

## CHAPTER 42 OF THE INTERNATIONAL RESIDENTIAL CODE AND SECTION 680 NATIONAL ELECTRICAL CODE GENERAL REQUIREMENTS FOR ABOVE AND INGROUND SWIMMING POOLS

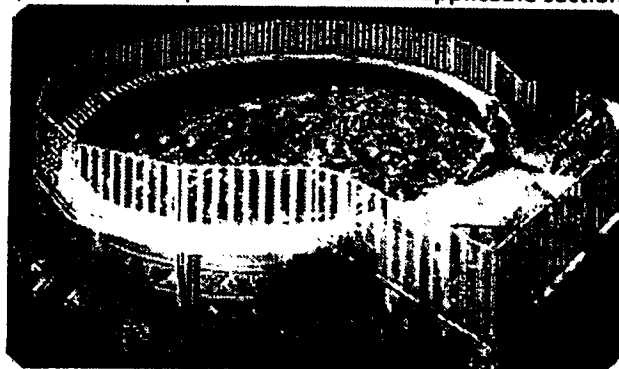
**Permanently Installed Swimming, Wading and Therapeutic Pools.** Those that are constructed in the ground or partially in the ground and all others capable of holding water in a depth greater than 42in. (1.07m), and all pools installed inside of a building, regardless of water depth, whether or not served by electrical circuits of any nature.

**BEFORE INSTALLATION:** Consult the electrical inspector when encountering overhead or underground conductors in proposed area of construction.

This information is not intended as a design specification, nor as an instruction for untrained persons.

- 0-6' No outlets or switch devices - E4203.1.1
- 6-10' Single 20 AMP receptacle for pump motor only, twist-lock type, GFCI protected with proper cover, see 406.8(B)(1). – E4205.5
- 6-20' One duplex receptacle must be provided; GFCI protected with in use w/p covers 406.8(B) – E4023.1.2
- Metal surfaces within 5' horizontal and 12' vertical of edge of pool must be bonded to system.
- Motor, metal pool frame and all metal parts must be bonded together with #8 solid copper wire.
- Wiring for pool motor rigid metal conduit, IMC (min.6" deep) or PVC (min. 18" deep) and expansion fitting (NEC 300.5) to motor including #12 AWG insulated equipment ground back to panel.
- Pool lights must comply with NEC 680.23. Section 4606
- Termination of the 8 AWG insulated green bonding jumper in the forming shell shall be encapsulated in a listed potting compound.
- Lugs for bonding must be DB rated NEC 110.3(B)
- The conductors and equipment required or permitted shall be identified, labeled, listed and approved for use NEC 110.2 & 110.3.

These are only general requirements for pool installation. All applicable sections of NEC Article 680 apply.



## Bonding of all metallic parts if applicable

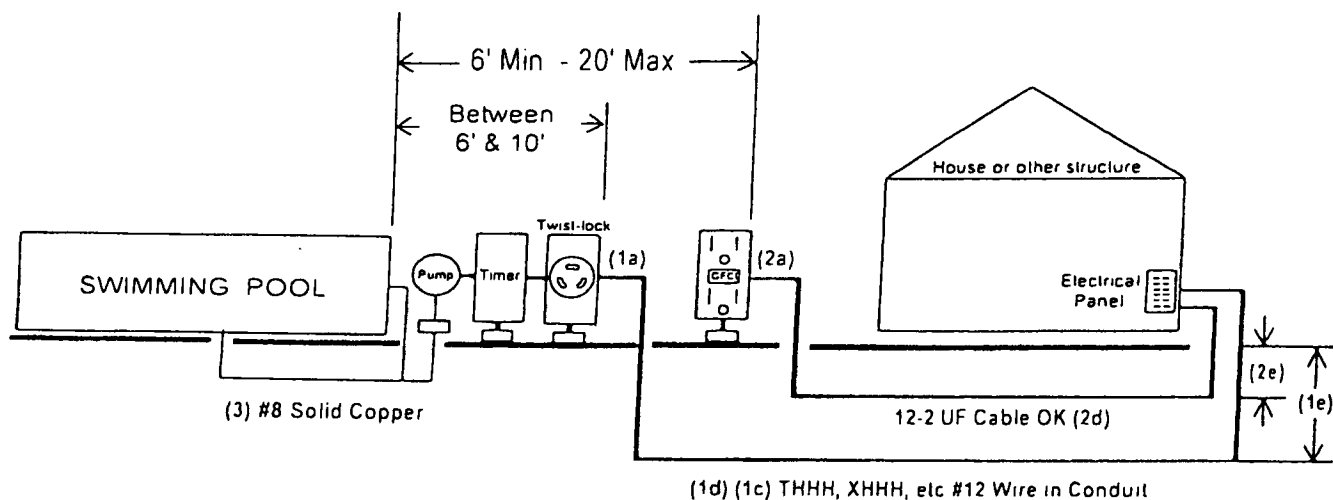
A. All metal parts must be bonded together using a #8 (or larger) solid copper wire.

