# Thomas rifle tuning instructions

## These instructions break down into 2 high level goals:

- Setting hammer spring tension in harmony with the regulator pressure.
- Configuring jet screw for a particular energy level (e.g. 12fpe for light varmint class).

## Step-by-step instructions

1. Setting hammer spring tension
    a. Install a short jet screw (#6-32 x 3/8") so the transfer port is relatively unobstructed.
    b. Using your intended pellet (e.g. JSB 10.3gr), gradually increase hammer spring tension until the velocity no longer increases.
    c. Calculate 95 – 97% of this maximum velocity.
    *Example: Let's say the velocity maxes out at 880fps. 95% is 0.95 * 880 =* ***836fps****. 97% is 0.97 * 880 =* ***854fps****.*
    d. Back off the hammer spring tension until the velocity falls somewhere within this range.
    *In this example, between 836 – 854fps.*

2. Configuring the jet screw
    *The goal of this step is to use the jet screw to restrict the transfer port to bring the energy down to the desired level.*
    a. Identify the desired velocity.
    *Example: 12fpe for a 10.3gr pellet is 723fps. Generally want to tune a little under 12fpe to allow for variation, say 715fps (11.7fpe).*
    b. Replace the jet screw with a longer one, perhaps #6-32 x ¾"
    c. Check the velocity.
        i. If still too high, try a longer screw.
        ii. If too low, back off the screw by 1 turn and try again. Continue until the desired velocity is reached.
        *Tip: make a Sharpie marking or file a mark on the head of the screw.*
    d. Make a permanent jet screw.
        *i.* Remove the screw and cut it to approximate length. That is, remove almost as many threads as you had to back it out in the previous step. Leave it just a little long so you can file it down to final length by trial and error.
        *Dress the end of the screw with a file or abrasive so it will thread cleanly back into the swing port. Test it first on a #6-32 nut to be sure.*
        ii. Install the screw and snug it up and re-test the velocity. As needed, continue shortening the screw until the desired velocity is reached.

THE SETUP IS NOW COMPLETE. At this point, the system will be operating at a favorable state of tune in terms of consistency and efficiency. However you may want to experiment with slightly more or less hammer spring tension to see if it has any positive (or negative) effect on average group size. These effects will also vary between batches of pellets so it pays to experiment.