICAL

Each line that begins with a checkbox is a rule in the 2017 NEC, and the specific code section is at the right end of the line. The following example is from **p.3**:

☐ Max 6 disconnects to shut off power at service _____ 230.71

This line summarizes the code rule found in section 230.71 requiring no more than 6 disconnects to shut off all power at the service.

A line might have more than one code rule, and the code sections are separated by an ampersand - the "&" symbol, as in this example from **p.10**:

☐ Min #6 Cu to bond IBT to service or GEC _____ 250.94A4&5

This line tells us that the intersystem bonding terminal must be bonded to the service or the grounding electrode conductor, and the rules for this are found in 250.94(A)(4) and in 250.94(A)(5). This line is also an example of the way that Code Check uses abbreviations (see next column) to condense information. Also note that the actual code citation uses parantheses around letters and numbers after the initial code section, and we omit those parantheses to save space.

References to figures and tables in this book are shown by bold colored letters and numbers, as in this example from **p.5**:

☐ Cover from top of cable or conduit to finish grade per **T1, F4** _____ 300.5A

This line tells us that the amount of cover required over underground conduits and cables is found in Table 1 and is illustrated in Figure 4.

Exceptions are noted by text lines that end in EXC, and the following line then shows the exception to the rule just cited, as in this example from **p.4:**

☐ Each building or structure req's GES **F3, F6** EXC _____ 250.32A
• Building or structure w/ only 1 branch circuit & w/ EGC _____ 250.32AX

These lines tell us that each building or structure requires a grounding electrode system, with the exception of buildings supplied by a single branch circuit that contains an equipment grounding conductor.

Code changes are highlighted by placing the code citation in a different color. The superscript number at the end of the citation refers to the code change number on **p.31**, as in this example from **p.15**, under the subheading of "Locations requiring GFCI protection"

☐ Outlets supplying dishwashers _____ 210.8D[32]

This line tells us that all dishwashers in residential construction now require GFCI protection. The reference number for code change 32 on page 31 tells us this change took place in the 2014 NEC.

The 2017 NEC had a follow-up change to this section, also noted on **p.15**:

☐ DW cords 3 ft.– 6½ ft. measured from back of appliance _____ 422.16B2(3)[52]
☐ DW receptacle in space adjacent to dishwasher _____ 422.16B2(6)[52]

These lines tell us that dishwasher receptacles can no longer be in the space directly behind the dishwasher, and the maximum allowable cord length has been increased since the cord must reach to the adjacent space. This is also an example of how sections of the NEC are interconnected. GFCI devices must be readily accessible (a rule that first came into the 2011 NEC) and a receptacle directly behind the dishwasher would be accesssible, but not readily accessible.

ABBREVIATIONS

A = amp(s), amperage, amps
AC = air conditioning
AC = alternating current
AC = armored cable, a.k.a. "BX"
AFCI = arc-fault circuit interrupter
AFF = above finished floor or grade
AHJ = Authority Having Jurisdiction
Al = aluminum
AMI = in accordance with manufacturer's instructions
AWG = American Wire Gauge, commonly stated as "number" (#8 = 8 AWG)
CO = carbon monoxide
COM = communication wire
cu. = cubic, as in cu. in.
Cu = copper
DC = direct current
EGC = equipment grounding conductor
EMT = electrical metallic tubing
ENT = electrical nonmetallic tubing, a.k.a. "Smurf tubing"
EV = electric vehicle
EVSE = electric vehicle supply equipment
EXC = exception(s)
FMC = flexible metal conduit
ft. = foot, feet
GEC = grounding electrode conductor
GES = grounding electrode system
GFCI = ground-fault circuit interrupter
GFPE = ground-fault protection of equipment
hp = horsepower
IMC = intermediate metal conduit
in. = inch(es)
IBT = Intersystem Bonding Terminal
IRC = International Residential Code
kcmil = 1,000 circular mil units (conductor size – formerly MCM)
L&L = listed & labeled, listing & labeling
LCDI = leakage-current detector-interrupter
LED = light-emitting diode
lb. = pound(s)
LFMC = liquidtight flexible metal conduit
LFNC = liquidtight flexible nonmetallic conduit
max = maximum
MC = metal-clad cable
MFR = manufacturer(s)
min = minimum
n/a = minimum
NEC = National Electrical Code
NEMA = National Electrical Manufacturers Association
NFPA = National Fire Protection Association
NM = nonmetallic-sheathed cable
OBC AFCI = Outlet Branch Circuit AFCI
O.C. = on center
OCPD = overcurrent protection device (breaker or fuse)
PV = photovoltaic
PVC = rigid polyvinyl chloride conduit
req = require, requiring, requirement
req'd = required
req's = requires
RMC = rigid metal conduit
RS = rapid shutdown (photovoltaics)
RTRC = reinforced thermosettting resin conduit
SCC = short circuit current
SCCR = short circuit current rating
SER = service entrance cable (round)
SEU = service entrance cable (flat)
SFD = single-family dwelling
sq. = square, as in sq. in.
temp = temperature
TR = tamper-resistant
UF = underground feeder cable
USB = universal serial bus
USE = underground service entrance cable
V = volt(s), such as a 120V circuit
VA = volt-ampere(s), units of apparent power
w/ = with
W = watt(s), units of true (useful) power
WR = weather-resistant

