

Troubleshooting Guide For Pulse Start Metal Halide Lighting Fixtures

Caution: High Voltages, electric currents and temperatures are required to operate H.I.D. lamps. Shock and burn hazards exist, and testing or evaluating fixtures or components should be done only by qualified electricians.

Under each procedure, checks *a*, *b* and *c* are rudimentary, whereas check *d* needs to be performed by a qualified electrician. The troubleshooter should perform the easiest sub-tasks (*a*, *b*, *c*) first, and then move ahead to the next category (1, 2, 3 etc), then consult a qualified electrician for “*d*” tests.

Lamp Will Not Start[♦]

1. Make sure there is power to the fixture
 - a. Check circuit breaker (turn “OFF” and then back “ON”). If circuit breaker is in “trip” position, this indicates a short in the wiring, or too many fixtures on the circuit.
 - b. Check GFI (if installed on GFI circuit) Push “reset” button
 - c. Check ballast:
 - i. If equipped with a magnetic ballast, check if the ballast is “humming”
 - ii. For Electronic Ballasts, check with a non-contact voltage sensor, if available and safe to do so.
 - d. Only a qualified electrician should check “live” wire leads with a “contact” voltage meter.
2. Check for loose wiring connections
 - a. Disconnect or turn off power
 - b. Check wire connectors. Wires should be firmly held in connector
3. Check for correct voltage
 - a. Disconnect or turn off power
 - b. Check that incoming “load” lead is connected to correct fixture voltage lead (120 Volt, 208V, 240V or 277V if equipped with multiple voltage leads.)
 - c. Check that “neutral” lead is connected to “Common” fixture lead.
 - d. If the distance from the fixture to the circuit breaker is too long and/or the wire size too small, the voltage at the fixture may be too low to power the ballast and lamp. Consult a ballast “technical guide” for the maximum distance between ballast and lamp, and the wire size required. It is unlikely that this is the problem if the lamp had been previously operating. If the lamp is old and the distance and wire size are maximized, this problem could exist.
4. Check if lamp is correctly seated in socket
 - a. Disconnect or turn off power (allow lamp to cool)
 - b. Open fixture, unscrew lamp ½ turn, and re-tighten until firmly seated
5. Check if lamp is correct for fixture
 - a. Check wattage printed on the outer *glass* of the lamp
 - b. Check the operating position/orientation of the lamp. If the lamp is not for “Universal” operating position, compare the actual finished operating position of the lamp against the lamp’s intended operating position.
6. Check the ballast components
 - a. Disconnect or turn off power

- b. Examine the transformer, ignitor and capacitor (if equipped) for signs of burning, bulging, charring or shorting-out. Re-check supply voltage against voltage on ballast nameplate.*
- c. Check the information on the ballast nameplate for lamp type, ballast input voltage and wiring diagram.
7. Check if photoelectric cell is defective (if equipped with photocell).
 - a. Cover the “eye” of the photocell with opaque tape & wait two minutes. If the lamp “lights up” there may be too much light coming into the photocell. Often, a nearby object will reflect light from the fixture into the photocell.
 - b. Disconnect or turn off power
 - c. Consult a qualified electrician for “d”
 - d. Re-wire the fixture with the photocell out of the circuit.
8. Replace lamp with a “Known Good Lamp”: one that has been very recently operating in another fixture.

*Magnetic Ballast observations:

1. Ballasts with more than one coil winding can indicate the source of the failure. The primary coil is the one closest or connected to the input wiring. If this coil is burned, there was probably an over-voltage event caused by the wrong voltage being applied to the ballast, or correct voltage applied to a lower-voltage input lead on the ballast.
2. If the secondary coil is burned (the coil with the socket leads connected to it) the lamp is probably the cause of the short.
3. Replacing the ballast without mediation of the cause of failure will probably burn out the replacement ballast again.

Lamp/ignitor notes:

1. Pulse Start Metal Halide lamps utilize an Ignitor. The ignitor (or ignitor circuit) supplies a high voltage “pulse” to start these lamps. They will not start without this “pulse”. If a “known good lamp” fails to start, the ignitor may have failed. Pulse-start fixtures between 200-400 watts, a mercury vapor lamp (or “probe-start Metal Halide”) of the same wattage may be used to test. If the fixture has a “pink” socket, the test lamp will need to have the extended center-pin of an “OPEN-RATED” Mercury or Metal Halide lamp, but must have a “starting probe” in order to be used as a “test lamp”. Do not operate the test lamp for long periods beyond the test.
2. HID Lamps have a very long life, compared with incandescent lamps. However, they do eventually “burn out” from various aging processes. Usually, there will be a colored coating or blackening on areas on or inside of the lamp. Compare the “old” lamp with a new one to judge whether “burn out” could be the problem. Also, try the old lamp in a recently operating fixture, after disconnecting power and allowing the fixture to cool.
3. Lamps that have been operated 24/7 for many years will continue to operate until they are turned off, and will not re-start. If continued to operate in this “beyond-end-of-life” condition, they will experience “non-passive failure” or arc-tube rupture. Open-Rated lamps have a containment sleeve that prevents the rupture from destroying the outer envelope. Older “S-rated” lamps do not have this feature and should be fitted with a glass-bottom enclosure from the manufacturer to prevent hot glass shards from exploding outside of the fixture.