



*A NEMA Lighting Systems Division Document*

**Application Note:  
Wiring Requirements For  
T-8 Fluorescent Lamps  
With *Instant*-start Ballasts**

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**Wiring Requirements for T-8 Fluorescent Lamps**  
**With *Instant*-start Ballasts**

**Introduction**

Improper wiring may cause field problems related to installation and retrofit of T-8 lamps with instant-start ballasts. Installers should familiarize themselves with the wiring and other requirements issued by lamp, ballast, and lampholder manufacturers. The NEMA Lighting Systems Division has published this notice to remind original equipment manufacturers (OEMs) and installers of some of the principal requirements that contribute to the safe operation and optimum performance of T-8 lamps when used with instant-start ballasts.

**Lampholder Wiring for Bi-pin Lamps**

For the installation of bi-pin based T-8 lamps (up to 5 feet in length and including U-shaped), the two wires from each lampholder must be connected together prior to connecting them to the appropriate single lead of an instant-start ballast, as shown in Figure 1. It is further recommended that this connection be made within 4 inches of the lampholders, and that all existing jumpering between the lampholders used for any prior rapid-start operation should be reconfigured as shown in Figure 1. Also, check that all existing lampholder leads should be securely connected to the lampholder and all lampholder contacts should be in good condition and show no signs of arcing or pitting; replace or repair the lampholders, if needed.

An alternative for new fixtures, or where lampholders need to be replaced, is the use of special T-8 bi-pin instant-start lampholders that have a factory installed jumper between the two lamp contacts.

**No other method of wiring is recommended.** The incorrect wiring shown in Figure 2, or an electrical equivalent, allows excessive current to pass through one (or more) lamp cathodes, giving rise to potentially severe overheating of the lamp base and

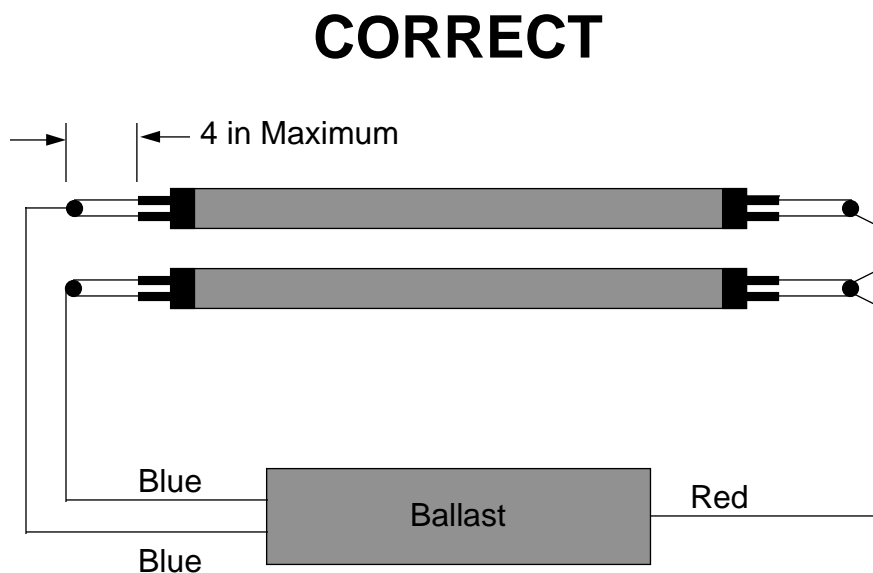
lampholder. This can result in the possibility of lampholder deformation, melting, or charring.

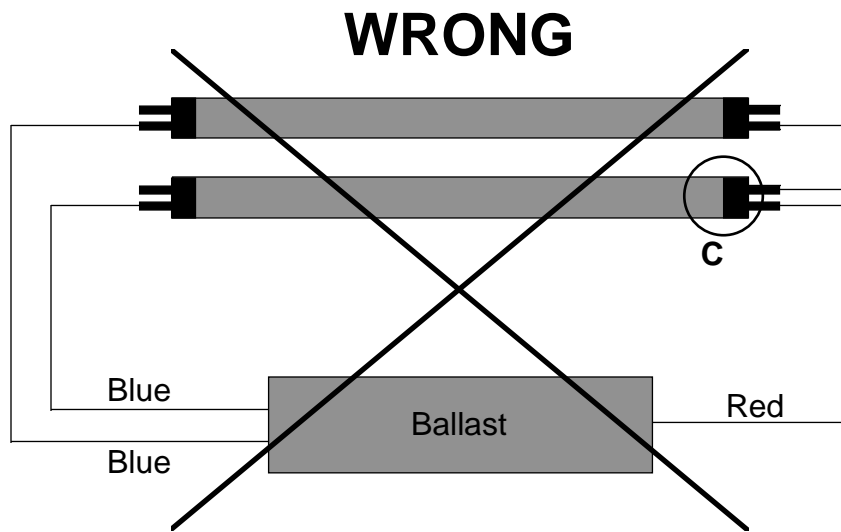
### **Eight Foot T-8 Lamps**

Installers of eight foot T-8 lamps with high frequency electronic instant-start ballasts in retrofit situations should carefully examine existing single-pin lampholders for signs of arcing and pitting; if in doubt, lampholders should be replaced. Also, the spacing between existing or new lampholders should be checked so that it conforms to the lampholder and lamp manufacturer's requirements. Failure to perform either of the above functions may result in an arc being sustained between the single lamp pin and the lampholder, such that deterioration of the materials over time may allow the lamp to fall from the lampholder.

Note that a high frequency ballast will sustain an arc more easily in adverse conditions than the 60 Hz magnetic ballast it replaces.

**Figure 1. Correct Wiring Diagram for Typical 2-lamp Instant-start Ballast**



**Figure 2. Incorrect Wiring Diagram for Typical 2-lamp Instant-start Ballast**

Note - This method of wiring, or its electrical equivalent, is not acceptable. The lamp cathode "C" is carrying the current of the other lamp(s) in the circuit and will overheat.