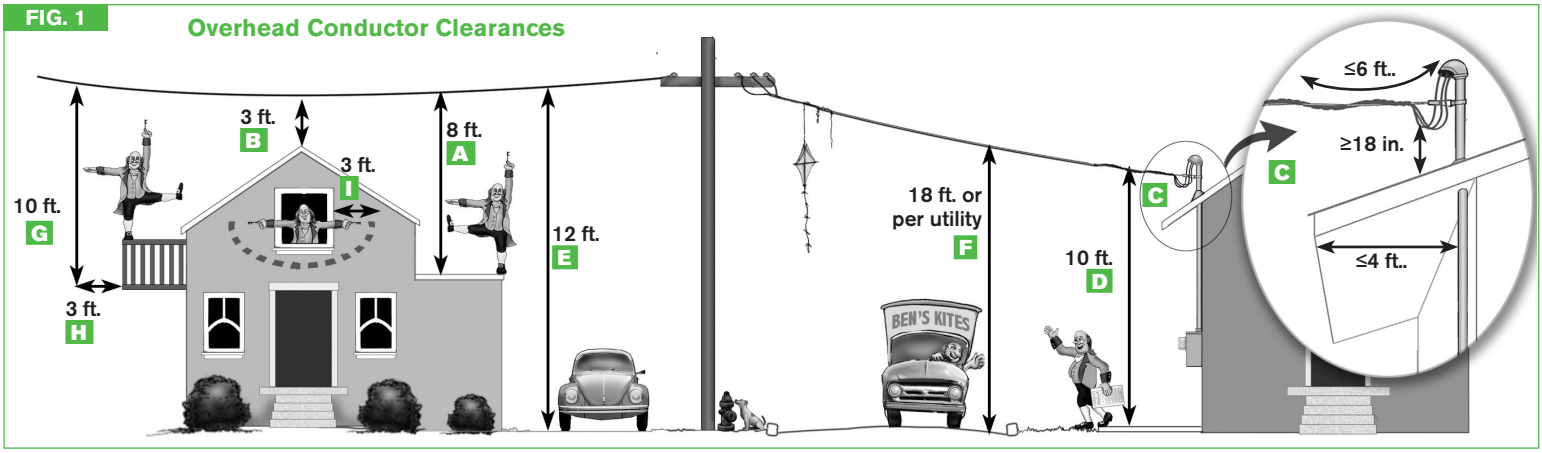
For further information, articles by the Code Check team and why Ben Franklin is featured in the book visit: ***www.codecheck.com***

After proving lighting and electricity are the same thing, Ben invented the lightning rod, which he believed was his most important invention.

Benjamin Franklin *was chosen as the main character in our Code Check illustrations for a number of reasons. The "First American's" insatiable curiosity, scientific genius, and civic-mindedness drove him to promote fire safety, safe exiting, public sanitation, improved heating methods to reduce air pollution, and of course, electricity. Franklin contributed to each of the four main disciplines of building inspection: Building, Plumbing, Mechanical, and Electrical.*

To find out more, visit: www.codecheck.com/cc/Ben.html

FIG. 1 **Overhead Conductor Clearances**



OVERHEAD SERVICE DROP CLEARANCES

Service drop conductors are protected by isolation; they typically have no protective outer jacket and no overload protection at their source. Utility rules may override the specifications in the code, so check with the AHJ to determine variations from the clearances below. These clearances also apply to overhead feeders.

