

How to start designing and building a 12lb Fighting Robot.

By Peter Smith

The 12lb “Hobby Weight” fighting robots are one of the most popular and fastest growing classes in this exciting sport. They are big enough to look and even sound like the bigger bots that appeared on the TV shows whilst being much cheaper to build and enter into events.

The first stage in designing any Bot is to look closely at the competition. Go to events, if possible, to see what works and what doesn't. Study the rules for the class, most events use the Robot Fighting League (RFL) rule set (available at www.botleague.com) and probably most important of all is to visit the RFLs forum, starting at www.botleague.com/forum.asp to get first hand advice from real builders.

There are many other websites that offer specialist robot parts, www.banebots.com , www.robotcombat.com and www.battlepack.com for example and others like www.cncbotparts.com and www.teamwhyachi.com that can provide those and also specialist machining and other engineering services. Finally there are even websites like www.inertialabs.com and www.rollingthunder.com which offer battle proven designs in kit form.

The next step is to decide what type of Bot to build. It is tempting to jump straight in and try to build a Bot with a big spinning blade or a pneumatic flipper but I would advise any first time builder to start with either a “Wedge” or a “Brick”. There are several reasons for this. Firstly, they are fundamentally simpler than any Bot with an active weapon, therefore easier to design, build, and maintain. Secondly, they are safer and much less likely to cause injury to a young or inexperienced builder or driver. Lastly, they tend to be tougher and are more likely to keep working during fights and survive to fight another day.

To compensate for the lack of a weapon you will need to combine good speed, power, maneuverability, and armor. This requires careful choices of drive motors and gearboxes, electronic speed controllers (ESCs), batteries, Radio Control equipment, and finally what materials to use for the chassis and armor.

1. Drive Motors and Gearboxes. These combine a small electric motor with a gearbox. Good choices would be converted cordless drill motors (good Cordless Drills are available for as little as \$16 from www.harborfreight.com or ready converted from www.teamrollingthunder.com), or the 25:1 36mm 545 motors from BaneBots or the TWR18 from Team Whyachi. All of these will give good speed and power when combined with 3” to 4” wheels and the right battery pack.
2. Electronic Speed Controllers. The BB-12-45 from BaneBots or the Scorpion XL from www.robotpower.com are popular choices. The latter is an all-in-one unit that combines two ESCs and a mixer on one board. You would need to

