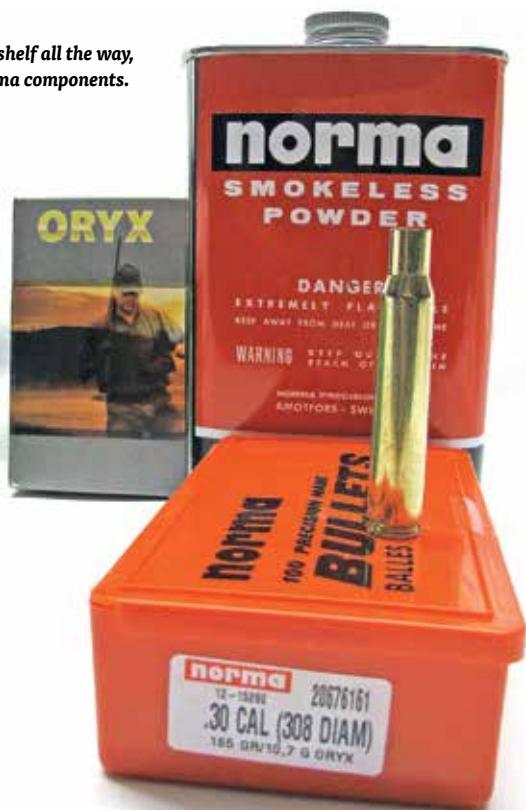


Can you beat factory ammo?

I have been a keen hand loader for over 30 years so shoot very little factory ammo outside of .22 LR or shotgun. I do remember starting out with my first rifle and a box of Remington Core-Lokt® ammunition back in my teens but was soon loading my own using a Lee Loader bought from Sid Smith's store in Wellington's Mercer Street.

Top shelf all the way, Norma components.



Sitting at my desk at home I happily hammered my way to completed rounds at least once a week, completely oblivious that the velocity of my product was well down performance-wise on the bought stuff. Goats didn't seem to care and it was nearly two years before a chance to fire a round over a chronograph arose that shattered my illusions. I soon bought a single stage press, dies, scales and the rest is history. Sid's shop may be long gone but I still have that same Lee Loader that started it all.

Today there is far more reloading gear available than a sane man needs and chronographs are available at every corner dairy it would seem.

Of course, at the same time factory ammunition has come along in leaps and bounds. Whether your preference is cheap or quality, there is plenty of choice. Hand loading even a simple round can cost you the better part of \$1 a throw as opposed to \$1.50 to \$2.00 for factory new but if you shoot enough, the savings stack up. In accuracy, many factory offerings leave nothing to be desired but expect to pay upwards of \$3 a round for the flash stuff. If you are a couple-of-boxes-a-year type of guy, no worries, but many shooters like to, well, shoot so feeding your habit can get expensive.

The last box of 30/06 factory I bought was around 1996 (and I still have half of it) so I thought it high

time to test the theory and put my \$10K odd worth of reloading bits and bobs up against modern, quality factory ammo. Talking the issue over with the folk at NZ Ammunition Company, I came away with a box of 165 grain Norma Oryx factory ammo and components to make up my own. Norma ammunition was all the rage back when I started out and I cannot remember how many Norma soft points went downrange at goats, magpies and rabbits from my poor battered old BSA .270 way back then. Pulling one round of the factory ammo apart when back home produced 60.2 grains of extruded powder and a flat based semi-pointed projectile with a cannellured groove.

The Oryx projectile is a conventional looking, semi-pointed, flat base that has the lead core essentially soldered into place. Being a bit on the blunt side, the Oryx is not as \$\$\$y looking as even the least of its plastic tipped brethren but it is a proven performer and should make for an excellent medium to large game do-it-all loading out to 300 yards or so, which is well past where I usually shoot deer. Given that Norma has extensive experience in making missiles intended for game such as the likes of moose, I doubt the Oryx would fail on even the biggest red stag. In the search for a hunting projectile, too many hunters tend to lean towards accurate or flat shooting rather than seeking the best terminal performing versions.