Vertical above Roof F1

	17 NEC
☐ < 4-in-12 slope: min 8 ft. A EXC	230.24A
• 3 ft. OK if roof area guarded or isolated	230.24AX5
☐ ≥ 4-in-12 slope: min 3 ft. B EXC	230.24AX2
• Over eaves 18 in. OK for ≤ 4 ft. horizontal 6 ft. of conductor C	230.24AX3
☐ Maintain req'd distance for 3 ft. past roof edge EXC	230.24A
• Edge clearance above roof is not req'd where overhead conductors attach to side of building	230.24AX4
☐ Metal support structures for conductors passing over roofs req bonding to neutral of service drop	230.29[1]

Vertical above Grade F1

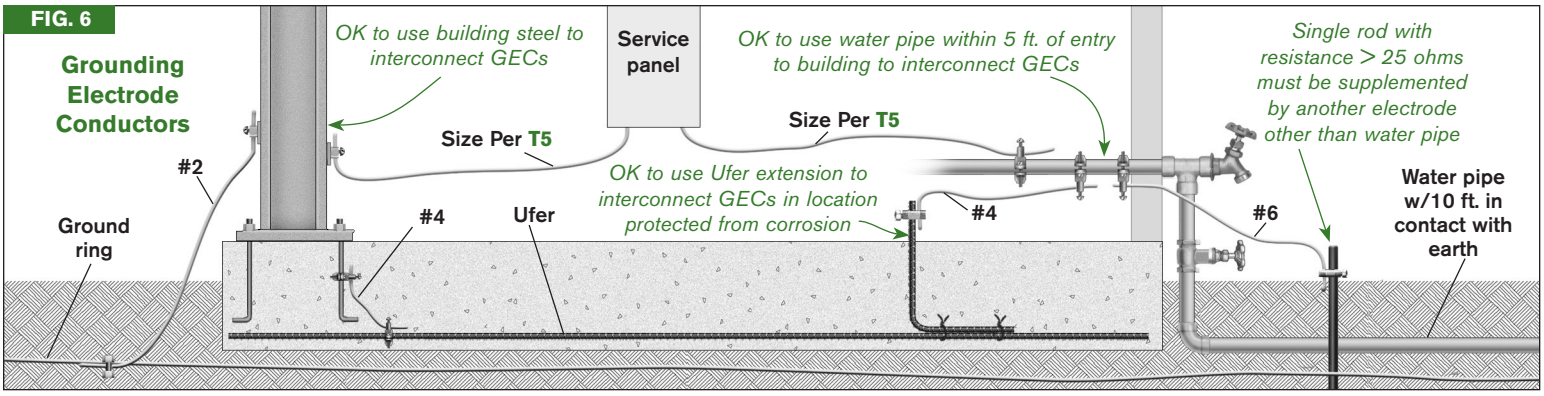
	17 NEC
☐ 10 ft. above final grade to lowest point of drip loop	230.24B1
☐ Area accessible only to pedestrians: 10 ft. D	230.24B1
☐ General above grade & driveways: 12 ft. E	230.24B2
☐ Above roads or parking areas subject to truck traffic: 18 ft. F	230.24B4
☐ Any direction < 10 ft. horizontal from swimming pool water: 22½ ft.	680.8A

Clearance from Openings & Communication Wires F1

	17 NEC
☐ Vertical above decks & balconies: 10 ft. G	230.9B
☐ From side of area above decks & balconies: 3 ft. H	230.9A
☐ Below or to sides of openable window: 3 ft. I	230.9A
☐ Communications wire min 12 in. to parallel power wires	800.44A4
☐ Communications wires above roofs same as power conductors	800.44B

Window & door clearances apply to open conductors – not to conductors contained inside a raceway or a cable with an overall outer jacket. Clearance req's above a window are typically per the local utility.

FIG. 6



GROUNDING ELECTRODES

Grounding provides a path for lightning and reduces electrical "noise" on communications equipment. Common grounding electrodes in residential construction are metal underground water piping, ground rods, and concrete-encased electrodes. Other types include ground rings, metal plates, metal well casings, listed grounding electrode systems, underground tanks, and the steel frame of a building connected to earth as described below. Gas piping is not an acceptable grounding electrode.

Grounding Electrode System (GES) F6 — 17 NEC

- ☐ Use all electrodes that are available on premises during the course of construction — 250.50
- ☐ Bond all electrodes to form a GES — 250.50
- ☐ Gas pipe not OK as grounding electrode — 250.52B1

Water Pipe

- ☐ Use metal water pipe if ≥ 10 ft. in contact with soil F6 — 250.52A1
- ☐ Bond around water meters, filters, etc. — 250.53D1
- ☐ Water pipe cannot be the sole electrode– it must be supplemented by another type of electrode — 250.53D2
- ☐ Pipe, rod, or plate that supplements water pipe must comply with 25 ohm rule or be supplemented by another electrode — 250.53D2
- ☐ Metal well casing OK as electrode (e.g., plastic water service) — 250.52A8

