**Aromat Instruction Document : AID012**

*Aromat Corporation - Lighting Division*

# *AID012*

# *APPLICATION GUIDELINES for AROMAT MH BALLASTS on AUXILIARY LIGHTING CONTROLS*

**The source …**
**for Lighting Components and Product Design Expertise for the Luminaire Manufacturer**

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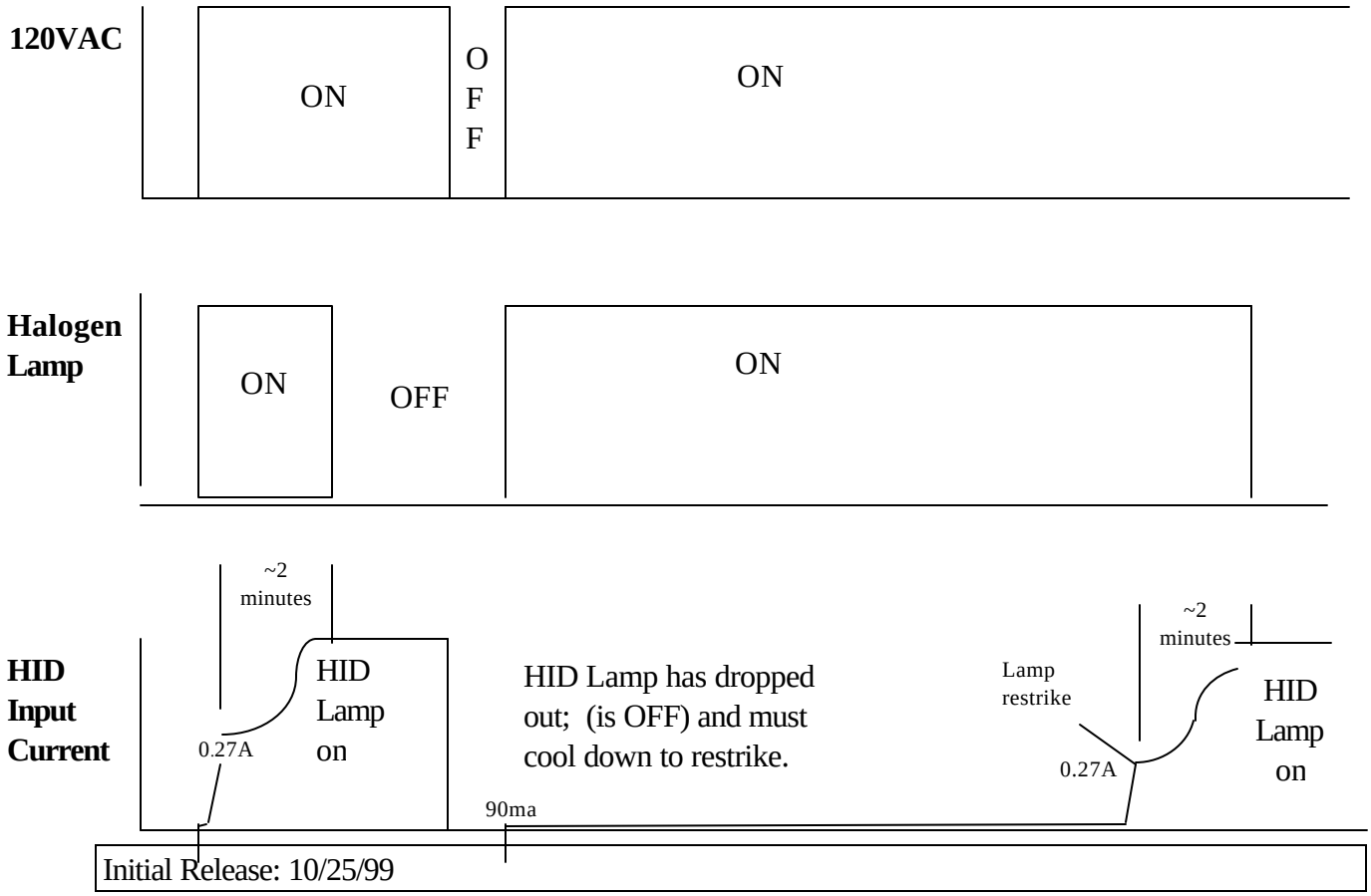
## *Application Guidelines for Aromat MH Ballasts on Auxiliary Lighting Controls*

1.0 Background:

Auxiliary lighting controls (ALC) are widely used in many downlight fixture applications in which the total space is lit with metal halide fixtures. If a momentary AC power outage occurs, the HID lamp extinguishes and needs to cool down before it will relight. The auxiliary lamp (typically, a halogen incandescent lamp of 100 to 200W) is powered by 120V to supply a low-level illumination while the metal halide lamp is warming up and/or during a hot restrike mode of operation. These auxiliary "back-up" lamp controls are not to be confused with emergency lighting systems which have their own battery source to provide low level illumination if no AC line voltage is available.

