Product	Beginner	Intermediate	Advanced 1	Advanced 2
SSTC 1.0 Kit	**X**			
SSTC 2.0 Kit		**X (O) (D)**		
Universal Flyback Driver	**X**			
Class-E Audio Tesla Coil		**X**		
Basic Modulator Kit	**X (O)**			
microBrute DRSSTC Kit			**X**	
Advanced Modulator Kit		**X (O)**		
Xenosonic Modulator Kit		**X (O)**		
miniBrute DRSSTC Kit				**X**
CM600 Gate Driver Kit				**X (D)**
Plasmasonic Kit			**X**	

Kit Difficulty Chart

Kit Difficulty Guide

The goal of this document is to provide a very basic summary of the complexity of build for the available products we offer so that one has an understanding of what is involved in building one of our products prior to purchasing it.

One of the most important things to realize before purchasing a kit from Eastern Voltage Research is that these kits are not your average run-of-the mill educational kits that are offered from the many different electronic kit manufacturers on the market. These kits feature high performance solid state switching components which either switch high power at very high frequencies (i.e. 4MHz for our Class-E Plasma Speaker) or high peak currents (500A+ peak) in our DRSSTC kits.

Because these solid state components switch high power and high current, they are more prone to failure than components included in your basic LED flasher kit sold at Mr. Smith's Electronics Store down the street. Therefore, it is important to recognize that in the course of building, testing, and operating your kit, you may see device failures from time to time. This is simply a nature of the beast when working with solid state Tesla coils!

Now you make ask why wouldn't you incorporated a higher performance (and thus higher reliability) device in the design to begin with. That is an excellent question, and the answer is simply price and availability. For the price, we presently use the highest

performance IGBTs available for our DRSSTC kits. The IGBTs we use presently retail for about $25.00 each. To specify a higher performance IGBT in these applications would require selecting an industrial motor control type IGBT such as a Mitsubishi CM300 or CM600. Unfortunately, these devices start at over $300 each (CM300) to well over $1000 each for the CM600 devices! This is simply prohibitively expensive for the average hobbyist to afford. Surplus prices for these devices is much less expensive, however, you never know what condition the device will be in and the supply is extremely limited.

Finally, the aim of this document is not meant to scare you, but rather provide you with a realistic idea of what to expect when building, testing, and operating one of our kits.

The difficulty levels described below are brief summaries to what can be expected with each kit as far as what test equipment is needed, and how reliable the kit is during operation.

Beginner

This type of kit is designed as an entry level, easy to build kit, for the beginner. The design is relatively simple with highly detailed instructions. Recommended test equipment include a multimeter. These designs are considered highly reliable with a very low probability of semiconductor failure.

Beginner (O)

Same as above, although an oscilloscope is recommended for measurement and test due to the timing nature of the device.

Intermediate

This type of kit is slightly more complex that the beginner kit. The hook-up and implementation are more involved, but straightforward with highly detailed instructions. Recommended test equipment include a multimeter. These designs are considered fairly reliable, although careful thermal management is required. There is a low probability of power semiconductor failure, mainly at times where the kit is not properly tuned, cooled, or hooked-up properly.

Intermediate (O)

Same as the standard intermediate kit except that an oscilloscope is require to test, measure, and modify the timing according to the user's needs.

Intermediate (D)

Same as the standard intermediate kit except no documentation is included other than a schematic. In the case of the SSTC 2.0, the user is expected to be familiar with the design and use of SSTCs and able to properly design a Tesla resonator as well as the timing of the modulator (interrupter.)

Advanced Level 1

Advanced Level 1 kits are fairly complex, and require good soldering skills as well as troubleshooting skills. The builds are very straightforward with highly detailed instructions. Required test equipment include a multimeter. Recommended test equipment include an oscilloscope. These designs are considered somewhat reliable. Proper tuning, current limiting, and cooling are an absolute must for reliable performance. There is a medium probability that the power semiconductors may fail, as is the case with any high power solid state Tesla coil device. Proper thermal management along with proper tuning will minimize this risk. The end user should be prepared to purchase replacement components as needed during any failures especially during the initial tuning and set-up phase of the build. The end user should be fully comfortable with troubleshooting electronics and power circuits using an oscilloscope and multimeter and with reading and interpreting a schematic. Knowledge of DRSSTC systems (for our microBrute DRSSTC Kit) is strongly recommended as the microBrute DRSSTC is a turn-key solution targeted toward Tesla enthusiasts.

Advanced Level 1 (D)

Same as above except being a development kit, there is no documentation other than a schematic. The end user should be familiar with SSTCs and DRSSTCs and have good troubleshooting skills.

Advanced Level 2

Advanced Level 2 kits are high complex solid state power devices. These kits require excellent electrical and mechanical construction skills. Although complete documentation is available for these kits (i.e. miniBrute Reference Design book), step-by-step instructions are not. The user should be able to build a board from a parts list and schematic only. Required test equipment include a multimeter and oscilloscope. Recommended test equipment include a function generator and benchtop power supplies. Reliability of these designs are highly dependent on the build and tuning of these devices as well as the power levels these devices are run at. A poorly tuned system running at high power levels has the probability to yield a high power semiconductor failure rate while a well tuned system running at conservative power levels may see a very low power semiconductor failure rate. End users should expect failures of power semiconductors devices, especially during the initial start-up and tuning phases of these devices.

Advanced Level 2 (D)

Same as Advanced Level 1 except no documentation is available other than a schematic. The implementation and interface of this device needs to be completely designed and built by the end user.