PRODUCT USE STATEMENTS

CASTLE PART NUMBER	PRODUCT DESCRIPTION
010-0175-00	HYDRA X 8S, 33.6V ESC, 8A PEAK BEC

The appropriate motor/vehicle/battery combinations for your system are crucial to the sustained and efficient operation of your Castle system. Incorrect wiring, over voltage, overloading, improper gearing, improper motor selection, incorrect controller settings, or insufficient batteries or connectors can result in damages to your motor or controller that will not be covered under warranty. Please read all product documentation (Product Use Statements, Quick Start Guide, User Manual) prior to use and contact us if you have any questions about the use or operation of your Castle power system.

SAFETY PRECAUTIONS

- Always monitor your ESC and motor temperatures during the first run after modifying your system to ensure they stay within the safe operating limits and temperatures. The absolute maximum heat limit threshold for the ESC and Motor is 200° F.
- This is an extremely powerful brushless motor system. We strongly recommend removing the pinion gear from the motor for your own safety and the safety of those around you before performing calibration and programming functions.
- Do NOT hold the vehicle in the air and run it up to full throttle. Rubber tires will “grow” to extreme size on a high-speed vehicle. Tire failures at speed can cause serious injury! Make sure your tires are securely glued to the wheels and check them often.
- ALWAYS disconnect the battery from the ESC when you are finished enjoying your vehicle. The switch on the ESC controls the power that is delivered to the receiver and servo(s). The controller will always draw current when it is connected to the battery and will completely discharge batteries if they are connected for long durations. This may cause failure of your batteries. Castle Creations is not responsible for any damage as a result of batteries left plugged in to your ESC. Your Castle ESC is programmed to sound a tone every ten seconds to remind you that it is still powered.

CALIBRATION

- Individual transmitter signals for neutral, full throttle, and full brake vary.
- You must calibrate your Castle ESC so that it will operate effectively with your transmitter.
- Anytime the ESC is powered up with a new transmitter or with different throttle channel settings, it will need to be calibrated to the transmitter’s throttle settings.
- Additionally, we recommend that the ESC be calibrated after updating to new software via Castle Link.

INPUT VOLTAGE

- Applying voltages higher than 33.6V will cause irreparable damage to your Hydra X8s controller.
- **DO NOT RUN HV CELLS (above 4.2v/cell) WHEN RUNNING AT MAX CELL COUNT (8s). This will exceed the 33.6v rating and will damage the ESC and not be covered by the warranty.**

BATTERY CAPACITY MINIMUM

- The Hydra X8s is a high-performance controller; you must use high-discharge cells in your high-performance application to ensure vehicle performance.
- MINIMUM battery capacity is 5000mAh and MINIMUM of 50C continuous discharge for general use
- For extreme setups we recommend a MINIMUM of 70C continuous discharge LiPo batteries.
- If the batteries, you are using contain input bullets you might consider upgrading to a direct wired pack as the bullets may not be able to handle the currents that the Hydra X8s ESC can push out.
- If you must disable low voltage cutoff to prevent the ESC from shutting down, then your batteries are insufficient for your application. 3.2v/cell is the lowest a LiPo battery should ever be discharged under load. Utilize the data logging capability of the ESC to verify your batteries are not sagging to the cutoff voltage. Exceeding a LiPo batteries capabilities can lead to a catastrophic failure of the battery and/or ESC.

WIRING AND SOLDERING

- High strand count silicone coated copper wire is essential with higher power electric power systems. Castle Creations' wire is lower resistance than the same diameter of solid copper, meaning more power gets from the batteries to the motor with less wasted as heat.
- The ultra-high strand count and silicone coating means the wire is very flexible which prevents work hardening and breakage with use.
- Use a high quality soldering station. Soldering stations usually have a variable temperature control which lets you set the right amount of heat to be used. Too little heat will result in a cold solder joint; too much heat can seriously damage a component. The key factors in quality soldering are time and temperature. Our recommendation for the Mamba XLX2 is a temperature setting of 400° C (745° F). You want it hot and as short a time as possible. We use 250W soldering irons.
- Use a high-quality rosin core solder. The rosin core solder is infused with flux which helps clean the surfaces you are soldering for better adhesion.
- Do not exceed more than 18 inches of total wire between the battery and ESC (this includes the wire already on the ESC and battery).
- Do not solder wires directly to the circuit board. Doing so will damage the ESC and void the warranty.
- Our wire is available for purchase and this link provides the appropriate wire gauge for your Castle ESC. http://www.castlecreations.com/wire-application-chart

