

# PERMANENTLY INSTALLED SWIMMING POOLS

## 2017 National Electrical Code Requirements

### NEW YORK ELECTRICAL INSPECTION AGENCY

PERMANENTLY INSTALLED SWIMMING POOLS ARE THOSE THAT ARE CONSTRUCTED IN THE GROUND OR PARTIALLY IN THE GROUND, AND ALL OTHERS CAPABLE OF HOLDING WATER WITH A DEPTH GREATER THAN 42 INCHES (1067 MM)

#### 1) Pool Pump Receptacle (Outlet) and Wiring Method

- a. Swimming pool pump motor receptacle must be located at least 6' from the inside pool wall, must be grounded, and Ground Fault Circuit Interrupter (GFCI) protected.
- b. Receptacle must have an extra-duty, in-use, weatherproof cover that can be closed when the cord is plugged in.
- c. Depending on the horsepower of the pump motor, the circuit line for the pump motor may need to be a continuous line going directly to the panel box, and isolated from all other receptacles and loads. (see NEC Table 430.248)
- d. Grounding Conductor (ground wire) for the pump motor cannot be less than #12 AWG insulated copper grounded wire, and must be in conduit. (Exception: When entering a building the wire can change to NM) (Cannot use NM wire in conduit).
- e. Conduit
  - i. PVC – All PVC conduit\* must be buried at least 18" deep (12" if GFCI protected prior to entering the ground).
  - ii. Metal – All Rigid Metal Conduit\* must be at least 6" deep.

\* Wires used in conduit must be single strand wires (ex: THWN, etc - NO NM or UF CABLE in Conduit).

#### 2) Convenience Receptacle (Outlet) and Wiring Method

- a. At least one (1) 15- or 20-ampere convenience receptacle must be located no closer than 6' and no further than 20' from the inside pool wall (Can be existing and/or wired with any approved wiring method). This receptacle cannot be located more than 6 1/2' above the grade level, deck, or platform serving the swimming pool.
- b. Convenience receptacle must be Ground Fault Circuit Interrupter (GFCI) protected, Tamper Resistant (TR), and Weather Resistant (WR) type receptacle.
- c. Must have an extra-duty, in-use, weatherproof cover that can be closed when in use (for all wet locations).
- d. May need to be separate from the pool pump receptacle wiring.
- e. Wiring
  - i. UF cable if buried must be at least 24" deep (12" if GFCI protected prior to entering the ground).
  - ii. PVC – All PVC conduits\* must be buried at least 18" deep (12" if GFCI protected prior to entering the ground).
  - iii. Metal – All Rigid Metal Conduits\* must be at least 6" deep

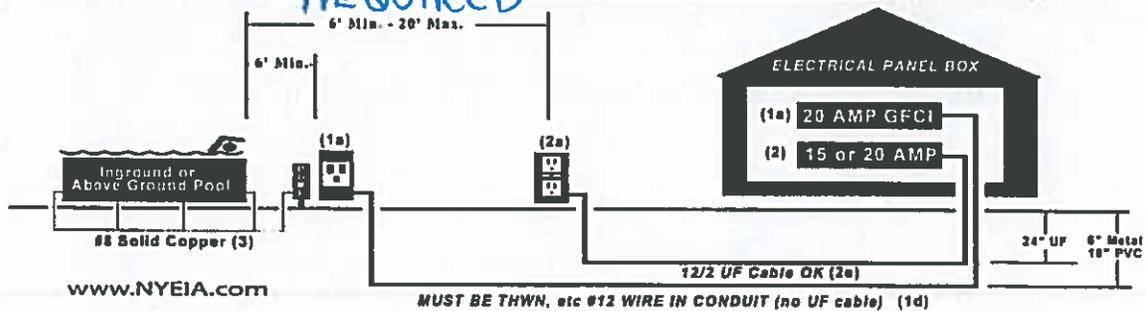
\* Wires used in conduit must be single strand wires (ex: THWN, etc. - NO NM or UF CABLE in Conduit).

#### 3) Bonding The Pool

- a. All metal parts must be bonded together using a #8 (or larger) solid copper wire.
- b. Must use non-corrosive clamps that are listed for direct burial use.
- c. Conductive pool shells must be bonded in a minimum of four (4) equal points uniformly spaced around the pool
- d. Nonconductive pool shells must have a #8 (or larger) solid, bare copper wire 18"-24" from the inside pool wall under the perimeter surface 4"-6" below the final grade.
- e. A minimum of nine (9) square inches of corrosion resistant metal must be in the water to bond the water.