2.0 Sensing Mode Timing:

Typically, auxiliary lighting controls are connected in series with the MH lamp, thereby, sensing lamp current to determine if the MH lamp is operating. A certain level of current is necessary to indicate that the lamp is "on". If the current is lower than the "on" threshold value, the ALC then switches to "back-up" mode and turns on the auxiliary halogen lamp. Timer features are sometimes added to assure that a full HID lamp warm-up has taken place prior to shutting off the halogen lamp. The timing diagram for an ALC with a (2) minute timer function is as follows:



3.0 Special Provisions for Electronic HID Ballasts:

The sensing is fairly straight forward when the ALC senses the lamp current operating on a magnetic ballast, as the lamp current for the most part is either zero or the normal operating current. However, the output power regulation characteristics of electronic ballasts can be sacrificed when additional components (such as the ALC sensing components) are connected in series with the lamp. Therefore, Aromat recommends that the current sensing be conducted only in the ***input line side*** of the electronic ballast. See the wiring diagrams in Appendix 1. Specifically, input line "sensing" generates unique situations that must be addressed:

3.1 All 277V fixtures must use a step-down transformer to provide 120V for the 120V halogen back-up lamp.

3.2 A 39W/277V system with an ALCH auxiliary lighting controller must utilize a 277V to 120V step-down transformer for the entire system including the 39W ballast. The normal input current of a 39W/277V ballast is not sufficient to "trigger" the ALCH. Therefore, on those fixtures a 39W -***120V*** ballast must be used.

4.0) Compatible Auxiliary System Controls

Current Industries: ALCH (N) – 1 Hot Start
ALCH (N) – 2 Hot & Cold Start

| Wattage | Input Voltage | Wiring Diagram | 277V to 120V Step down transformer required | Comments |
|---|---|---|---|---|
| 39W | 120 | Fig 1 | No | - |
| | 277 | Fig 3 | Yes, sized for both HID & AUX loads | Must use 120V Ballast! |
| 70W | 120 | Fig1 | No | - |
| | 277 | Fig 2 | Yes, sized only for AUX Lamp | - |
| 100W | 120 | Fig1 | No | - |
| | 277 | Fig 2 | Yes, sized only for AUX Lamp | - |
| 150W | 120 | TBD | TBD | - |
| | 277 | Fig 2 | Yes, sized only for AUX Lamp | - |

5.0 Step-down transformers:

5.1 The 50, 70 or 100W Metal Halide "reactor" autotransformers offered by Advance Transformer are not step-"down", but step-"UP" autotransformers used with magnetic reactor ballasts. Because MH lamps require over 250V to start, the 120V input voltage is stepped-up to 277V & then used in conjunction with a standard 277V reactor to ballast the lamp. Therefore, these "reactor" autotransformers are not applicable for our *STEPDOWN* requirement.

5.2 Incandescent 277V to 120V(or 115V) "step-down" transformers are totally acceptable for all the applications cited; including the 277V 39W fixture which must use a step-down transformer for both the 120V ballast and the auxiliary lamp.

5.3 Transformer wattage ratings:

a) It is the OEM's responsibility to meet the UL rating requirements and to evaluate under worst case operational modes the effects of transformer mounting, fixture ambient temperature, & the maximum temperature rating of the transformer to determine the suitable transformer.

b) Note that the 39W 277V application will have a total load of the summation of auxiliary lamp wattage AND the 44W of the 39W 120V ballast, because of the overlap in timing of the auxiliary lamp being "on" at the same time as the metal halide ballast is starting and warming up the lamp.

# *Appendix I : Auxiliary Lamp Control Wiring*

Fig 1

120V System: 39, 70, 100W Aromat Ballast

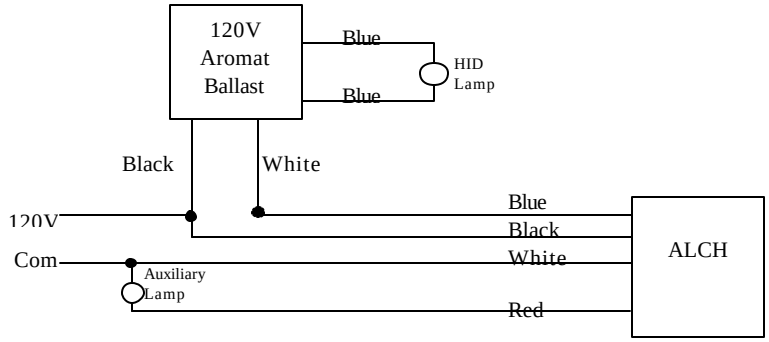



Fig 2

277V System: 70, 100, 150W Aromat Ballast

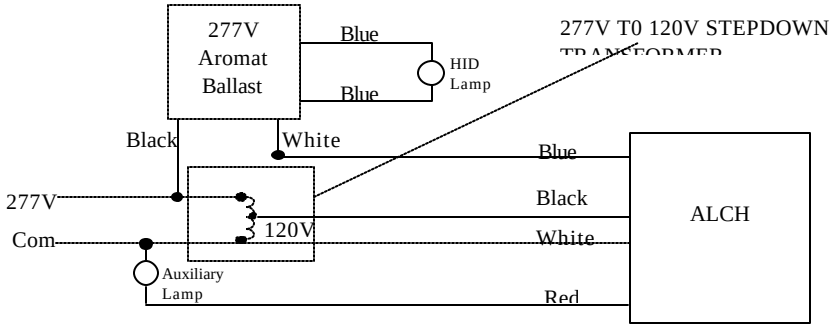



Fig 3

277V / 39W System: Must use 120V 39W Aromat Ballast With Step-down Transformer