Ground Ring

- ☐ Min #2 copper encircling building in direct contact w/ earth F6 — 250.52A4
- ☐ Min 30 in. below surface of earth — 250.53F

Metal In-Ground Building Structure

- ☐ Metal in-ground support structures w/10 ft. in direct contact w/ earth or encased in concrete in earth (piles) — 250.52A2

Ground Rods — 17 NEC

- ☐ Unlisted pipe electrodes min 3/4 in. diameter & galvanized — 250.52A5a
- ☐ Copper-clad rods min 5/8 in. diameter unless listed for less — 250.52A5b
- ☐ Rods min 8 ft. in contact with soil F6 — 250.53G
- ☐ Drive rods vertical & fully below grade EXC — 250.53G
  - If bedrock encountered, rod may be buried horizontally 2 1/2 ft. deep or driven at 45° angle — 250.53G
  - Clamp above grade OK if protected F8–10 — 250.53G
- ☐ Must be supplemented by another electrode that is not a water pipe EXC — 250.53A2
  - Not req'd if rod resistance ≤ 25 ohms — 250.53A2X
- ☐ Supplemental rods/plates spaced min 6 ft. apart (16 ft. preferred) — 250.5A3

Concrete-Encased Electrode (Ufer)

- ☐ Ufer = 20ft #4 or larger rebar near bottom of footing or 20 ft. of min #4 Cu wire near bottom of footing, min 2 in. encasement — 250.52A3
- ☐ Ufer must be used if present during construction — 250.50
- ☐ Ufer not req'd in existing building if concrete would have to be disturbed to gain access — 250.50X
- ☐ OK to bond sections of rebar with ordinary steel tie wires to obtain 20 ft. continuous length — 250.52A3
- ☐ Can be 20 ft. of vertical steel in pier in direct earth contact — 250.52A3
- ☐ Where multiple Ufers present, only 1 req'd to be bonded to GES — 250.52A3

Pipes & Plates

- ☐ Pipe electrodes min 3/4 in. diameter & galvanized — 250.52A5
- ☐ Ferrous plates min 1/4 in. thick & min 2 sq. ft. in contact with soil — 250.52A7
- ☐ Aluminum not permitted as grounding electrode — 250.52B2

PANELBOARDS & CABINETS (CONTINUED)

Neutral Conductors — 17 NEC

- ☐ Bond neutral, EGCs, & enclosure in service panels **F16** ____ 250.24B
- ☐ Isolate neutrals in subpanels **F17** ____ 250.24A5
- ☐ Continuity of neutrals not to depend on enclosures ____ 200.2B
- ☐ Each neutral conductor req's individual terminal ____ 408.41
- ☐ Neutral cannot serve more than one circuit or MW circuit ____ 200.4A
- ☐ Identify or group each neutral with its circuit conductors EXC ____ 200.4B[17]
  - • When grouping is obvious, such as a cable system ____ 200.4BX1[17]
  - • When passing through a box with no loop or splice ____ 200.4BX2[17]
- ☐ Neutrals factory-applied white or grey EXC ____ 200.6A
  - • Conductors ≥ #4 white or grey tape encircling ends ____ 200.6B
- ☐ White not OK on ungrounded conductors EXC ____ 200.7A
  - • White conductors of a cable assembly OK as ungrounded conductors with tape (not white or green) encircling ends ____ 200.7C

OCPDs

- ☐ Bus req's overcurrent protection on supply side EXC **F16,17** ____ 408.36
  - • Service equipment bus w/ >1 main disconnect ____ 408.36X1–3
- ☐ Breakers must be listed or classified AMI for panel ____ 110.3B
- ☐ Protect ungrounded conductors w/ OCPDs **T11,15** ____ 240.4
- ☐ 2-pole breaker or 2 single-pole breakers w/ approved handle ties req'd for multiwire circuits or for 240V circuits **F17** ____ 240.15B1&2
- ☐ 2-pole breaker or 2 single-pole breakers w/ approved handle ties req'd for receptacles on shared yoke ____ 210.7
- ☐ Backfed breakers secured in place EXC ____ 408.36D
  - • Output circuits from listed utility interactive PV inverter ____ 705.12B5

Panel Wiring

- ☐ Torque all breakers & terminals AMI ____ 110.3B & 110.14D[18]
- ☐ Antioxidant on Al conductors AMI ____ 110.14
- ☐ Secure each cable entering panel AMI **F16,17,49** ____ 312.5C