#### 4) Other

- a. Building Permits are required. Secure a Building Permit from your municipality prior to beginning work.
- b. Pool Alarms are required. (Check with your local Building Department for additional information).
- c. Pool Pump Timers: **REQUIRED**



**PLEASE CONTACT YOUR LOCAL INSPECTOR IF YOU HAVE ANY QUESTIONS**

# HOT TUBS & SPAS - ELECTRICAL WIRING REQUIREMENTS

## 2017 National Electrical Code Requirements NEW YORK ELECTRICAL INSPECTION AGENCY

SPA OR HOT TUB. A HYDROMASSAGE POOL, OR TUB FOR RECREATIONAL OR THERAPEUTIC USE, NOT LOCATED IN HEALTH CARE FACILITIES, DESIGNED FOR IMMERSION OF USERS, AND USUALLY HAVING A FILTER, HEATER, AND MOTOR-DRIVEN BLOWER. THEY ARE INSTALLED INDOORS OR OUTDOORS, ON THE GROUND OR SUPPORTING STRUCTURE, OR IN THE GROUND OR SUPPORTING STRUCTURE. GENERALLY, A SPA OR HOT TUB IS NOT DESIGNED OR INTENDED TO HAVE ITS CONTENTS DRAINED OR DISCHARGED AFTER EACH USE.

### 1) Hot Tub / Spa Wiring Method and Receptacles (Outlets)

- Maintenance Disconnect - A disconnect is required for all ungrounded electrical wires (except for lighting). It must be at least 5' horizontally but not more than 50' from the water's edge, readily accessible, and within sight of the Hot Tub / Spa.
- The outlet(s) that supply a Hot Tub / Spa must be Ground-Fault Circuit Interrupter (GFCI) protected.
- Indoor Hot Tubs & Spas
  - At least one (1) convenience receptacle must be located between 6' and 10' from the inside wall of the Hot Tub / Spa and be GFCI Protected (Existing receptacle OK and wired with any approved wiring method).
- Outdoor Hot Tubs & Spas
  - At least one (1) 15- or 20-amp convenience receptacle must be located between 6' and 20' from the inside wall of the Hot Tub / Spa and be GFCI Protected (Existing receptacle OK and wired with any approved wiring method).
  - Liquidtight flexible nonmetallic or metallic conduit is permitted in any lengths.
  - A listed packaged hot tub / spa installed outdoors that is GFCI protected shall be permitted to be cord and plug-connected provided that such cord does not exceed 15 feet in length.
  - Outdoor receptacles must have an in-use weatherproof cover rated "extra-duty" where exposed to the weather.

### 2) Bonding The Hot Tub / Spa

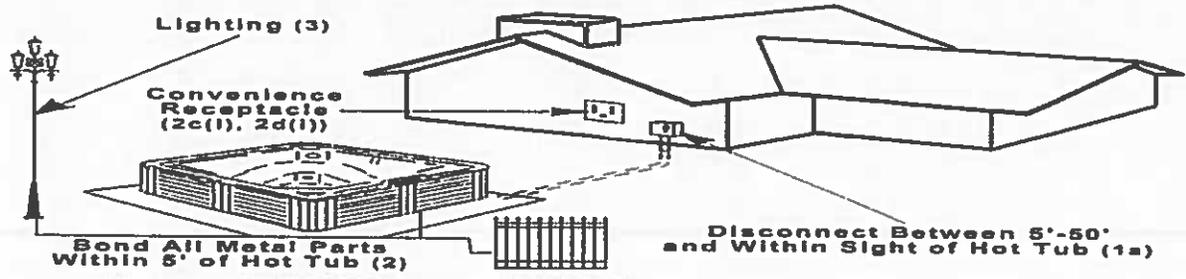
- All metal parts & surfaces within 5' of the Hot Tub / Spa must be bonded together using a #8 (or larger) solid copper wire and connections must be listed and non-corrosive. Indoor Hot Tubs / Spas must bond all metal within or attached to the hot tub.
  - Outdoor Hot Tubs / Spas with nonconductive shells must have a #8 (or larger) solid, bare copper wire 18"-24" from the inside hot tub wall under the perimeter surface 4"-6" below the final grade and connected to a metal part of the pump motor.\*
- \* Exception: All must apply; 1) Hot tub must be listed for aboveground use, 2) Listed for outdoor use, 3) Installed on or aboveground, 4) The top rim of the hot tub must be at least 28" above the perimeter surfaces within 30" horizontally.

### 3) Lighting (other than underwater applications) (if any)

- All non-GFCI protected lights and ceiling fans within 5' of the inside wall of the Hot Tub / Spa must be at least 12' above the maximum water level of the Hot Tub / Spa.
- All GFCI protected lights and ceiling fans within 5' of the inside wall of the Hot Tub / Spa must be at least 7 1/2' above the maximum water level of the Hot Tub / Spa.
- Exception - Lights that are within 5' of the inside wall of the Hot Tub / Spa and less than 7 1/2' above the water level are only acceptable if they meet the following:
  - Recessed Lights - GFCI protected with a glass or plastic lens, nonmetallic or electrically isolated metal trim, and suitable for damp locations.
  - Surface-Mounted Lights - GFCI protected with a glass or plastic globe, a nonmetallic body, or a metallic body isolated from contact, and suitable for damp locations.

