



# .25-06 IMPROVED ACKLEY

## CLASSIC CARTRIDGES

by John Haviland • • • • •

**P.O. Ackley invented dozens** of wildcat and improved cartridges during a career as a gunsmith, barrel maker and firearm's writer that started in the 1930s. Twenty-five-caliber cartridges were a favorite of Ackley, as he developed cartridges based on the .25-35 Winchester, .250-3000 Savage, .257 Roberts, .30-40 Krag and .25-06 Remington. Ackley promoted his cartridges, but he was also critical of some of his designs that contained a relatively large powder capacity.

In his book *Handbook for Shooters and Reloaders, Volume I*, Ackley wrote that adding to the amount of powder burned increases velocity only "... up to a certain point, beyond which if more powder is added, very little increase in velocity is attained; in some cases it is actually reduced."

His .25-06 Improved was one of those cartridges. In his book Ack-

ley states: "The fire formed case is somewhat over bore capacity which results in close to maximum velocity for the .25 bore, but at the same time makes it critical and hard on barrels. . . . It is still not recommended as being the over all satisfactory cartridge that the Improved .257 is."

I recently got my hands on a rifle with ".25-06 ACK" stamped on the barrel. Above that is stamped "Ashurst." Jack Ashurst was a gunsmith in Grangeville, Idaho, beginning in the 1940s; he made reloading dies and developed a line of .25-, .27-, .28- and .30-caliber cartridges.

The rifle is a target rifle most likely from the 1940s or 50s and is based on a Mauser Model 98 action. It weighs 17 pounds with most of that weight from its barrel. The barrel has a diameter of 1.20 inches in front of the receiver ring and tapers only slightly over



*The .25-06 Improved Ackley remains a somewhat popular cartridge decades after it was developed; Redding and CH4D make reloading dies.*

its 26-inch length. The rifle lies steady in a rest with a Bishop walnut stock with a wide, flat forearm and large cheekpiece. The Canjar Set Trigger on the rifle was adjusted with a pull weight of about an angel's breath. I turned the trigger's adjustment screw to increase pull weight to one pound.

The rifle had no scope but does have scope bases on the barrel and a Lyman 48 aperture receiver sight with a Lyman No. 77 globe target front sight. Using those sights was reason enough to begin the work of shooting the rifle.

Forming cases for many of Ackley's improved cartridges requires nothing more than firing factory cartridges in an improved chamber, but according to prominent gun writer and gunsmith Norm Johnson, "Ackley developed the .25-06 improved decades before Remington commercialized the .25-06, so there is really no standard chamber dimensions for the cartridge."

Johnson said he ordered a .25-06 improved reamer one time to cut chambers for a couple of rifles he was building at his Plum City Ballistic Range. The warning accompanying the reamer stated not all .25-06 improved chambers are

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quite the same. “You’ll like the improved,” Johnson said, “but you won’t get much of an increase in velocity over the standard .25-06.”

In his book Ackley also warned about chamber variations: “Wildcat cartridges are not usually standardized to any degree and headspace gauges are not always available for them and even reliable chamber data is not available. Usually reputable tool makers can furnish tools for any well known cartridge, but very seldom do they furnish headspace gauges. Therefore, the gunsmith will find it necessary to determine the headspace himself as nearly as pos-

sible. This means there will be considerable variations in the headspace of some wildcat cartridges as they are chambered for by different gunsmiths, and it will be up to the owner of the rifle to make his own brass to fit his own individual chamber.”

To make improved cases, I took Ackley’s suggestion to neck down .30-06 cases first in a .270 Winchester and then a .25-06 sizing die.

*The .25-06 Improved Ackley (left) is pretty much an elongated .257 Roberts Improved Ackley (center) or a regular .25-06 (right) with some of the case body taper reduced and lengthened.*

However, cases were not quite fully inserted into the .25-06 die, leaving the bottom portion of the neck slightly wide, so the rifle’s bolt required some pressure to



### .25-06 Improved Ackley Select Handloads

bullet (grains)	powder	charge (grains)	velocity (fps)
87 Berger Target	IMR-4350	56.5	3,458
100 Remington Core-Lokt	MagPro	62.5	3,255
100 Sierra HPBT	H-4831	58.3	3,317
117 Hornady SST	IMR-4831	54.0	3,229

*Be Alert – Publisher cannot accept responsibility for errors in published load data.*

close. That created a false shoulder on the cases to keep them from stretching on firing. Ackley also suggested not using a significantly reduced load to fireform cases as that has a tendency to

shorten cases and develop excessive headspace "... which can be disastrous the second time they are fired."

Load data for the .25-06 improved is rather scarce. Some loads on the Worldwide Web of misinformation were so obviously excessive they caused me to shudder. The Sierra reloading manual contains a good selection of loads for 75- to 120-grain bullets, and it lists top velocities for the improved cartridge the same as the regular .25-06 Remington to 100 fps faster. According to the Sierra data, the improved required about two grains more of the same powders to match the velocities of the .25-06's fastest bullet speeds and four more grains of powder to slightly exceed them.

To fireform improved cases, I used 63.0 grains of MagPro powder, which is 2.0 grains below Sierra's maximum, with Berger 87-grain Target bullets. Fired cases came out of the rifle with a slightly reduced body taper, the base of the shoulder moved a little forward and the shoulder angle sharpened to 40 degrees. The cases looked like elongated cases for the .257 Improved Ackley. The blown-out cases held about 6 percent more powder than regular .25-06 Remington cases.

I was concerned the necks might be too thick on the necked-down .30-06 cases and not be able to expand enough to release bullets, causing pressures to spike, but a bullet slip fit into the necks of fired cases, so there was no problem.

To see what the .25-06 IA was capable of for speed, I loaded 87-, 100- and 117-grain bullets with several powders with weights about .5 grain below the maximum listed in the Sierra manual. The 87-grain bullets had velocities a smidgen faster than the .257 Roberts Improved Ackley and .25 Winchester Super Short Magnum cartridges. The improved shot 100-grain bullets a bit over 3,300 fps, which is on par for the .25-06 Remington. At 3,229 fps, the 117-



*This 100-yard group with Berger 87-grain bullets and MagPro was shot with Lyman aperture rear and front sights.*

grain bullets from the improved slightly surpassed what I've been able to reach with the .25-06. Norm Johnson was right; the improved would not increase velocity much over the standard .25-06 Remington.

If nothing else, the target rifle based on the Model 98 action made the .25-06 improved worth the work of forming cases and handloading. The heavy rifle shot three-round groups between 1.5 and 2.0 inches at 100 yards with the case forming loads. The first bullets hit somewhat low at 100 yards. The Lyman 48 aperture receiver sight has .25-minute click adjustments and moving the sight up five clicks raised bullet impact 1.25 inches at 100 yards. The globe front sight had a .115-inch diameter aperture and the 4-inch diameter black circles I used for targets should have been at least an inch larger in diameter to fit tightly inside the aperture. I blame the horizontal stringing of most of the groups on that vague fit. The best group was 1.46 inches with Berger 87-grain bullets and IMR-4350. The group with Sierra 100-grain bullets and H-4831 was a close second.

So I'll keep shooting the .25-06 Improved Ackley target rifle – not because it offers any significant boost in velocity over the standard .25-06 Remington but to better learn how to properly shoot the rifle's target sights to revisit a bygone time.

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