B. You must use non-corrosive clamps listed and stamped on the connectors.

**YOU DO NOT NEED TO INSTALL GROUND RODS OR RUN THE #8 BONDING CONDUCTOR BACK TO THE SERVICE OR SUB PANEL.**

FOR ILLUSTRATED PURPOSES ONLY

Your situation may be different



1a. Single twist-lock receptacle in a weather-proof box with an "in-use" cover.

1e. The minimum depth of trench: 18 inches deep. (Unless based on table 300.5 for 1 & 2 family dwellings.) Conductor types are: XHHN, THWN, or other approved conductors. (See Article 310.8.) They are to be Black (or other color to identify the ungrounded conductor), white (grounded conductor) and green (an insulated equipment conductor). You CAN reidentify any color conductor for the ungrounded conductor (hot) and grounded conductor (neutral) with tape. (See Article 200.6) but you CANNOT reidentify the equipment grounding conductor. It must be green throughout its entire length. (See Article 250.119)

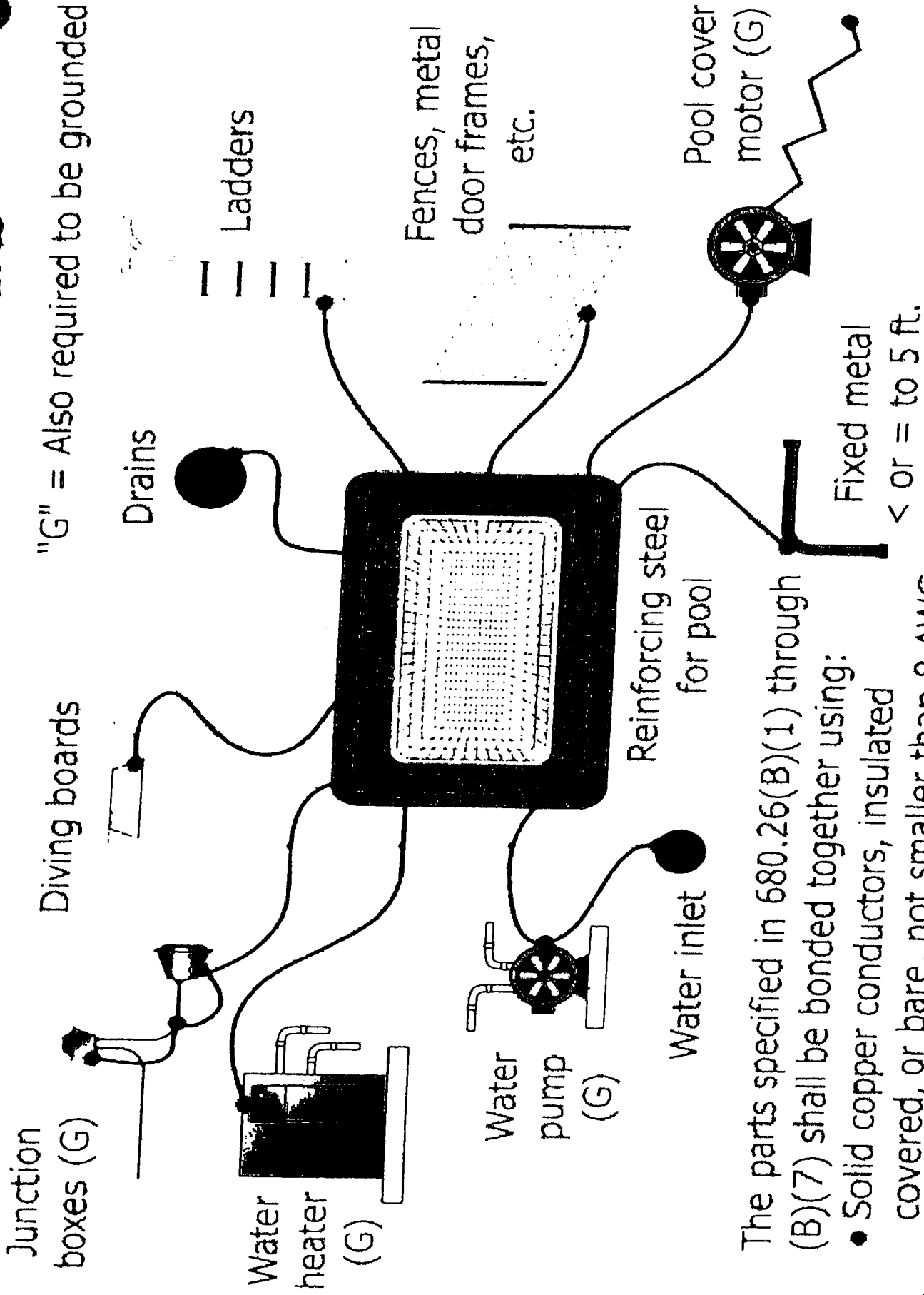
2a. Convenience receptacle(s) GFCI protected in a weather-proof box with an "in-use cover".

