

Does the bulb have to match my ballast?

Yes Ballasts and Bulbs Should be Matched. HID bulbs generally need specific ballasts, and any given ballast can usually safely and effectively operate only one type or a few types of HID bulbs. The bulb wattage must be matched to the ballast. A smaller bulb will usually be fed a wattage close to what the proper bulb takes, and will generally overheat and may catastrophically fail. Any catastrophic failures may not necessarily happen quickly. A larger bulb will be underpowered, and will operate at reduced efficiency and may have a shortened lifetime. The ballast may also overheat from prolonged operation with an oversized bulb that fails to warm. Even if the ballast and bulb wattages match, substitutions can be limited by various factors including but not limited to different operating voltages for different bulb types. Examples are: Pulse-start sodium lamps often have a slightly lower operating voltage than metal halide and mercury lamps of the same wattage, and ballasts for these sodium bulbs provide slightly more current than mercury and metal halide ballasts for the same wattage would. The higher current provided by the pulse-start sodium ballast can overheat mercury and metal halide lamps. Mercury and metal halide lamps may also "cycle" on and off in lower voltage sodium ballasts, such as many 50 to 100 watt ones. Metal halide lamps have an operating voltage close to that of mercury lamps in many wattages, but have stricter tolerances for wattage and current waveform. Metal halides also usually need a higher starting voltage. Most metal halide lamps 100 watts or smaller require a high voltage starting pulse around or even over 1,000 volts. 175 to 400 watt metal halide lamp ballasts can power mercury lamps of the same wattage, but the reverse is not recommended. Mercury lamps 50 to 100 watts will work on metal halide ballasts, but hot re-striking of mercury lamps 100 watts or smaller on metal halide lamps may be hard on the mercury lamp since the starting pulse can force current through cold electrodes and the starting resistor inside the mercury lamp. 1,000 watt mercury lamps come in two operating voltages, one of which is OK for 1,000 watt metal halide ballasts. A few wattages of pulse-start sodium (150 watts?) come in two voltages. A low voltage lamp in a high voltage ballast will be underpowered, resulting in reduced efficiency, possible reduced lamp life, and possible ballast overheating. A high voltage lamp in a low voltage ballast will usually cycle on and off, operate erratically, or possibly overheat. This will usually result in greatly reduced lamp life in any case. One class of sodium lamps is made to work in mercury fixtures, but these only work properly with some mercury ballasts, namely: 'Reactor' (plain inductor) ballasts on 230 to 277 volt lines. 'High leakage reactance autotransformer' ballasts, preferably with an open circuit voltage around 230 to 277 volts. NOT 'lead', 'lead-peak' nor any metal halide ballast! These sodium lamps may suffer poor power regulation and accelerated aging in the wrong mercury ballasts, especially after some normal aging changes their electrical characteristics. Also, these lamps may overheat and will probably have shortened life with pulse-start sodium ballasts. Many sodium lamps require a high voltage starting pulse provided only by ballasts made to power such lamps. To prevent dangerous accidents please keep remote ballasts away from tap points and on an elevated position (approx 5 inches off the floor) using a block shelf.