



## **Technical Bulletin #022707**

### Purpose:

To review the sound regulations set by the AMA for the 2007 Amateur Dirt Track racing season and to outline how to tune a SuperTrapp exhaust to meet these regulations.

### Background:

For the 2007 race season, the AMA has implemented a rule that requires all racers in the amateur dirt track series to comply with a maximum sound level of 99dB(A) at technical inspection. The sound level is measured according to the SAE J1287 test procedure. You should refer to the complete SAE test procedure to ensure compliance but basically, here is how the test is done. The bike is tested in a stationary position with the sound meter positioned 20" from the exhaust exit and at a 45 degree angle from the centerline of the exhaust outlet. The bike is then run up to ½ of its maximum horsepower RPM and the reading is taken.

There are many subtle factors that affect the performance and sound output levels of a motorcycle. Some of them are valve sizes, cam profiles, and especially exhaust valve blow down timing. These variations make it impossible to specify exactly which configuration will ensure compliance but the following guidelines will explain how you can achieve it.

SuperTrapp tunable exhausts are ideally suited for these situations. By design, these exhausts can be adjusted in the field to allow you to pass inspection. Even if you were to fail inspection, you could simply remove discs and retest to pass. In general, you should think of each disc as a hole in the exhaust. By adding discs you increase the exhaust opening, reduce backpressure, increase horsepower at mid range rpm and reduce low end torque. By removing discs, you reduce the exhaust opening, increase backpressure, increase low end torque and reduce horsepower at mid range rpm. These guide lines apply mostly to street riding and lower RPM ranges. In race situations, the high RPM operating ranges result in very small changes in horsepower output when changing the number of discs. This is what allows you to reduce the number of discs to achieve sound compliance without sacrificing power.

## Procedure:

Start by installing the SuperTrapp Honda CRF 450 exhaust system according to the instructions. You will also need to get at least 8 standard 4" discs. They do not come with the kit but you can get them from your local dealer or directly from SuperTrapp. The item number for a 12 pack of discs is 404-6512. When installing the discs, use an ample amount of high temperature anti-seize on the bolt threads. Start out by installing 8 race discs and 8 standard discs with the closed end cap. Use a race disc as the starting disc closest to the muffler and then alternate standard discs with race discs. A common misconception is that the open end cap makes more power. The open end cap has an open area equivalent to 6 discs, but will dramatically increase the sound level. With the 16 discs and closed end cap installed, test the sound level according to SAE J1287. If you are above the 99dB(A) limit, remove two discs at a time (one race and one standard) and retest. Repeat this process until you reach compliance. Tests were done on a stock bike with 4 race discs and 4 standard discs. The bike measured 96dB(A) and still demonstrated very good power.

Once you have achieved the proper sound level, you will need to check your jetting.

The exhaust canister contains a high tech E-Glass packing material that is used to help absorb higher frequency noises. This material will break down over time and will need to be replaced. You can expect it to last at least one full race season.