2d&e. At least one Convenience receptacle must be installed using UF cable or other approved wiring method. The trench can be a minimum of 12" deep when rated 120 Volts or less than GFCI protection and a maximum overcurrent protection of 20 Amperes. NEC Table 300.5, Column 4. (For 12IN burial depth, the conductors must be GFCI protected at the house, if they are not GFCI protected, the burial depth must be at least 18IN.)

3a. Minimum #8 (or larger) solid copper conductor for bonding purposes.

The above swimming pool rules are based on the 2008 National Electrical Code. Some rules are paraphrased for clarification. If you are installing electric wiring in addition to the above requirement or do not fully understand these regulations, please refer to the 2008 NEC.

# Equipotential Bonding - Bonded Parts



- The parts specified in 680.26(B)(1) through (B)(7) shall be bonded together using:
- Solid copper conductors, insulated covered, or bare, not smaller than 8 AWG
  - Rigid metal conduit of brass or other identified corrosion-resistant metal

## **ELECTRICAL WIRING REQUIREMENTS FOR ABOVE-GROUND SWIMMING POOLS**

ANY POOL HOLDING WATER IN A DEPTH GREATER THAN 1.0 M (42 IN.) IS TO BE CONSIDERED A PERMANENTLY INSTALLED POOL.

### **Pool Pump Receptacle Outlet and Wiring Method**

- (A) Receptacle(s) that provide power for water-pump motors or for other loads directly related to the circulation and sanitation system shall be located at least 3.0 m (10 ft.) from the inside walls of the pool, or **not less than** 1.83 m (6 ft.) from the inside walls of the pool if they meet all of the following conditions:
- (1) Consist of single receptacle(s)
  - (2) Employ a locking configuration (Twist-lock)
  - (3) Are of the grounding type
  - (4) Have GFCI protection
- (B) Receptacle(s) must have an (in-use) weatherproof cover that can be closed when plugged in.
- (C) Conductors for pool-associated motors shall be installed in rigid metal conduit, intermediate metal conduit, rigid nonmetallic conduit (PVC), reinforced thermosetting resin conduit, or Type MC cable listed for swimming pools. Any wiring method employed shall contain an insulated copper equipment grounding conductor sized in accordance with 250.122 but not smaller than 12 AWG. The pump motor plug and cord that comes with the pump is for testing purposes only. It is not a listed cord & plug, *UL does not test and list the cord and plug, only the pump motor.* Therefore, you must purchase a twist-lock plug & a '**hard usage**' cord with a #12 insulated grounding conductor listed for wet locations. The cord & plug shall not exceed 3 ft. in length. See Articles 680.21(5) and 680.25 (1).
1. The equipment grounding conductor must have a green insulated covering. Article 680.21(A) (1) of the NEC specifies that the grounding conductor for the pool pump must be insulated and Article 250.119 identified it to be green in color. (Therefore, YOU CANNOT USE UP CABLE FOR THE POOL PUMP.) It does not employ a green insulated equipment grounding conductor but instead a bare equipment grounding conductor.
- (D) Article 310.8 specifies the type of conductors for wet locations. They shall be any of the below listed types:  
Types MTW, RHW, RHW-2, TW, THW, THW-2, THHW, THHW-2, THWN, THWN-2, XHHW, XHHW-2, ZW, etc.
- (E) Depth of trench for the branch circuits.
- (1) Article 680.10. The branch circuit conductors listed above and the raceways must be buried at least 18" deep. **Exception: 1&2 Family dwellings.** When rated 120 Volts or Less with GFCI Protection and a maximum overcurrent protection of 20 Amperes based on Table 300.5, Column 4 of the 2005 NEC Handbook Commentary.
  - (2) Metal – All Rigid Metal Conduit must be at least 6" deep.

### **Convenience Receptacles(s)**

- (1) At least one (1) convenience receptacle, other than the pool pump receptacle, must be installed between 6' and 20' measured from the inside wall of the pool.
- (2) Convenience receptacle(s) must be GFCI protected.
- (3) Must have an in-use weatherproof cover where exposed to the weather.
- (4) Wiring Method: (YOU CAN USE UF CABLE FOR THE CONVENIENCE RECEPTACLE.)
- (5) UF cable Rated 120 Volts or Less, that is GFCI protected and that has a maximum overcurrent protection of 20 Amperes or less based on Table 300.5, Column 4 of the 2005 NEC Handbook commentary can be buried at least 12" deep.
- (6) UF cable not GFCI Protected must be buried 18 inches deep.
- (7) Metal – All Rigid Metal Conduit must be buried no less than 6" deep.

**Note:** In addition to the above NEC wiring methods, the energy code requires that a timer switch be installed for the pool pump motor.