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Diy cree cob led grow light kit

COB LED grow lights are some of the most effective and most popular on the market. But there's also a problem with them. Manufacturers tend to add a bunch of standard diodes to the fixtures with the COBs. That is great if you want it, but not if you just want a plain COB. Then you're just paying for a bunch of add-ons you don't want. Because not only do you get all the added diodes, but those diodes generate more heat, which means the fixture also needs fans. So that's another thing you're paying for. It's no wonder that all of the good COB LED grow lights on the market are expensive. But they don't have to be. Rapid LED makes DIY COB kits. These include everything you need to get a COB fixture built and nothing more. There are no additional diodes and no fans. Because the "fixture" is just an open frame and the COBs have large heat sinks, fans are not required. This, and the fact that you handle the assembly, keeps costs down. If you don't mind paying a bit more, you can also get the fixtures pre-assembled. Even then, they're still far cheaper than competing lights. Let's take a closer look at the Rapid LED COB kits and find out if they're the right solution for your grow room. Rapid LED DIY Grow Light Kits: Comparison Table Rapid LED's basic lights are the 75 watt CREE CXB3590 COB LED and the 100 watt ChiLED Logic Puck, also called the Growmaus (the first two lights in the table above). Both are available on Amazon. The DIY kits in the table are made up of multiples of the 75 watt COB lights. The kits are not on Amazon, so I provided links to the biggest LED grow lights store where you can find them. You can also get them directly from Rapid, but the other store usually has a 5% off sale, so you can save a bit of money there. You may be wondering how the last two kits are different, because they appear the same. Both feature 12 of the COB lights, but why is one more powerful and covers a 5 by 5 foot area, while the other only covers 4 by 4? The difference is the driver. The 4 by 4 kit runs at a 1400 mA current, which drives the COBs at 50 watts each, for a total of 600 watts. The 5 by 5 kit runs at 2100 mA, driving the COBs at 75 watts each for a total of 900 watts. Rapid LED Review This review focuses on the individual CREE CXB3590 COB LED grow light, because all of the grow light kits make use of several of these fixtures. This light is generally driven at 75 watts, but two of the kits drive them at only 50 watts (the 4x4 and the 100w kits). Rapid CXB3590 COB LED Features Uses 75 watts — save 40 to 50% on your electric bill over HID lights Ideal spectrum for plants — choose from 3000K, 3500K or 5000K white light Highly efficient — great output from a low power usage 22 by 22 inch core coverage — with great canopy penetration CREE COB — high quality LED chip Meanwell driver — high quality dimmable driver Extra wide reflector — directs all of the light downward toward plants 60 day returns — of unused lights Advantages The primary advantages of the Rapid LED COB fixture are the great color spectrum, the deep canopy penetration and the flexibility. You can hang them in any configuration you like, including any one of the DIY kits. DIY Kits Let's start with the primary reason growers end up going with Rapid LED grow lights: the ultimate flexibility the single COB fixture offers, especially when buying them in one of the easy-to-build DIY kits. The kits come with all the parts you need to build a fixture like this one, which is the largest of the Rapid LED kits: While this is the largest kit on offer, the smaller ones are all constructed in a similar fashion. Naturally, you can forego the kit altogether and construct your own light using the COBs, drivers (ideally the same Meanwell drivers that come with the kits) and whatever material you want for the frame. Many growers use wood or aluminum or even PVC tubes. But the kits are the easiest solution and they include all of the following: CREE CXB3590 COB Arrays Ideal 50-2303CR COB holders 140mm pin heatsinks Meanwell HLG drivers SurSeal Thermal Pads Cased Potentiometers with knobs Power cord WAGO 221-412 lever nuts Red and black 18 AWG solid core bulk wire ANGELINA Extra Wide Reflector with holder (optional) Canopy Substrate with Canopy Rail sets, driver brackets, and hanging kit Spectrum These lights use a simple all white spectrum that has a good amount of light at every wavelength. It is very close to natural sunlight and is great for plants during all stages of growth. You have a number of color temperature options: 2700K, 3000K, 3500K, 4000K, 5000K or 6500K. On Amazon, only the 3000K, 3500K or 5000K