

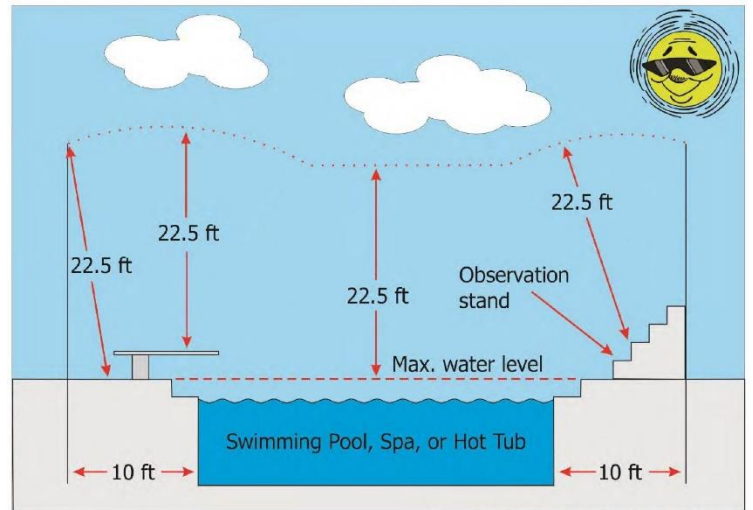


ELECTRICAL GUIDELINES FOR “IN-GROUND SWIMMING POOLS”

Overhead Electrical Lines

A swimming pool or spa installation must follow a couple of rules when it comes to overhead electrical lines:

- Utility power lines that run over a pool or spa must be at least 22.5 feet above the water level, base of a diving platform or observation platform.
- Communications cable must be at least 10 feet above the water level, base of a diving platform or observation platform.
- NOTE: Com Ed does not permit their conductors above pools.
- **A Licensed Electrical contractor** installing electric needs to provide a copy of their current license. Homeowners shall not be permitted to install electric services, swimming pools or hot tubs. (VOH 150.16 -110.1).



Reproduction of NEC Figure 680.9(A)

For these rules, the water level is defined as the highest point water can reach before it spills out of the pool or spa. It is always preferable to install a pool or spa well away from any electrical lines, or vice versa. The water is one thing to worry about; another is the use of pool cleaning nets with very long, metal handles that you lift high into the air, which may accidentally come into contact with those overhead lines.

Underground Wiring

Underground wiring is not allowed under a pool or spa, and can be run no closer than 5 feet from any sidewall of a pool or spa.

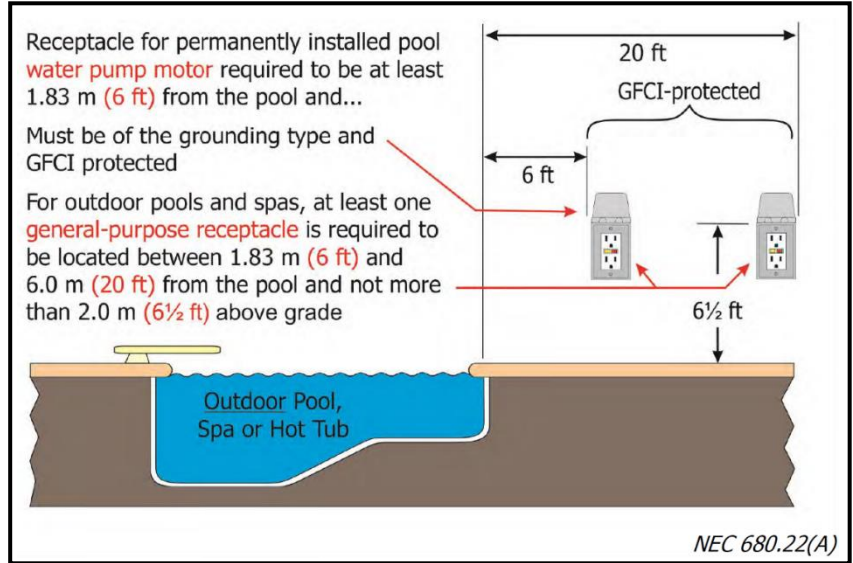
There are some exceptions when the wiring attaches to the pool or spa to serve equipment or lighting. When there is insufficient space in the area to maintain a 5-foot separation, wiring may be closer than 5 feet if it is installed in a complete raceway (conduit) system. Rigid metal raceway (RMC or IMC) must have at least 6 inches of cover. Nonmetallic raceway must have at least 6 inches of cover, including at least 4 inches of concrete; 18 inches minimum cover is required if the nonmetallic conduit (PVC) is listed for direct burial without concrete encasement.