Wire Space

- ☐ Avoid crowding of conductors ____ 312.7
- ☐ Splices & taps in panels OK to 40% fill, 75% max cross-section ____ 312.8A1&2
- ☐ Power-monitoring devices OK if listed & meeting above fill req's ____ 312.8B[19]
- ☐ Feed-through conductors OK to pass through panel if warning label applied that identifies power source is applied to enclosure ____ 312.8A3
- ☐ Min bending space for conductors not entering or leaving wall opposite terminals ("L" bend) per **T7A, F18** ____ 312.6B1
- ☐ Min bending space for conductors entering or leaving wall opposite terminals ("S" bend) per **T7B, F18** EXC ____ 312.6B2
  - • **T7A** distance from terminal to wall OK if conductor enters or leaves in gutter & meets distance per **T7A, F18** ____ 312.6B2X1
- ☐ Conductors entering from back wall req **T7A** distance to cover and **T7B** distance from terminals **F18** ____ 408.55C[20]

FIG. 16

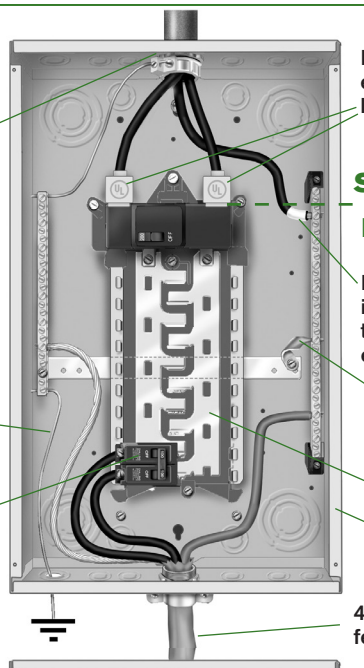


FIG. 17

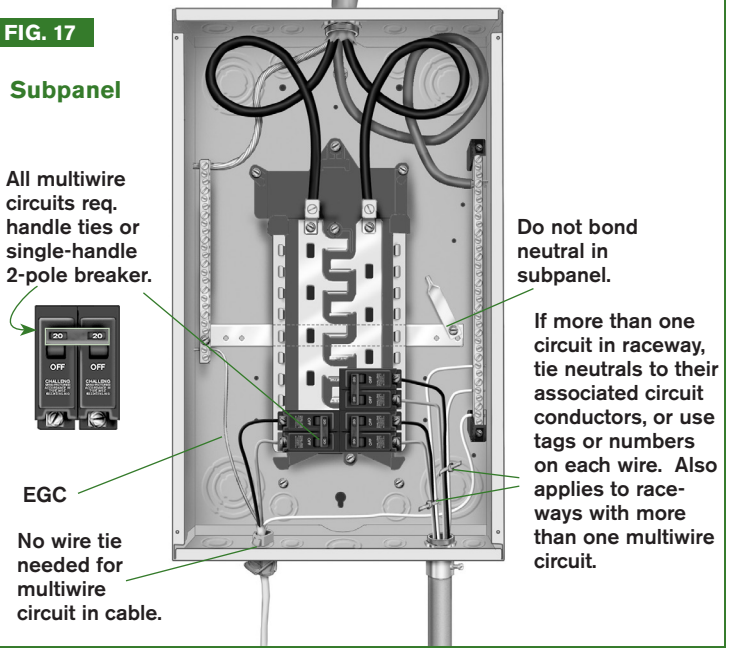


FIG. 18 Wire Bending Space

(For clarity, neutrals & EGCs not shown)

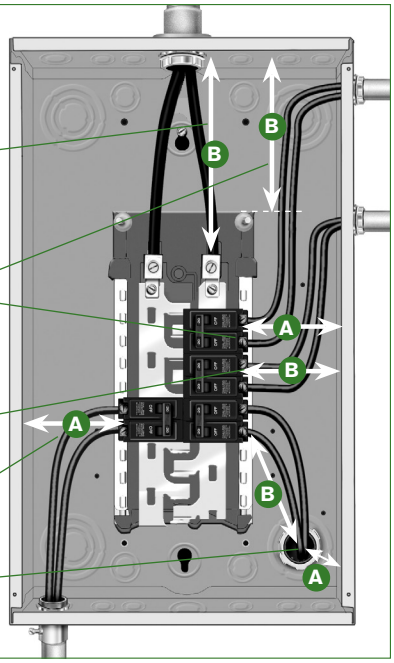


TABLE 7 MINIMUM WIRING SPACE OPPOSITE TERMINALS[21] WIRE SIZES & REQ'D DISTANCES (INCHES)