CONNECTOR RATINGS MINIMUM

- The Hydra X8s requires the use of connectors designed for 130 amps continuous. We have tested and recommend Castle 6.5mm Polarized, Castle 8mm Bullet, QS8 Anti Spark and QS10 Anti Spark
- Do not use Deans, Traxxas, EC3/XT60, EC5/IC5, XT90/XT90s, or EC5/IC5, connectors in a Hydra setup

We have tested these connectors/ brands and recommend them for the HYDRA X 8S:	
Castle 6.5mm Polarized	Castle 8mm Bullet
QS8 8mm Anti Spark	QS10 10mm Anti Spark

MOTORS

- The Hydra X8s is capable of handling incredible amounts of power, your motor must also be up for the task. Always run your motor within the manufacturer's specs. Monitor motor, battery, and controller temps carefully and never let the motor get above 200° F.
- Excessive heat in the motor can damage the motor, the Hydra X8s, and your batteries.
- We recommend the default "Smart Sense™" mode. It uses the sensors (if applicable motor is used) to start the motor smoothly. Once the motor is running the ESC stops using the sensors and reverts to sensorless operation. If a sensored motor is not used, the ESC reverts to full sensorless operation.

PROP SIZE

- When you are tuning a boat, expect some modifications in prop size to get it exactly where you want it. The goal here is to not overheat the motor, ESC, and/or batteries.
- Check your motor temps – never let the motor get above 200° F - invest in an infrared thermometer so you can monitor temps easily.
- You can also adjust MOTOR TEMPERATURE CUTOFF (with Sensored Motors Only) in Castle Link. When this setting is enabled, the controller will shut off if the motor reaches the specified temperature as indicated by its internal temperature sensor.
- We always recommend making small changes when propping up.

CASTLE LINK SETTINGS

- During the optimization of your setup it is critical to check motor and ESC temperatures after making adjustment.
- The heat limit threshold for Hydra X8s ESC is 200° F and Castle motors is 200° F.
- We recommend the use of the data log as you progress with the feel and power of the vehicle. You will be able to record real-time data such as motor RPM, battery current and voltage, ESC and motor temperature, throttle input, and more.
- Download and analyze the collected data via Castle Link and make adjustments to maximize both performance and battery life.

AUXILIARY WIRE

- The AUX wire allows you to adjust a setting "on-the-fly" using an auxiliary channel on your receiver.
- The AUX wire function is disabled by default and is programmable via Castle Link. Plug this wire into the auxiliary (#3/#4) channel on your receiver.
- You must connect the AUX wire to an open channel on your receiver even if you are not using the Auxiliary function.
- You must disconnect the AUX wire from your radio before connecting to Castle Link. Failure to do so may result in damage to your Castle Link and/or computer.

OPERATING ENVIRONMENT CONSIDERATIONS

- Although Hydra X8s is waterproof, it is not intended for operation while completely submerged in liquid.
- Always rinse the ESC and motor with clean water after exposure to corrosives or dirt.

- The receiver harness and sensor harness connections at the board can be affected by water. While most boat hulls are watertight, water can find its way in. Applying dielectric grease to these connections can prevent corrosion and signal interruption if these connections are exposed to water.

TECH TIPS

- If replacing the water-cooling fittings, it is recommended to use Loctite® 545 (or similar) on the threads. This will ensure a watertight, 25+ PSI strong seal.

ADDITIONAL SUPPORT

- For support, frequently asked questions, technical documents, and more, visit our *Castle Tech Support Site*
- Need to discuss a setup or troubleshoot an issue? Castle Creations Tech Support is available Mon-Fri 9am-4pm CST at (913) 390-6939 (Option 1)
- You can also email us by clicking here: *Castle Tech Support Email*