versions are available, but that's really all you need. If you are using your light for vegging only, go for the cooler 5000K version, which has more blue light. If you are flowering only, go with the red-heavy 3000K light. If you are growing full-cycle, go with the 3000K or 35000K versions. Personally, I would use the 3000K for all stages, because I like having the added red during flowering more than I like the extra blue in the 3500K for vegging. Either light works great for any stage though. Coverage And Penetration One of the Rapid LED CREE CXB3590 COB arrays can cover an area of around 2 by 2 feet. The ideal coverage is just slightly less at 22 by 22 inches. Take a look at the PPFd footprint. This is a great coverage for such a small light and you can see how that potential coverage area really adds up once you start adding more and more of these COBs to your grow space, like one of the DIY kits would do. More importantly, powerful COB LEDs get much better canopy penetration than traditional LEDs, so they can have a huge positive effect on yields. The Rapid COBs have a large reflector that further boosts penetration, because it directs all of the light downwards. Competing COBs without the reflector end up losing light as it escapes off to the sides. Other Advantages Another advantage is that Rapid LED fixtures do not have any fans. Not only are fans noisy, but they tend to be the first component in an LED grow light that breaks. Because the individual COB lights are separated by a good amount of space, and they are not enclosed inside a housing, but mounted on an open frame, heat sinks are sufficient to cool them. Finally, Rapid LED have a 60 day return policy. That means you can return your light, if you are not satisfied. Disadvantages Rapid LED grow lights do not have any real disadvantages, but there are several things that could be a problem in certain situations. In other words: these lights are not right for everyone. If you have limited vertical space in your grow room, COBs are not the way to go. Because they are more powerful, they need more distance from the plants to avoid burning them. They spectrum may also be a problem for some. Full spectrum white light is great and works really well on its own, but white with added red, blue, UV and IR is better. Really, this depends on personal preference and you can always add supplemental lighting in whichever color you wish. If you do want additional diodes in the same fixture, check out Phlizon's line of COB lights. Comparison To Timber LED Rapid and Timber make very similar fixtures. There are a few other companies that also make lights like this, but these two stand far above the rest. So which is better? It depends. I prefer Timber overall, but it is very close. Timber uses Vero29 V7 COBs made by Bridgelux, which are almost as good as the CREE COBs, but not quite. Timber lights also cost a bit more. The primary reason I prefer them is that they are a bit better quality and they are made in the US. I am not sure where Rapid manufactures their lights, but because they are not open with this information, it is almost certainly in China. If you prefer the CREE COBs or you prefer to spend less, go with Rapid. You're getting great lights. If you'd like to check out Timber, read our full Timber LED review. Rapid DIY COB LED Grow Lights: Final Verdict A Rapid LED DIY COB Kit is a great option for those who want top-of-the-line COBs at the lowest possible price. And with everything based on the single COB units, you get maximum flexibility. Choose from a number of different DIY kits that give you multiple mounting options, or just get the COBs and a driver and build you own frame to mount however you like. If you prefer not to DIY, you also have the option to pay a bit more and have Rapid LED assemble everything for you. That said, assembly with the DIY kits could not be simpler. Rapid LED are a great option for DIY COB kits, especially since they are one of only two (good) companies that offer them. Unfortunately for Rapid, the other company is Timber, who do it even better. Still, Rapid earns a Grow Light Info rating of 4.6 out of 5. Wattage Draw : 100W From LEDsLEDs : Top Bin CREE CXB3590Driver : Mean Well HLG-185H-C140BCoverage Area : 2-3 Square FeetDimensions : 21.70" X 5.55"Dimmable : YesTools Required : Screwdriver, Wire Stripper Skip to content When LEDs became powerful, circa 2006, we started getting requests from customers to help them use our LEDs for growing (horticulture). Before giving out too much information, we researched photosynthesis and did an internal grow test using shorter wavelength blue and longer wavelength red LEDs. After the success of that first test, we decided