L Bends – Wire not through wall opposite terminal (A)			S Bends – Wire through wall opposite terminal (B)		
Cu Wire	Al Wire[1]	Distance[2]	Cu Wire	Al Wire[1]	Distance[3]
14–10	12 –8	n/a	14 – 10	12 –8	n/a
8–6	6 –4	1½	8	6	1½
4–3	2 –1	2	6	4	2
2	1/0	2½	4	2	3
1	2/0	3	3	1	3
1/0–2/0	3/0–4/0	3½	2	1/0	3½
3/0–4/0	250–300	4	1	2/0	4½
250	350	4½	1/0	3/0	5½
300–350	400–500	5	2/0	4/0	6
400–500	600–750	6	3/0	250	6½
600–700	800–1000	8	4/0	300	7

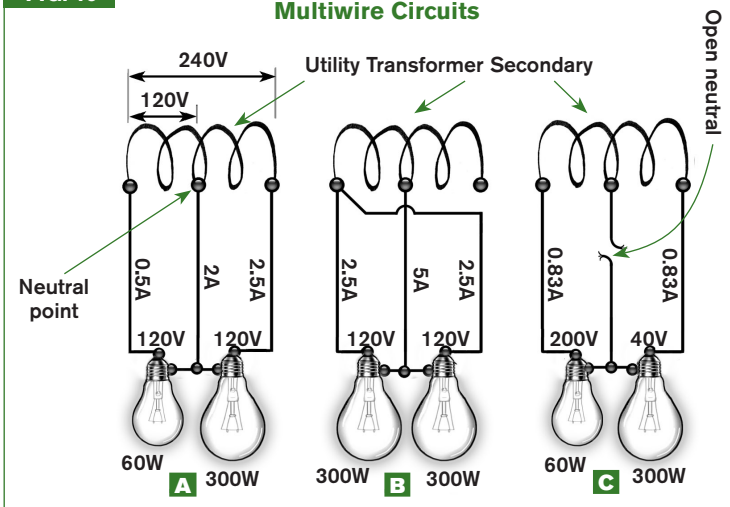
1. Compact stranded aluminum conductors using AA-8000 series alloys.[21]
2. When a lug lies at an angle, the distance can be measured along the length of the wire in the direction that the wire leaves the terminal.
3. The distance is measured in a straight line from the lug in a direction perpendicular to the panel wall.

Multiwire Circuits — 17 NEC

- ☐ Ungrounded conductors must originate from opposite poles _____ 100
- ☐ All conductors must originate from same panel _____ 210.4A
- ☐ Neutrals may not feed through devices whose removal would interrupt continuity (use pigtails from neutral to devices in box) ____ 300.13B
- ☐ All multiwire circuits req handle ties or single handle breaker _____ 210.4B
- ☐ All conductors of multiwire circuit must be identified or grouped (wire ties or other means) inside enclosures EXC **F17** __ 200.4B & 210.4D[22]
  - • Cable systems where grouping is obvious **F17** _____ 200.4BX1
  - • Where passing through box w/out splice or loop_____ 200.4BX2[22]

Most utility transformers for 1- and 2-family dwelling services have two ungrounded "hot" conductors and a neutral derived from the center of the transformer, as depicted in **F19**. The neutral is connected to earth and is a "grounded" conductor. The neutral limits the voltage on either of the hot conductors to 120V to ground. The service is a "3-wire" shared-neutral circuit. 120V branch circuits with shared neutrals are known as multiwire circuits (also called "Edison" circuits). If the neutral is broken or loose, voltages become erratic, as in **F19 C**. TV sets, motors, and computers don't do well with fluctuating voltages. Signs of unstable voltage, such as incandescent bulbs growing brighter or dimmer as other loads change, could indicate a loose neutral either at a branch circuit or at the utility.

FIG. 19 Multiwire Circuits



A PROPER CIRCUIT 2 unequal loads are fed by a 3-wire circuit. The neutral carries the imbalance between the 2 loads[1].

B OVERLOADED NEUTRAL Without voltage potential between the hot conductors, the neutral carries the sum of the loads. In a 3-conductor NM cable, the black & red wires must originate from different poles.

C OPEN NEUTRAL Two unequal loads in series across 240V from the transformer. The load with lowest resistance sees the lower voltage. Voltage at each load depends on other loads and is unstable.

1. On 120/208 systems, the neutral always carries current, even in properly balanced circuits. The principles here still apply.

