



# Electronic Fluorescent Ballast Lead “Bundling”

## A White Paper: Best Practices for Lead-wire Bundling

Electronic ballasts have become the most popular fluorescent ballast choice today. While they do provide superior energy savings, controllability, and smaller size than magnetic ballasts, there are a few additional precautions which should be taken to ensure proper operation of the lighting system. One of these is ballast lead-wire “bundling” or “twisting” which this paper will focus on.

Unlike magnetic fluorescent ballasts which operate lamps at low frequency (60 Hz in U.S.), electronic fluorescent ballasts operate lamps at frequencies typically  $> 40,000$  Hz or 40 kHz. With this high frequency operation, the possibility of capacitive coupling between ballast output leads becomes a real possibility. The amount of coupling is directly proportional to the distance between the output lead wires, the frequency of operation, and the total area which is bundled. If this coupling becomes too high, electronic ballast operation can be affected. This could cause improper lamp starting, hard starting, or no starting at all.

Normal routing of the ballast lead wires next to each will not cause a coupling problem. When the leads are tightly twisted or bundled together, capacitive coupling increases which could lead to improper operation. While it is rare that problems occur due to lead bundling, it can happen. Some ballasts could be more sensitive to this than others.

It is therefore recommended not to bundle leads in order to reduce the chances of improper operation. If leads are tightly bundled or twisted, the added capacitance increases the chance that the lamp ignition circuitry could be adversely affected. This holds true for single ballast or multiple ballast fixture applications.

While it is rare that problems occur due to lead bundling, it can happen. Some ballasts could be more sensitive to this than others. This is similar to having excessive ballast lead lengths where lamp ignition could be compromised.

In summary, leads should not be “tightly” twisted or bundled. Leads can be bent, but avoid the “tight twist” (sometimes plastic wire ties are used to hold the leads tightly together—this also is not recommended). If there were to be a problem as the result of tightly twisted or bundled wires, it would show up immediately. This typically is not a problem which would show up at a future time.

A leader in the ballast industry for over 60 years, Philips Lighting Electronics, based in Rosemont, Illinois, offers a full line of Philips Advance branded ballasts and drivers for fluorescent, HID, and LED light sources to the market's broad range of lighting fixture manufacturers and electrical distributors. For more information on Philips Lighting Electronics' complete product line and range of Smart Solutions™, visit our website at [www.philips.com/advance](http://www.philips.com/advance) or call us at (800) 322-2086.



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