to develop a high-quality LED grow light kit; something that used name brand and reliable LEDs and components. At that time, all the LED grow products we were seeing on the market seemed to have vague specifications, outlandish claims, looked cheaply built and used unreliable components. Of course our kit started small in-scale, but now almost 10-years later our LED grow light kits have gone through many different upgrades. Our latest multi-spectrum grow kits have just been lowered in cost, increased in quality and have been made easier to build with detailed video instruction. So, in light of these recent changes we decided to put together a post that would highlight all the new features and show how easy it is to build one yourself (DIY). First, if you have ever been interested in this subject before (using LEDs to grow), then you know there is a lot of information on LEDs versus High Intensity Discharge (HID). Should you want more information on growing with LEDs, we do have a post more appropriate to that subject: 5-Steps to Super Yields with LEDs. For us, being an LED company, the choice to develop a high-power LED grow light with LEDs was an easy one. Like our customers, we appreciate sustainability and were willing to live through the growing pains along the way. Obviously, much of the available resources when starting were only on HID lights, so the learning curve was longer, but we had excellent customers that were willing to help test and improve the product along the way. Ok, lets start with an overview. The general idea for this product was to give all skill levels of customers affordable access to the best LED components, in a package that could be easily set-up and customized to their specifications without expensive or difficult to use tools. However, because it does require some DIY, we have provided simple step-by-step instructions and a video guide to help with assembly. Don't let the DIY part scare you away, this kit is easier to put together than your kids legos. Just wait for the video to see how... These kits are all scalable, because everyone is different we offer varying lengths, which allow for more or less LEDs on one heat sink (more on this later). The prepackaged options range from as little as 75-watts to as much as 300+ watts. In our experience these combination cover most applications, but should you need a variation, we can help to customize the kit (more on customization later). The DIY MakersLED Heat Sink With most people we find they consider heat sinks to be the least sexy talking point of an LED project, but actually the heat sink we use here is kinda cool. It's a professional grade DIY MakersLED Original Heat Sink that looks more like a finished fixture. More importantly than the appearance, its function...Without the correct heat sink, all the LEDs would overheat and significantly drop in light-output and dramatically lose lifetime hours. The MakersLED Original Heat Sink is a 6.45-inch by 3.5-inch extruded aluminum anodized heat sink that can be as long as 4-feet and cut down to as short as you want. It comes with a cooling fan(s), LED mounting hardware, end-caps/plugs, multiple mounting options and a clear acrylic lens to cover and protect your LEDs. Remember that the LEDs are replacing extremely hot/powerful HID grow lights, so despite what you may have heard or read, the LEDs are going to need to be run at max power and will get very hot, thus the need for such a significant heat sink. We have calculated that a one-foot section of the heat sink is capable of handling around 100-watts of LEDs. That is a lot. But, the heat is quickly moved away from the LEDs and the plants via the heat sink and small cooling fans. This contrasts with HID lights as the heat from that type of light is projected down at the plants, often requiring extra power and products to help cool the area, making the grow process more difficult. For a closer look at the MakersLED heat sink we have an image above and a short video here. Heat Sink Hanging Kit One of the advantages of LED grow lights is you can get the light extremely close to the plants for maximum light penetration. The MakersLED heat sink can include a hanging kit accessory which allows the heat sink to hang from cables at whatever distance from the plants you prefer. The LEDs for the Grow Light The fun part is the LEDs, which is where we have experimented the most. As mentioned earlier, the first test we did was just with blue and red LEDs. Once LED manufacturers like Cree and Luxeon started coming out with Deep-Red or Photo-Red (660nm), we then began trying that wavelength along with Royal-Blue and Blue. From our research on plants and Photosynthesis we concluded