ARC-FAULT CIRCUIT INTERRUPTERS (AFCIs)

AFCIs provide fire protection by tripping when an arcing fault is detected. AFCI breakers and GFCI breakers look similar **F21,24**, and you must read the label to determine if a breaker is an AFCI or a GFCI. Dual function breakers that provide both AFCI & GFCI protection are also available **F21**. Outlet branch-circuit type (OBC) AFCIs are also available, including ones that are also GFCIs, and the codes have changed substantially to recognize these new methods.

The number of areas requiring AFCI protection expands in each code cycle. The time to plan for the AFCIs is during the rough wiring, so that separate cables are provided for the circuits requiring AFCI protection. Not all brands and models of AFCI are compatible with multiwire circuits.

Beginning January 1, 2008, all AFCIs were req'd to meet the UL standard for "combination" types rather than the older "branch/feeder" type. Combination AFCIs provide a broader range of protection than branch/feeder types. OBC AFCIs provide the same range of protection as combination types, and when installed at the first outlet box on a circuit protected by an older "branch/feeder" AFCI, that circuit then complies with the 2014 and 2017 NEC.

Areas Requiring AFCI Protection — 17 NEC

- ☐ Req'd for all 120V 15A & 20A branch circuits supplying outlets or devices in family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways kitchens, laundry areas & similar rooms EXC _____ 210.12A[23]
  - • May be omitted on individual circuit to a fire alarm circuit in RMC, IMC, EMT, or steel-armored AC or MC cable w/ metal junction boxes that is part of central-station system in accordance w/ NEC Article 760 _ 210.12AX
- ☐ Req'd for all 120V 15A & 20A branch circuits supplying outlets & devices in dormitory unit bedrooms, living rooms, hallways, closets, bathrooms, & similar rooms _____ 210.12B[24]

FIG. 20

AFCIs – Replacements & Extensions

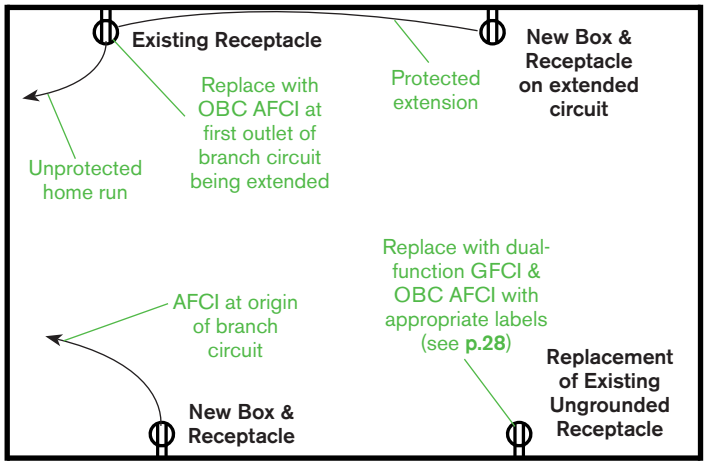
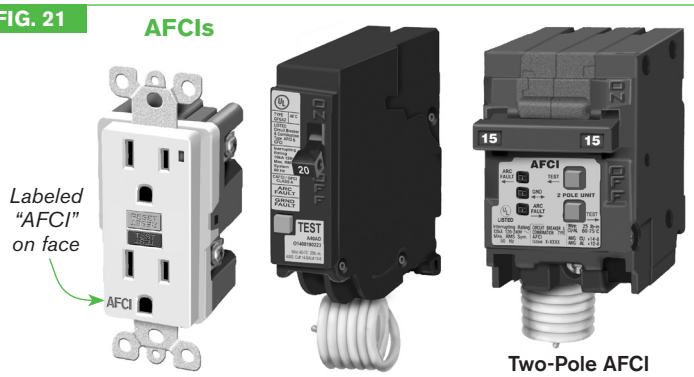


FIG. 21

AFCIs



Outlet Branch Circuit AFCI (OBC) | Dual function AFCI/GFCI | Two-Pole AFCI Breaker for Multiwire Circuits

AFCI Protection Methods — 17 NEC

- ☐ Combination-type AFCI at origin of branch circuit _____ 210.12A1
- ☐ Branch/feeder-type AFCI at origin of branch circuit & OBC type at first outlet box on branch circuit, w/ outlet box marked as first on circuit _____ 210.12A2[25]
- ☐ Ordinary circuit breaker at origin of circuit & RMC, IMC, EMT, Type MC, or steel-armored AC cable to first outlet, with OBC AFCI at first outlet _____ 210.12A5
- ☐ Ordinary circuit breaker at origin of circuit & metallic or nonmetallic conduit or tubing encased in min. 2 in. concrete to first outlet & OBC AFCI at first outlet _____ 210.12A6

In addition to the 4 methods above, the NEC also includes "supplemental arc protection breakers" & "system combination" AFCIs. These non-AFCI breakers are used in conjunction with OBC type AFCIs as the first outlet on the circuit to create a system that is listed. As of this writing, neither of these systems actually exists. These two additional methods depend upon UL testing that is ongoing, and will not work with older circuit breakers.

