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

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With *Instant*-start Ballasts

Introduction

There have been a number of recent field problems related to the retrofit of T-8 lamps and instant-start ballasts into existing luminaires. These incidents indicate that installers are not always familiarizing themselves with the wiring and other requirements issued by lamp, ballast, and lampholder manufacturers. The NEMA Lighting Systems Division is issuing 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 T-8 lamps (up to and including 5 feet in length), the two wires from each lampholder must be connected together prior to connecting them to the appropriate single lead of the instant-start ballast, as shown in Figure 1. It is further recommended that this connection is 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 both the existing lampholder leads are securely connected to the lampholder and that all lampholder contacts are 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 which 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

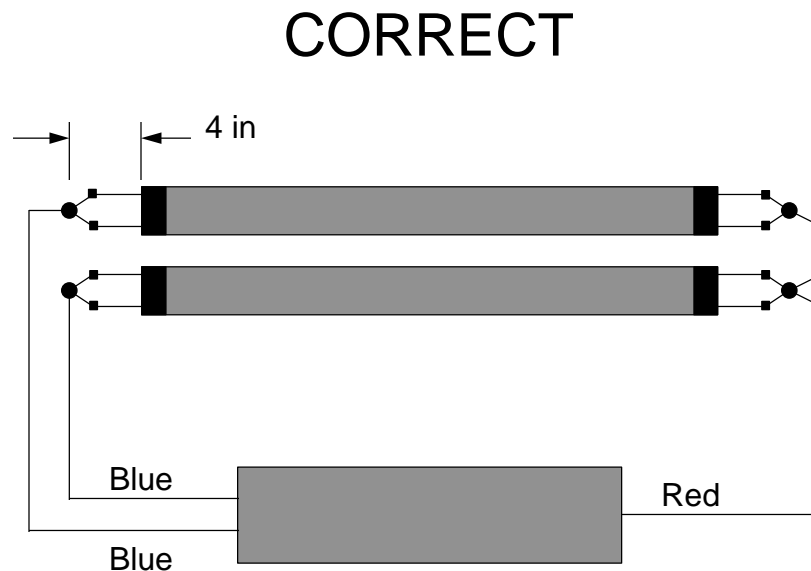
more) lamp cathodes, giving rise to potentially severe overheating of the lamp base and lampholder. This can result in the possibility of lampholder deformation, melting, or charring.

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 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.

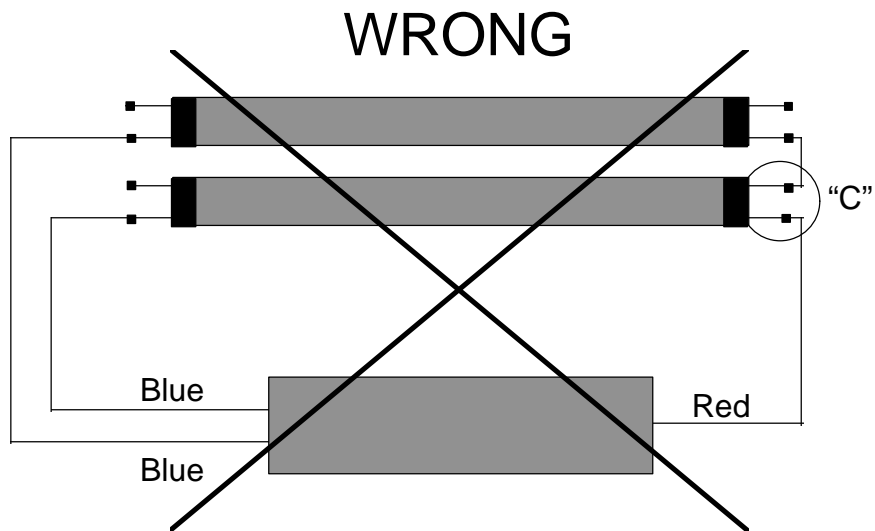
Note that a high frequency ballast will sustain an arc more easily in adverse conditions than the 60 Hz magnetic ballast which it replaces.

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



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



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

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