HMI Lighting Tutorial

Preface

HMI (**Hydrargyrum medium-arc iodide**) lights are a metal-halide discharge, medium arc lamp manufactured specifically for film and entertainment applications. Unlike traditional lighting units which employ incandescent bulbs, HMIs require electrical **ballasts**, which are separated from the **lamp head** via a **header cable**, to regulate electrical current and supply the proper voltage. Where as tungsten-halogen lamps use the halide gas to regenerate their filament, the vapourized mercury combined with the halides actually emit light from HMI lamps. The color temperature is a result of specific lamp chemistries and can range from ~5400K to ~6500K dependent upon age of the bulb. During the prime of a bulb's lifespan, the temperature usually sits between 5600K - 6000K and rapidly decay as it gets older with various bulbs decaying differently, making it difficult to match color temperature from lamp to lamp.

Disclaimer

This is a supplemental guide, and does not absolve users of liability. Users alone are responsible for safety, proper use, and damages incurred while operating aforementioned equipment.

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Safe Operation of HMI Lamps

Proper operation of HMI Lamps is crucial to both utilization of the lamp and set safety.

Operation Advisement

- Ensure that ballast and lamp switches are in the **'OFF'** position before making connections.

- HMIs are **NOT** dimmable via DMX or variac dimmer routes. Some ballasts offer a built in dimmer. **DO NOT** connect HMI Lamps to dimmers under **ANY** circumstances

- Ensure that lamp is placed in the **FULL SPOT** position at the beginning of the set-up phase, before rigging it to a stand, mount, condor, etc. This places the bulb as far from the shielding glass as possible as an extra precaution, should the bulb explode.

- **NEVER** touch the bulb of an HMI (most lamp housings are designed to make this impossible without breaking into the housing). Natural oils left on a bulb can cause the temperature of the arc to rise, causing the bulb to arc at a greater length resulting in the bulb exploding. Likewise **NEVER** touch the shielding glass of the front of a lamp.

- It is recommended to replace HMI bulbs once they have reached half of their life expectancy. Bulbs decay more rapidly after reaching this point, thus varying their color temperature and making them more prone to exploding. **NEVER** attempt to change a bulb yourself. **TELEPLEX EQUIPMENT CHECKOUT** staff will complete this task. If you believe a bulb requires a replacement please notify **TELEPLEX EQUIPMENT CHECKOUT** staff.

- Bulbs are most likely to **EXPLODE** during the **'CYCLING'** phase upon being struck. Once you have struck the lamp it is recommended that all users stand away from the lamp head during the cycling phase.

- Exterior / Interior temperatures can drastically change the arc of the bulb and could result in explosions should the following not be adhered to:
    - **DO NOT** move lamp from one temperature extreme to the other without first striking the lamp and allowing it to cool down entirely.

    - Moving a lamp from an environment to any environment whose temperature is +/- 10 degrees will **REQUIRE** the lamp to be struck **OFF** and allowed to cool down before being moved to the new environment.

    - Lamps should **NEVER** be operated in excess of 100°F or below 32°F

Safe Rigging of HMI Lamps

Proper Rigging techniques should be used to ensure that lamps are secure during operation.

Rigging Advisement

- Mount all Adapting Lenses, Barndoors, Softboxes, etc. **BEFORE** striking.

- Make connections in a **backwards** pattern:
    - Place and rig light
    - Run header cable, ensuring slack is present
    - Place ballast in a safe environment. Make connections. Plug in.

- Ensure that the accessory mount latch is **CLOSED** after mounting accessories to the lamp.

- Once the lamp is rigged and connections are made, ensure that all header cables are **TIED UP** near the lamp head, to prevent ripping/breaking the connector housings if force is applied (falls, trips, yanks, etc.)

- Keep header cable slack and ballast extensions 'tidy':
    - **ROUTE** cables in a straight line where possible.

    - Use bright gaff-tape to tape down cables once lamp is positioned.

    - Keep slack coiled near the ballast in a **CLOCKWISE** manner.

    - **NEVER** "close-line" any cables / extensions: these should always touch the ground and not hang in the air.

- **DO NOT** apply gels directly to the lamp housing. Use barndoors and C-47s (clothespins) to apply gels in a loose fashion.
    - Alternatively, use gel holders and C-Stands to keep the gel from touching the lamp or accessories at all.

- **ALWAYS** place **SANDBAGS** on stands **first** and remove them **last.**

- If rigging a lamp to a point that is not a stand, use **SAFETY LINES** to keep it from dropping.

Proper Handling of HMI Lamps

Proper handling of HMI Lamps possessed by the **TELEPLEX EQUIPMENT CHECKOUT** facility is described below.

Handling Advisement

- Ensure that **TWO HANDS** are used to **CARRY** larger lamps. This may require two (2) persons to rig the light.

- Lamps will **CYCLE** upon striking, before reaching operating capacity. Allow approximately **SEVEN (7) MINUTES** for this phase before the lamp is 'hot'.
    - During the **CYCLING** phase, the bulb will gradually get brighter before reaching operating capacity.

    - The **LAMP** and **BALLAST** may make a higher-pitched noise during the **CYCLING** phase, which will gradually subside to normal decibel levels when complete.

- HMI lamps are **NOT "Hot Strike"** fixtures. You **MUST** allow approximately **TWENTY (20) MINUTES** for the lamp to cool off, before striking it back on.
    - Attempting to immediately strike the lamp back on (**Hot Striking**) after striking off, can increase the chance of the bulb **EXPLODING**.

    - Attempting to immediately strike the lamp back on after striking off, can increase the chance of overloading the **BALLAST**.

- HMI lamps are **NOT** to be operated in inclement weather.
    - **LAMP** housings and **BALLASTS** are **NOT** water resistant.

- **LAMP** housing can become **EXTREMELY** hot when at operational capacity.
    - **DO NOT** touch the housing with bare hands

    - **DO NOT** attach **GELS** directly to the housing, safety glass, or bulb.

    - **DO NOT** cover ventilation areas of the housing with blackwrap/cinefoil.

Wattage Output / General Electrics

Basic understanding of wattage output and electrics is required to operate HMIs.

Electric Advisement

- HMI Lamps are rated based on operational wattage output.
    - **Wattage Output** may be found on either the **LAMP** or **BALLAST**.
    - **Wattage Output** is directly proportionate to the size of the lamps.
    - **EXAMPLE:** 200W - Small Lamp | 18Kw - Large Lamp
- During the **CYCLING** phase an HMI lamp will pull more amps, thus increasing it's **Wattage Output**. After **CYCLING** the lamp will reach normal Wattage Output.
    - It is possible to overload a circuit during the **CYCLING** phase because of **IGNITION AMPERAGE** vs **OPERATION AMPERAGE**.
    - **DO NOT** strike multiple HMI lamps on the same **CIRCUIT**. Strike them separately and allow each lamp to go through the **CYCLING** phase individually.
- **BALLASTS** **MUST ALWAYS** be on **GROUNDED CIRCUITS**.
    - **NEVER** utilize **2-to-3 Prong Lifts** with HMI **BALLASTS**.
    - Failure to follow this advisement may result in the **BALLAST** overloading or **BULB** exploding.
- **NEVER** use **STINGERS** (Extension Cords) that are rated **ABOVE 12-GAUGE**.
    - **STINGER** Gauges are rated from the lowest number being 'stronger' to the highest number being 'weaker'.
    - **STINGERS** rated under **12-GAUGE** (i.e. the number is higher than twelve - 13, 14, etc.) are not capable of handling the electrical load of HMI **LAMPS** and **BALLASTS**.