NZ Ammunition Company also loaned me a copy of Norma's excellent reloading manual, as well as supplying me Norma brass, Oryx 165 grain projectiles and their URP powder.

A quick peek through the manual showed URP as having a maximum loading of well under 60.2 grains, so possibly Norma load their factory ammo with a form of commercial Norma MRP which is slower burning than URP. Commercial powders are not available to the hand loader as companies tend to create powder batches for factory ammunition themselves but being able to mix and blend a powder is a big advantage over the hand loader, even though there are many good powders out there to choose from. My goal was to match or beat velocity and accuracy so would start with Norma URP for the test, it being designed for the 30/06 as well.

Case neck runoff on unsized brass was good.



The Norma brass was very well made and needed little preparation. I did, however, go crazy and prepped it as much as possible by neck sizing, trimming and chamfering. Of course they don't do this at the factory but such effort might pay off. I then dragged out my tools and worked out maximum overall length. Here the hand loader does have a significant advantage in that they can adjust the jump that the projectile has to the rifling.

The theory goes that less is better but in reality this may or may not help, depending on the projectile used. Weatherby magnums, for example, use a relatively huge leap to the rifling as the barrels use free-bore to reduce pressures. Just about every Weatherby magnum I've ever encountered usually shot very well so the jump theory may not be an advantage after all. In fact, if the throat area is still tight I have yet to see it make any 'significant' difference to accuracy in most rifles. Owners of 6.5x55 Swedish Mausers will know what I mean as the military throats are so long as to force 6mm jumps on some projectiles but Swedes usually shoot like demons regardless.

After measuring, I found that the factory offerings had at least 3mm of jump over my hand loads so time would tell. The manual used Winchester magnum primers which I thought odd but who am I to argue with Norma? I installed Winchester magnums which I had on hand and then hand weighed a pressure group starting 1.5 grains under maximum and seated the projectiles to be .25mm off the lands in a Forster Ultra Match seating die. Why seat off the lands? Simple, a hunting load needs to be reliable first and seating a projectile on or into the lands can invite disaster. Factory ammo is typically very reliable so custom made and accurate but with a projectile left stuck in the lands is not what I want.

Now down to shooting. The best way to do this is off of a bench and in my case that means holding the fore-end while resting my hand on a sandbag. I also placed a smaller bag behind the pistol grip, put on my oilskin vest to help soak up some of the boot, took a teaspoon of cement and started on my 25+ round ordeal.

Five three round groups of Norma 165 grain Oryx factory 30/06 ammo worked thus:

| | | |
|----------|------|----------|
| Velocity | Mean | 2817 fps |
| | SD | 16.8 fps |
| Group | Mean | 28.6mm |
| | SD | 10.6mm |

So pretty good results all around and sets a good benchmark to copy but nothing unexpected given Norma's reputation. This rifle is more than capable of ½ MOA with match projectiles but ¾ was as good as I have ever achieved with non-premium hunting versions.

Now for the poor man's attempts: I had first worked out what I was seeking in an optimum load - by using a blade micrometer to measure case head expansion of the factory loads as my guide. A .002 worth of expansion is generally considered ok while watching for other pressure signs such as flattened primers and extractor marks. This .002 expansion was also what I measured from fired factory brass.

Projectiles were seated to be .25mm off the rifling; all results are an average of three rounds using new unfired brass and a clean barrel. All charges were individually weighed and only unfired brass was used.

