

# Load Development: Ladder Test Method

by [AJ 5 Comments](#)

As mentioned previously, there are three main methods to use to develop a load for your rifle, they are the OBT (optimal barrel time) method, the OCW (optimal charge weight) load development method and then our preferred method based on efficiency of ammunition use and simplicity of determination, the ladder test method.

In this article we will share with you how the ladder test method, also sometimes called the sweet spot method, works, and the steps to follow to develop an accurate load for your rifle using this method.

If you load from your min to max range across the spectrum, you always see two sweet spots. I always use the highest one only because the shooting discipline I do has unknown distances, and I have to estimate the distance, that's why I want to shoot as flat as possible, and use the higher sweat spot. In many cases, the lower sweat spot is more constant in variable atmospheric conditions, as it is not near a point where your pressure levels can make a sudden upward curve due to very high temperatures.

## Method:

Very important. In order for you to do accurate load development, the test must be shot over a [chronograph](#) and the speed of each shot must be recorded.

If you have no idea where your sweat spot is in terms of load and speed, you should start about a 1/4 above your minimum load. Suppose your minimum is 39gr, and max is 43gr, you should start at 40gr and increase your load with 0.2gr increments to maximum, loading only 1 cartridge at each load weight increment.

You then shoot these cartridges at a minimum of 300 yards, and mark the shots from shot 1 to the last shot on the target.

If however you have an idea of where your sweat spot is in speed, you should start at about 1.0gr below your expected load and load only 1 cartridge at that specific load weight, then load in 0.1gr increments from load 1 to max load.

Again you shoot at minimum 300 yards and again mark your shots on target from shot 1 (min) to the last shot (max).

It is very important to shoot this test when there is no mirage, early morning, or late afternoon. You should also shoot the shots fairly quickly after one another to prevent great variance in conditions from affecting your result. This one time your barrel is fired until a little hot will not notably damage your barrel, and you will get a much better end result.

How you mark your shots 300 yards away from you when shooting in quick succession can seem tricky, but there is an easy method, read about it on [this link](#).

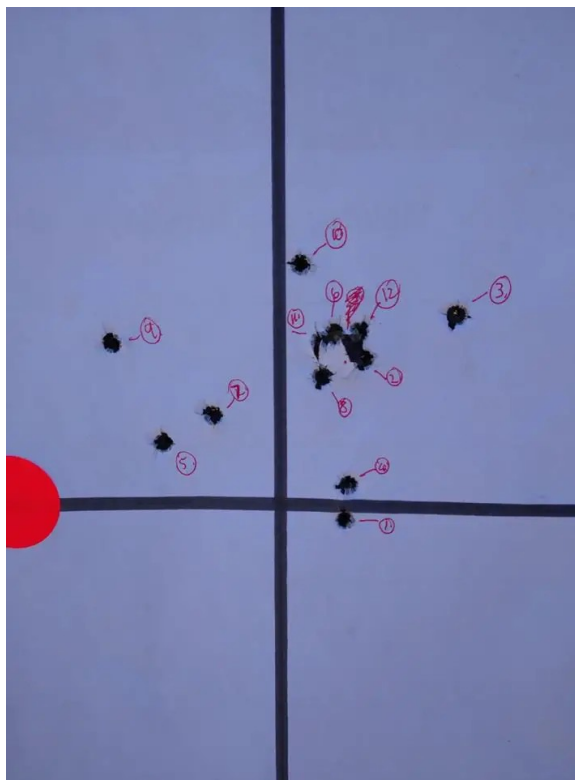
There are now two things to look at, minimum vertical spread between 5 consecutive shots, and where your measured speed also shows a flat spot (as in, where two or more shots at increasing

loads, stay at around the same speed). Usually the shots where the holes are close to each other on a vertical band, and the flat spot between the shots' speed, are the same shots.

Take a look at this ladder shot with a 6.5mm Creedmoor caliber from a Tikka rifle with 139gr Lapua Scenar bullets. The increments were 0.1 gr.