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Electrical Outlets - Receptacles

The rules for electrical outlets are aimed at preventing the possibility of shock:

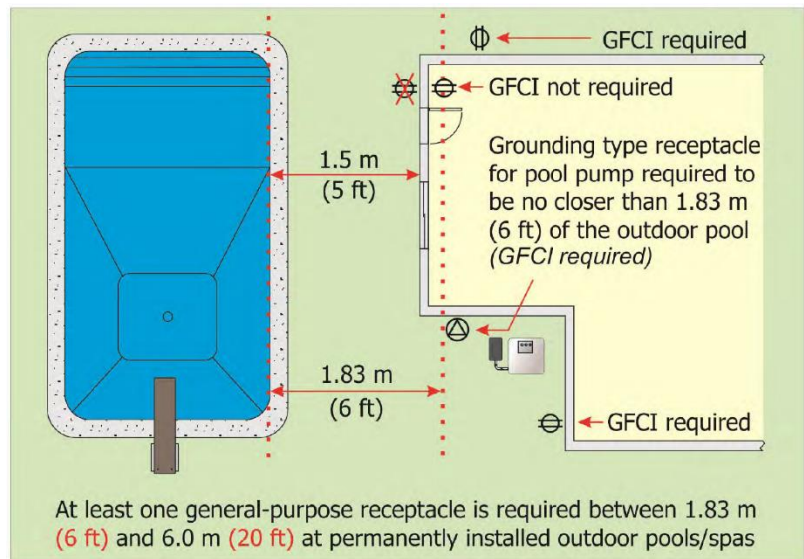
- Receptacles for pumps and motors must be located between 6 and 10 feet from the pool walls, and they must be GFCI-protected and locked.
- Outlet receptacles for general use can be no closer than 20 feet from a pool or in-ground spa if they are not GFCI-protected, and no closer than 6 feet away if they are GFCI protected.
- All in-ground pools, MUST have at least one GFCI protected convenience outlet located between 6 feet and 20 feet from the edge of the pool.



GFCI Protection

Most devices and equipment serving pools or spas and the surrounding areas must be protected by ground-fault circuit interrupter (GFCI) devices. This includes but is not limited to:

- Outlet receptacles within 20 feet of a pool or spa
- Underwater pool lights greater than 15 volts
- Motors and controls for pool covers
- Outlet receptacles for pool pump motors at all distances from the pool
- Light fixtures less than 10 feet from a pool or spa edge, unless the fixture is more than 5 feet above the water level

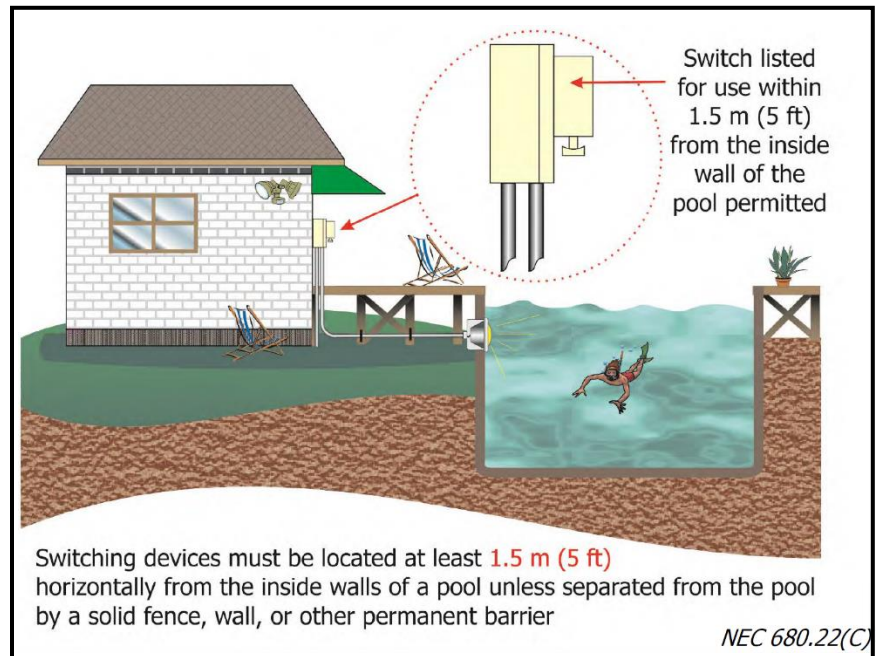


NEC 680.22(A)

