Allanson - Magnetic Ballast Trouble Shooting Procedures

Primary Current:

Place clamp around the black primary hot lead. This reading should be at or below the rating of the ballast as indicated on the label. If the total combined footage does not meet the maximum of the ballast's limit, then this reading will be less than stated on the label. If this reading exceeds the rating, then there is either a short in the wiring or the wiring is incorrect. Double-check the actual wiring with the wiring diagram on the label, and look for any wires that may be shorted to ground or one another.

Primary Voltage:

Take the voltage measurement across the black and white wire. The voltage should be +/- 5% of nominal rating. Any deviation from this will cause premature failure of the ballast. If this voltage is low, attempt to locate the reason; make sure that the wire used to supply the circuit is of sufficient size for the distance from the panel and the rated load. Check the voltage at different points in the primary run to find out where the problem may exist.

Filament Voltage:

Measure the voltage in the socket from pin to pin. The reading here should be between 3.5 VAC to 4.5 VAC.

If the voltage reading is below 3.5:
a) Check for low primary input voltage.
b) Check for shorted filament wires within the sign.
c) Possibly a damaged ballast.

If the voltage reading is above 4.5 volts:
a) Check for high primary input voltage.
b) Possibly a damaged ballast.

Filament Current:

Using a clamp-on amp probe, measure the current in each wire with the exception of the black and white ones. The normal reading will be between .5 AMPS to 2 AMPS. A reading larger than this would indicate incorrect wiring, or a short circuit.

If the current reading is below 0.5 amps:
a) Open lamp filament (defective lamp)
b) Improper filament wiring connection causing an open circuit.
c) Check for low primary input voltage.
d) Possibly a damaged or defective ballast.

If the current reading is above 2 amps:
a) External short in the filament wiring.
b) Incorrect lamp or defective lamp filament

c) Check for high primary input voltage.
d) Possibly a damaged or defective ballast.

Lamp Filament Resistance:

With standard test probes, measure resistance between the two pins at the end of the lamp. This test should be performed for both ends of the lamp, and on each lamp in the circuit.
The expected resistance should be aproximately (.5 to 1.2 ohm).
a) Resistance greater than this would indicate an open lamp filament and the lamp should be replaced.
b) Resistance less than this would indicate a shorted filament and the lamp should be replaced.

Open Circuit Voltage:

Take the voltage reading across the blue and red wire. The reading should be between 300 and 1000 volts depending on the ballast model. On Allanson's 696 and 4120, the readings should be taken between the blue/white and red as well as the blue/white and blue, because these are dual circuit ballasts.
See the ballast label for specific Open Circuit Voltage rating.

Allason - Magnetic Ballast Trouble Shooting Procedures (Cont.)

If the OCV reading is below the rating on label:
a) Check for low primary input voltage.
b) Possibly a damaged ballast.

If the OCV reading is above the rating on the label:
a) Check for high primary input voltage.
b) Possibly a damaged ballast.

Lamp Current:

Place clamp-on amp probe around the lamp while it is lit. Reading should be between 400 and 800 MA. Smaller ballasts should be at the high end of the range and larger ballasts should be at the lower end of the range.

Should the current reading is below 400 MA:
a) Total lamp footage exceeds ballast rating.
b) Defective lamp (s).
c) Check for low primary input voltage.
d) Possibly a damaged ballast.

Should the current reading is above 800 MA:
a) Total lamp footage is below ballast rating.
b) Defective lamp (s).
c) Check for high primary input voltage.
d) Possibly a damaged ballast.

Is there a Ground Plane ?:

Ballasts are designed to be used with starter strips. They assist the ballast at time of lamp startup in colder weather, or when a ballast is running at maximum load. On single face signs where the lamps are in close proximity to the metallic sign back, strips may not be needed. The only time in trouble shooting where this is an issue, is when lamps only flicker at startup, or take a very long time to come to full brightness.