Tech Note - Jasdip LED replacement circuit boards.

High intensity white Rebel LEDs have a minimum life expectancy of 50,000 hours of operation as long as they a kept within their maximum operating parameters.

These parameters include both **maximum current** and **thermal** considerations.

Current control is via an IC specifically designed to operate as a constant current source for LEDs using a switching transistor and an inductor. Additional circuitry protects against line transients.

Thermal requirements are met by the use of the "Luxeon Rebel" LEDs, which have a solderable heat transfer pad to attach them to the PCB. Multiple adjacent PCB vias then transfer the heat to the back of the PCB, where double sided, adhesive heat transfer mat, passes the heat to the aluminium housing and then finally to the surrounding air. For long term reliability, it is critical to keep the thermal resistance between the silicon junction of the LED and the air as low as possible. This ensures that the maximum junction temperature of the LED (150 degrees celcius) is never exceeded. The method used provides superior heat transfer characteristics to silicon paste methods.

Housing Preparation

1) Remove the old LED PCB from the aluminium housing, including it's heat transfer sheet.
2) Wipe away any residual heat sink silicon compound with a clean rag to ensure that the flat surface inside is clean and free of any residue that will prevent the new board's heat transfer adhesive from holding onto the face. This part is critical for good heat transfer.

Installing the New LED Board

1. The white section of the back of the new board is the heat transfer section. The black sections are for insulation and protection against corrosive agents. The heat transfer section comes with a protective plastic sheet which must be peeled off to expose the adhesive heat transfer face underneath. A fine blade will be required to lift one corner and then the cover can be peeled back by hand.
2. The board must then be aligned correctly with the housing before sticking down. This is easiest accomplished by placing two mounting screws through the board diagonally at each end of the heat transfer section and lowering the board into the housing then aligning and starting the screws.
3. Press the board down onto the housing with fingers, as firm as you can. (50 to 60 psi recommended) This will ensure the heat bonding adhesive has good contact with the heatsink housing. Insert the rest of the screws. Note that the two mounting screws at the control end of the board (opposite end to the terminals) are unnecessary. They do not assist in mounting or heat transfer and provide a shorter path to earth should water enter the housing.

The board has a conformal coating to protect against corrosive environments, but is not water proof. Ensure that the housing cover and cable entries are well sealed against water ingress before use in the field. The Jasdip LED boards may be powered for short periods (10 to 15 secs) without a housing attached, for quick testing. **Longer periods will over heat the LEDs.**

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