Product Use Statements Hydra Cobra 5 HV

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. • The ESC may also need to be calibrated after updating to new software via Castle Link.
Input Voltage:	Min: 6S LiPo, Max: 12S LiPo, 50.4V
Battery Capacity Minimum:	• The Hydra Cobra 5 HV 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 Cobra 5 HV 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 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 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 Hydra Cobra 5 HV 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 Cobra 5 HV requires the use of connectors designed for 150+ 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 Cobra 5 HV setup
Motors:	• The Hydra Cobra 5 HV 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 Cobra 5 HV, and your batteries. • The default "Smart Sense™" modes 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 Cobra 5 HV 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.
AUX 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 Cobra 5 HV 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.