### 4) Other

- Building Permits are required. Always secure a Building Permit from your municipality prior to beginning work.
- Indoor Hot Tubs / Spas wall switches must be a minimum 5' from the inside wall of the Hot Tub / Spa.
- Outdoor Hot Tubs check for overhead wires within 10' of the Hot Tub. (Must be 22 1/2' above water level & not allowed in many towns)
- All Hot Tubs / Spas, other than in a single-family residence, must have an emergency shutoff between 5'-50' & within sight.



# STORABLE SWIMMING POOLS, SPAS, & HOT TUBS

## 2017 National Electrical Code Requirements NEW YORK ELECTRICAL INSPECTION AGENCY

STORABLE POOLS ARE SWIMMING, WADING, OR IMMERSION POOLS THAT ARE INTENDED TO BE STORED WHEN NOT IN USE, CONSTRUCTED ON OR ABOVE THE GROUND, AND ARE CAPABLE OF HOLDING WATER TO A MAXIMUM DEPTH OF 42 IN., OR A POOL, CONSTRUCTED ON OR ABOVE GROUND WITH NON METALLIC, MOLDED POLYMERIC WALLS, OR INFLATABLE FABRIC WALLS REGARDLESS OF DIMENSION.  
(The maximum water depth of 42" does not apply to inflatable swimming pools.)

### 1) Storable Pool Pumps

- Cord-connected pool filters must be approved system and have a double insulation or equivalent cord
- Cord-connected pool filter pumps must have a ground-fault circuit interrupter (GFCI) on the power supply cord located within 12" of the attached plug or that is an integral part of the attached plug on the cord.

### 2) Receptacle (Outlet) and Wiring Method for Storable Pool Pump

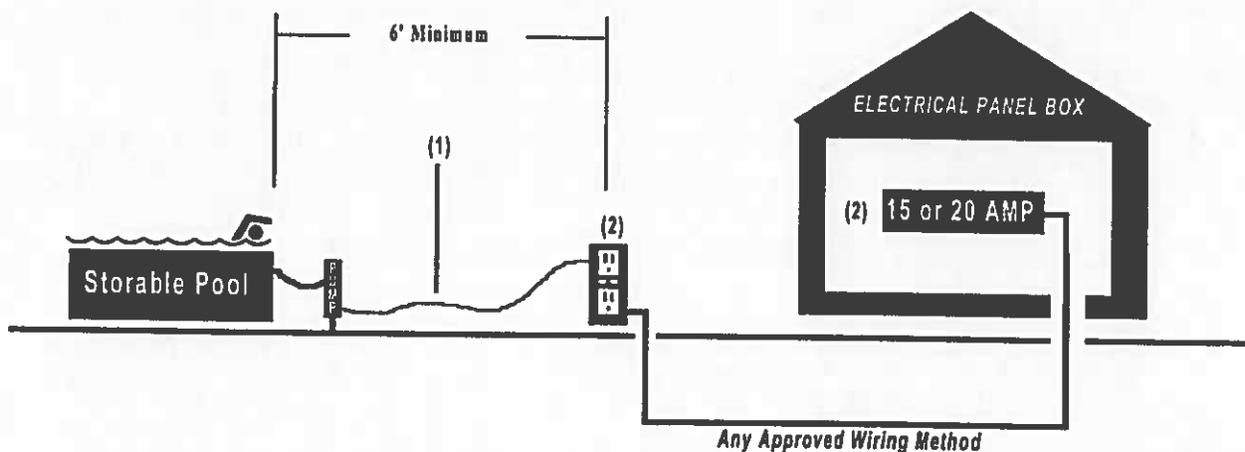
- Any receptacle, existing or new, cannot be located closer than 6' of the inside wall of the storable pool.
- The receptacle must be grounded, must be Ground Fault Circuit Interrupter (GFCI) protected, and the Tamper Resistant (TR), and Weather Resistant (WR) type receptacle.
- Receptacle must have an In-use, extra-duty weatherproof cover that can be closed when the cord is plugged in.
- An Automatic Timer (Time Switch) must be installed on storable swimming pool pumps.

### 3) Luminaries (lights) for Storable Pools (if used)

- Luminaries cannot have any exposed metal parts and must be listed for the purpose.
- Luminaries 15 Volts or less must:
  - Have a luminaire lamp that operates at 15 volts or less
  - Have an impact-resistant polymeric lens, luminaire body, and a transformer enclosure
  - Have a transformer listed for swimming pools with a primary rating not over 150 volts
- Luminaries Over 15 Volts but not over 150 volts must:
  - Have an impact-resistant polymeric lens and luminaire body
  - Have Ground Fault Circuit Interrupter (GFCI) protection.

### 4) Other

- Building Permits are required. Secure a Building Permit from your municipality prior to beginning work.
- Pool Alarms may be required. (Check with your local Building Department for additional information.)
- All receptacles located within 20' of the inside walls of a storable pool wall must be GFCI protected.
- Overhead power lines within 10' of the edge of the storable pool must be at least 22 ½' above the water surface.



PLEASE CONTACT YOUR LOCAL INSPECTOR FOR MORE INFORMATION