

Load Development

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In the two previous articles on “Handloading the AR-15 .223 Remington,” we offered tips and data for rifles with barrel twist rates of one turn in 12 inches and one turn in 9 inches. Now let’s look at rifles with the one-in-7-inch twist.

The 7-inch twist is intended primarily for heavier bullets ranging from 62 to 80 grains, which it stabilizes very well. With a match grade barrel and heavyweight match bullets, it has proven a worthy contender at 600 yards, effectively beating the .308 Winchester at its own game. (Just for reference, barrels featuring one turn in 8 inches have become popular in AR-15s, which stabilize bullets up to 80 grains. For those wanting an even heavier bullet, rifles fitted with a barrel featuring a one-in-6.5-inch twist will stabilize bullets up to 90 grains, such as the Sierra HPBT-Match. Both the 8- and 6.5-inch twists can be used with today’s data.)

In my mind, rifles fitted with a one-in-7-inch twist are somewhat special-



Brian used a DPMS Panther Arms Model A-15 (aka AR-15) to develop handloads in the accompanying table.



A Redding Instant Indicator-Case Comparator is an excellent tool for adjusting a sizing die to obtain correct headspace and determine datum length.

ized, intended primarily as long-range target rifles (which is not to say they won’t work with select 55-grain bullets). While handloads can be assembled with an overall cartridge length of 2.260 inches, which is within SAAMI specifications and will function and feed reliably through the action, better performance and improved accuracy can be obtained by seating bullets out for an overall cartridge length of 2.550 inches. Due to their excess length, cartridges loaded in this fashion will not fit into the magazine and become specialized “single shots” for competition.



A Redding Competition Bullet Seating Die aids in producing precise ammunition.

Handloading the AR-15 .223 with 1-in-7 twist

Part III



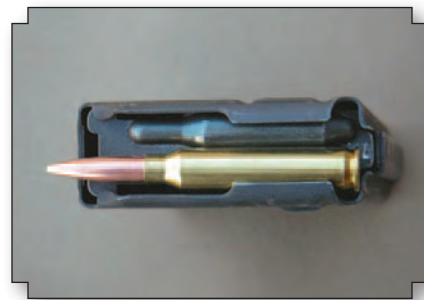
as they were assembled “long” for use in the “single-shot” mode. If bullets are seated deeper (to SAAMI specifications) than the listed length, powder charges must be reduced 7 to 10 percent. Failure to do so will result in loads that produce substantially greater (and even dangerous) pressures. The data presented here was developed in commercial Nosler-Custom cases, which have greater capacity than military cases. Do not use the accompanying data with



The cartridge on the left has an overall length of 2.260 inches (SAAMI specifications), while the cartridge on the right features an overall length of 2.550 inches. Note the significant change in powder capacity. Never use data developed for cartridges with a 2.550 inch length while seating bullets to SAAMI specifications, as dangerous pressures can result.

Some competitors modify magazines by cutting a slot into the front for the bullet tips to protrude, but the receiver box becomes the limiting factor. The rifle used in this article limited that length to 2.380 inches. Seating bullets out increases powder capacity and allows for greater velocity but also places bullets closer to the rifling, which usually improves accuracy and will allow one to fine-tune the load for a given rifle.

When using the accompanying data, take note of the overall cartridge length listed with each bullet,



Some of the handloads in the accompanying table feature 80-grain bullets seated to an overall cartridge length of 2.550 inches, which are too long to fit into an AR-15 magazine and must be fired in the single-shot mode, which is common in competition.

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A factory loaded .223 Remington cartridge with a 55-grain bullet (left) is compared to a competition handload with an 80-grain match bullet seated to an overall cartridge length of 2.550 inches. The latter cartridge must be fired in the single-shot mode, as it is too long to fit in magazines.

military brass, or pressures exceeding SAAMI guidelines will probably result. Commercial cases also vary in capacity. The point being, never begin with maximum listed loads, but rather begin with the starting loads, carefully measuring fired cases for signs of excess pressure (and case head expansion) before increasing the powder charge. And when working up powder charges, keep in mind that the .223 Remington case is small and a .5-grain increase will noticeably raise pressures, especially when used in conjunction with heavier bullets weighing 75 to 80 grains.

Most commercial .223 Remington cases are of good quality, but to obtain the consistency that match shooters seek, most will need the flash holes “uniformed” and deburred, then the



AR-15 .223 rifles fitted with a one-in-7-inch twist barrel will stabilize bullets up to 80 grains.

.223 Remington Handloading Data

bullet (grains)	powder	charge (grains)	velocity (fps)	overall loaded length (inches)
75 Hornady A-Max Match	TAC	22.0	2,484	2.390
		22.5	2,535	
		23.0	2,561	
		23.5	2,625	
		24.0	2,692	
	AAC-2230	21.0	2,488	
		21.5	2,501	
		22.0	2,567	
		22.5	2,611	
		23.0	2,673	
	XMR-2015	20.5	2,563	
		21.0	2,611	
		21.5	2,650	
		22.0	2,691*	
		22.5	2,691*	
	H-335	21.0	2,480	
		21.5	2,505	
		22.0	2,539	
		22.5	2,559	
		23.0	2,590	
	BL-C(2)	23.5	2,529	
		24.0	2,560	
		24.5	2,598	
		25.0	2,651	
		25.5	2,694	
	W-748	22.5	2,471	
		23.0	2,502	
		23.5	2,556	
		24.0	2,595	
		24.5	2,653	
	Varget	23.0	2,541	
		23.5	2,584	
		24.0	2,633	
		24.5	2,705	
		25.0	2,741	
VV-N140	23.0	2,569		
	23.5	2,610		
	24.0	2,655		
	24.5	2,699		
	25.0	2,783		
VV-N135	21.5	2,577		
	22.0	2,599		
	22.5	2,644		
	23.0	2,669		
	23.5	2,726		
RL-15	23.5	2,569		
	24.0	2,604		
	24.5	2,660		
	25.0	2,707		
	25.5	2,784		
AAC-2520	22.0	2,560		
	22.5	2,588		
	23.0	2,623		
	23.5	2,643		
	24.0	2,689		
77 Nosler hollowpoint boat-tail	TAC	22.0	2,517	2.390
		22.5	2,550	
		23.0	2,612	
		23.5	2,660	
		24.0	2,710	