that the main wavelengths the plants needed were 450nm Royal-Blue and 660nm Deep-Red/Photo-Red. However, in our attempt to replicated the sun, we knew we needed more. So we began adding more Reds, Red-Orange, Far-Red/Infrared, and warm-whites. The 3000K white helped peak the wavelength in the right areas (blue & red), but also added some useful light in the middle and lower ends of the spectrum. Having this wide range of wavelength has helped to improve flowering and keep plants on a normal schedule. Without these spectrum's we have seen weaker yields and longer flowering cycles. For ease of assembly we have upgraded the grow kit from individually mountable LEDs to a board of 30 LEDs (image below) that is designed to mount into the heat sink. The board has five rows of six LEDs, each row of LEDs are in-series. Below we have an image showing the board layout and configuration of the LEDs listing their peak wavelength. Our kits can have anywhere from 1 board to 4 boards mounted to the same heat sink. In a later section we will go over the wattage of each kit. Worth noting is the ratio of blues/whites to red. We have 10 blues/white and 20 reds. The main manufacture of LEDs for our grow kits has been Cree. We have experimented with others, but found that the efficiency, power and reliability of Cree has stood out above the rest. All LEDs are not made equal and this is one area that helps our grow light kits perform and last better/longer than others. We use a combination of the different Cree Xlamp packages. This helps get the best output from each spectrum. For example, the royal-blue LEDs are XT-E, the Reds are XP-E2 and the Whites are XP-G2. Powering LEDs for growing The five channels of LEDs are each powered by a designated constant current source on the MakersLED 5Up PRO. The 5-Up PRO driver is designed to slide into the heat sink and holds 5 separate Mean Well LDD constant current LED drivers. These driver channels are labeled 1 through 5 and correspond the LED channels on the board we described earlier. For example the center row of Royal-Blue LEDs on the board is channel 3 and is wired to the 3rd channel on the driver. The surrounding rows, numbered 2 & 4, are mixed with Red and White LEDs and the two outside rows, 1 & 5, are mixed with far-red and infrared. The Deep-Red/Photo-Red and Far-Red/Infrared LEDs are driven at their maximum rated current of 700mA, while the other LEDs can be driven slightly higher at 1000mA. We figure the wattage by multiplying the forward voltage by the current. The total wattage is 75-watts per board of 30 LEDs. The MakersLED 5-Up PRO driver receives power from an external 48V switching power supply, which also powers the fan and optional controller. The fan is a small 12v unit that comes with the heat sink and mounts above the fins to help actively cool the heat sink. The driver conveniently includes a 12v terminal to connect the fan wires to. Additionally the driver can power the MakersLED Controller. Controller for Timing To properly simulate the sun cycle a grow light needs to be on at timer. The optional MakersLED Controller allows you to easily set the time-of-day and control when the light turns on and off. The controller also can ramp up and ramp down the light at both ends of the day to simulate sunrise and sunset. The controller has a digital LCD display that is easily controlled by a turn style knob. As seen in the image, this unit mounts beautifully to the side of the MakersLED heat sink. Customize your kit In general we always can do something to help make your kit to the way you want, just ask. For example, in the past we have configured LEDs differently, cut the heat sink to a different length or assembled the kit your way. Of course the basic differences depend on your grow area, how many plants you have and or what coverage area you need. The kits can be customized to different lengths and wattages, but if there is a configuration we don't offer please contact us and we can consider altering it for you. If you watched the MakersLED heat sink video then you know that the heat has 1-slots for mounting individual star LEDs, so we also could customize the kits with individual star LEDs instead of the standard LED board. Keep in mind that mounting every LED individually does take a lot of extra time and requires advanced wiring and soldering techniques. Do it Yourself (DIY) Our kits include all the items needed, however it does require assembly. Take a look here at this time-lapse video below detailing the construction of a 150-watt LED grow kit. Also, on the LED grow kit product page is a PDF of step-by-step instructions and wiring diagram.

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