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Maintenance Disconnect

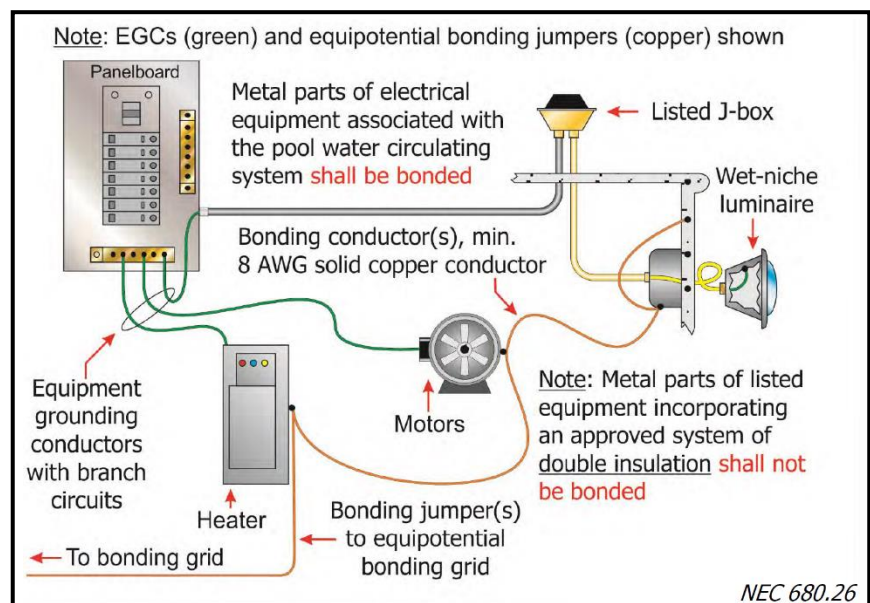
A maintenance disconnect is required for shutting off power to pool or spa pumps, filters, and other utilization equipment. The disconnect must be installed within sight of the pool or spa but can be no closer than 5 feet from the pool or spa so that you cannot turn the power on or off while leaning out of the water.



Electrical Bonding Code (NEC)

Equipotential bonding requirements of NEC 680.26 are to reduce voltage gradients (difference of voltage potential between two conducting objects), not to create a grounding electrode system for a building or structure.

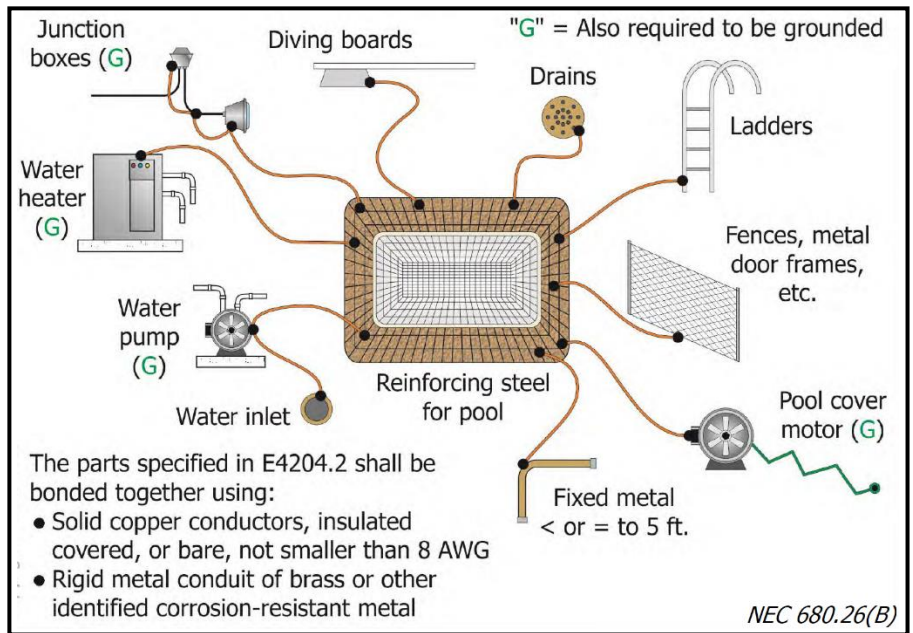
- This action essentially puts all metallic parts around and associated with the pool at the same voltage potential.
- Providing a path for ground-fault current is not the function of the equipotential bonding grid and associated bonding conductors.
- The structures and structural reinforcing steel of an in-ground swimming pool as described in NEC 680.26(B)(1) and (B)(2) are now prohibited from being used as a grounding electrode.



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The equipotential bonding grid includes but not limited to:

- All metallic parts of the pool including structural reinforcing steel of the pool shell and perimeter surface (Tie wires are suitable for bonding of structural steel)
- All metal forming shells of underwater luminaires
- All metal fittings within or attached to the pool structure (Small parts exempted)
- Note: Isolated small parts not over 100 mm (4 in.) do not require bonding



Pool Water

If the pool water doesn't have an electrical connection to one of the bonded parts described in 680.26(B), an approved corrosion-resistant conductive surface that's at least 9 sq in. must be in contact with the water. The corrosion-resistance conductive surface must be bonded in accordance with 680.26(B), and be located in an area where it won't be dislodged or damaged during normal pool usage.