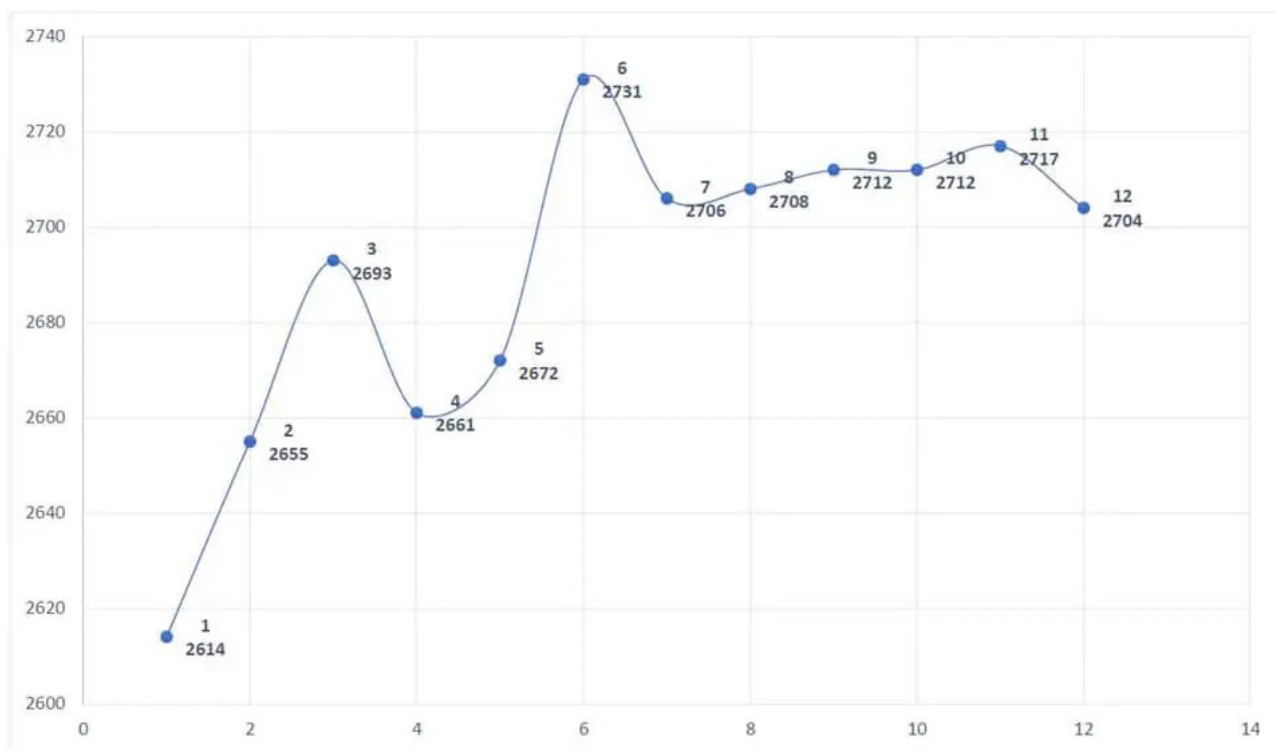
Note that from shot 8 to 12 differ with less than a 1/4 inch in height (vertical spread). Ignore shot 10 which sits slightly higher and consider it human error.

1. 41.5grn – 2614 fps
2. 41.6grn – 2655 fps
3. 41.7grn – 2693 fps
4. 41.8grn – 2661 fps
5. 41.9grn – 2672 fps
6. 42grn – 2731 fps
7. 42.1grn – 2706 fps
8. 42.2grn – 2708 fps
9. 42.3grn – 2712 fps
10. 42.4grn – 2712 fps
11. 42.5grn – 2717 fps
12. 42.6grn – 2704 fps



Now look at the speed of those 5 shots, and you will see that the total extreme spread is only 9 fps. This indicates a clear flat spot, even with a 0.5gr difference in propellant from shot 8 – 12. Also look at shot 10 which we considered to be human error and see that it also lies exactly in the flat spot, and therefore can be considered human error, and still be used in the test.

So clearly our sweet spot lies between the loads of shot 8-12. We then take the middle load, namely: load 10 and use it as our chosen load. The reason you take the middle one is because it is the load that lies in the middle of the sweetspot. The highest load, ie: shot 12 now simulates a typical hot day where your pressures are higher, and load 8 alternatively simulates a cold day, or a day when the air pressure suddenly drops, but still your load is shooting at the same height.



Flat spot or sweet spot clear when drawn on a graph.

Now that you have your load, you can get your groups smaller by experimenting with seating depth, and jump of your bullet. Load some of them deeper, and others closer to the lands and see where you get the best groups. Congratulations, you have developed a suitable load for your rifle.

We would love to hear your feedback on how the method works for you, or how you feel it can be improved on.