I had a few factory rounds left so pulled the projectiles and re-seated to the same as my hand load.

| | | |
|---|------------------------------|---------------------------------------|
| Norma Factory 30/06 165 grain Oryx ammo | Mean group at factory length | Mean group with projectiles re-seated |
| | 28.6mm | 25.5 |
| Notes: Test was 1x three shot group while the mean was average of 5x three shot groups. | | |

So a bit of an improvement but as it was a one off group it is hard to make any firm statement. Given the quality of Norma ammo, I would assume at this stage that the Oryx prefers being closer to the rifling.

| 30/06 Blaser R93 23.5" barrel - Norma URP, WW Magnum primer, 165 gr Norma Oryx | Mean | SD | Expansion | Group | Notes |
|--|------|-------|--------------|-------|--|
| | | | Factory .002 | | |
| 56.5 | 2838 | 26.49 | .001 | 15mm | Did this twice as I thought my first attempt was a fluke! |
| 57.0 | 2896 | 60.0 | .002 | 22mm | One possible flyer as I twitched at the wrong moment and opened the group out. |
| 57.2 (Max!) | 2905 | 58.9 | .002 | 35mm | Pressure signs so testing aborted. |

To say I was surprised was putting it mildly. With factory, the best group I had achieved had been 22mm so by simply fitting my ammunition to my rifle (via seating) it appears that I have just about halved the average while getting a small velocity boost in the bargain.

While not a long range bullet, the Oryx is still a great choice for deer.



Three factory rounds seated out closer to the lands compared to a factory round (left).

If only I hadn't twitched! First URP load was near perfect.

A half grain of URP made little difference.

By the end of the day I'm sure I was a bit battered but at least the group is round! Worse factory group was all me!




I ran another series of tests with ADI's AR2209 powder, it being in the same relative quickness bracket as URP. I also tested a couple of down-loaded versions just for kicks.

So there you are. The answer, quiet obviously, is "of course you can" but if you crunch the numbers I am no more able to shoot a deer at 300 yards with my hand load than I was able to with the factory version. Also, the point of impacts between my hand load and the factory were nearly identical, so much so that I would happily interchange them. So here is the rub. I seldom shoot deer past 100 yards let alone 300 and even at that range the factory rounds should give me a group of no more than 114 mm (calculated from the mean group size and with the SD added), good enough in fact for

precise shooting on deer sized game well **beyond** 300 yards. Incidentally, it is generally accepted that the "kill zone" on a deer is 250mm, covering the heart/lung area. Any decent projectile delivered into this area with sufficient energy is good insurance. Energy and velocity of the best hand load was so close to factory that it did not matter. The rule is that at any given distance you need at least 1000 ft. lbs of energy to kill a deer cleanly. While bullet

placement is far more important than energy, this rule is a good guideline as terminal ballistics is often overlooked in the pursuit of accuracy. Both factory and reload had energy in spades out to 500 yards and the small increase in velocity made zero difference to wind drift at normal hunting ranges. Only accurate rifles are interesting according to that famous writer of the sixties, Col Whelan, but the nut behind the butt is usually the limiting factor in the field and 1/2 MOA

off the bench is seldom that once shooting over your day-bag, across a gully, while trying to stop yourself sliding down the slope.

So in closing I have come to the conclusion that while I can definitely beat factory ammunition by hand loading, why should the average hunter bother? I know my last few factory loads will be with me in the Kawekas shorty. 

It might look plain but the Oryx is an excellent large game projectile.

| 30/06 Blaser R93 23.5" barrel, ADI AR2209, WW Magnum primer, 165 gr Norma Oryx. | Mean | SD | Expansion Factory .002 | Group | Notes |
|---|------|-------|---------------------------|-------|--|
| 48.5 | 2416 | 37.61 | .001 | 40mm | Low recoil but still angry. |
| 49.0 | 2434 | 7.61 | .001 | 35mm | Very low SD. |
| 58.5 | 2890 | 10.6 | .002 | 22mm | My go to loading for any 165 -168 non-monolithic projectile in this rifle although I usually use CCI standard primers. |
| 59.0 | 2934 | 39.71 | .0025 | 24mm | Still not max. but perhaps a bit hot for a general purpose load. Velocity is right up there too! |

Cases prepped and primed.