Extensions, Modifications, & Replacements

- ☐ If wiring extended, modified, or replaced in areas where protection currently req'd, provide protection by combination AFCI at origin of branch circuit or OBC AFCI at first outlet of existing branch circuit **F20** EXC _____ 210.12D
  - • Not req'd when extension of conductors ≤ 6 ft. & does not include added outlets or devices _____ 210.12DX[26]
- ☐ Replacement receptacles in areas where AFCI protection currently req'd must be OBC AFCI or be protected by combination AFCI or OBC AFCI EXC **F20** _____ 406.4D4
  - • Replacements w/ GFCI receptacle in older 2-wire systems where panel does not accept AFCIs & no practical means available to install EGC & no added wiring to receptacle & dual-function AFCI/GFCI receptacles not available _____ 406.4D4X1–4[27]

BRANCH CIRCUITS & OUTLETS

Branch circuits are the permanent wiring between the final OCPDs (overcurrent protective devices – fuses or breakers) and the outlets that provide power to electrical equipment. Separate circuits are required for the kitchen small appliance circuits, bathroom receptacles, laundry, garage, central heating equipment, and large appliances. In some cases, as described below, these are "individual" circuits, with only one piece of equipment on the circuit. With few exceptions, required receptacle outlets must be listed tamper-resistant types.

Circuit Sizes, Number & Load Limitations — 17 NEC

- ☐ Rule of thumb: min 1 general-purpose circuit per 500 sq. ft. _____ 220.12
- ☐ Load not to exceed rating of branch circuit _____ 220.18
- ☐ Min size = 125% of continuous load + 100% of noncontinous load 210.19A
- ☐ Continuous load = max current for 3 hours or more _____ 100
- ☐ Min size for branch circuit wiring #14 Cu _____ 210.19A4
- ☐ Individual circuit = supplying only one piece of equipment _____ 100
- ☐ Branch circuit ratings for other than individual circuits must be 15A, 20A, 30A, 40A, or 50A _____ 210.18
- ☐ Single piece of cord-&-plug-connected equipment not permanently fastened in place max 80% of 15A or 20A branch circuit _____ 210.23A1
- ☐ Max single cord-&-plug-connected load on multi-receptacle circuit not to exceed 80% of receptacle rating _____ 210.21B2
- ☐ Lights & receptacles OK on same 15A or 20A except small appliance circuits, bath receptacle circuit, laundry circuit _____ 210.23A

Receptacles – General

- ☐ Receptacles for specific appliances (laundry, garage door opener) within 6 ft. of appliance location _____ 210.50C
- ☐ Flexible cords not OK as fixed or concealed wiring _____ 400.12
- ☐ Receptacles must be mounted with 6–32 machine screws _____ 406.5[33]

Receptacle Types and Ratings

- ☐ All receptacles on 15A & 20A circuits grounding type _____ 406.4A
- ☐ Receptacles for direct Al connection marked "CO/ALR" _____ 406.3C
- ☐ Receptacles req'd by 210.52 listed TR type EXC _____ 406.12
  - • Receptacles located > 5 1/2 ft. above floor _____ 406.12X1[34]
- ☐ Replacement receptacles listed TR type EXC _____ 406.4D5
  - • Replacement non-grounding type receptacles (see **p.28**) _____ 406.4D5
- ☐ 15 & 20A nonlocking receptacles in damp or wet locations listed weather-resistant types _____ 406.9A&B1
- ☐ Single receptacles rated not less than branch circuit _____ 210.21B1

An example would be a single (not duplex) 20A receptacle on an individual branch circuit for a microwave oven/range hood with a cord & plug connection allowed by 422.16B4.

- ☐ Multiple receptacles on branch circuit per **T8** _____ 210.21B3

For the purposes of these rules, a duplex receptacle is 2 receptacles, not a "single" receptacle.

TABLE 8	RECEPTACLE RATINGS FOR MULTIPLE RECEPTACLES ON 1 CIRCUIT 210.21.B3		
Circuit Rating	Receptacle Rating	Circuit Rating	Receptacle Rating
15A	not over 15A	40A	40 or 50A
20A	15 or 20A	50A	50A
30A	30A		

FIG. 25 **Receptacle Spacing**