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.223 Remington Handloading Data

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bullet (grains)	powder	charge (grains)	velocity (fps)	overall loaded length (inches)
77 Nosler hollowpoint boat-tail	AAC-2230	21.0	2,527	2.390
		21.5	2,555	
		22.0	2,598	
		22.5	2,645	
		23.0	2,713	
	XMR-2015	20.5	2,548	
		21.0	2,601	
		21.5	2,655	
		22.0	2,711*	
		23.0	2,620	
	H-335	21.0	2,497	
		21.5	2,530	
		22.0	2,555	
		22.5	2,585	
		23.0	2,620	
	BL-C(2)	23.5	2,521	
		24.0	2,556	
		24.5	2,615	
		25.0	2,670	
		25.5	2,720	
80 Sierra MatchKing	Varget	22.0	2,402	2.550
		23.0	2,504	
		23.5	2,554	
		24.0	2,613	
		24.5	2,676	
	RL-15	25.0	2,755	
		22.0	2,475	
		22.5	2,499	
		23.0	2,542	
		23.5	2,588	
	BL-C (2)	24.0	2,636	
		23.0	2,543	
		24.0	2,618	
		24.5	2,653	
		25.0	2,679	
	VVN-135	25.5	2,738	
		21.0	2,528	
		21.5	2,557	
		22.0	2,595	
		22.5	2,633	
	H-335	23.0	2,692	
		20.0	2,371	
		21.0	2,460	
		21.5	2,490	
		22.0	2,535	
	VV-N140	22.5	2,583	
		22.5	2,508	
		23.0	2,549	
		23.5	2,605	
		24.0	2,621	
	H-4895	24.5	2,676	
		21.5	2,489	
		23.0	2,614	
		23.5	2,660	
		24.0	2,722	
	AAC-2495	21.0	2,395	
		21.5	2,431	
		22.0	2,469	



Bullets in the 75 to 80 grain weight increase the long-range accuracy potential of the .223 Remington cartridge.

overall case length trimmed and deburred inside and out. With the volume of handloading projects that I tackle, it proved a timesaver to order NoslerCustom unprimed brass for this project, which has all the above features and is ready to load right out of the box, and they certainly assisted in obtaining accuracy.

Before discussing these loads, it should be mentioned that the data presented with 65- to 75-grain bullets in the last edition of LoadData.com for the AR-15 rifle with a one-in-9-inch twist are suitable for rifles with a one-in-7-inch twist. Those loads will prove of interest to folks wanting loads that function and feed correctly in the semiautomatic mode. For that reason the focus of today's data is with 75- to 80-grain bullets seated to overall cartridge lengths that exceed SAAMI specifications. It is suggested to not seat bullets that actually touch the lands, but rather to be seated from .015 to .001 inch off the leade.

As has been written in previous articles, the .223 Remington cartridge has a rather rough trip as it is stripped from the AR-15 magazine, over the locking lugs and into the chamber. Cartridges should normally receive a crimp, even those that contain bullets without a crimping cannelure, to keep the bullet in place. As previously mentioned, the loads listed here are intended to be fired in the single-shot mode, wherein the rough trip is minimized, and therefore were assembled without a crimp.

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Load Development



Handloaded cartridges with proper tolerances will not need (as shown) chambering assistance.

To assemble loads that will produce maximum accuracy and provide long case life, it is imperative to adjust dies correctly so cases are sized to correspond with the headspace of a given rifle (that is assuming they will only be fired in one rifle). There are a number of good tools to help handloaders adjust dies and determine the datum length. In developing the accompanying loads, a Redding Instant Indicator-Case Comparator was used while adjusting the Redding sizing die. This is a highly precise and worthy tool for the serious handloader seeking to produce near perfect ammunition and obtain the next level of accuracy.

Another area that should always receive focus includes powder charges. For instance it is a common mistake



Federal Gold Medal 205GM Bench Rest primers were used exclusively in the accompanying data.

.223 Remington Handloading Data

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bullet (grains)	powder	charge (grains)	velocity (fps)	overall loaded length (inches)
80 Sierra MatchKing	AAC-2495	22.5	2,517	2.550
		23.0	2,570	
	H-322	20.0	2,479	
		20.5	2,521	
		21.0	2,542	
		21.5	2,580	
		22.0	2,661	
	AAC-2520	21.0	2,455	
		22.0	2,533	
		22.5	2,587	
		23.0	2,635	
		23.5	2,679	
	W-748	24.0	2,742	
		22.0	2,480	
		23.0	2,529	
TAC	24.0	2,607		
	21.5	2,420		
	22.0	2,444		
	22.5	2,475		
	23.0	2,537		
80 Nosler hollowpoint boat-tail	Varget	23.5	2,580	2.540
		24.5	2,710	
		24.0	2,616	
		25.0	2,688	
		23.0	2,703	
		24.0	2,648	
		24.0	2,733	

* maximum

Notes: A DPMS with a 20-inch barrel was used to test fire all loads. Bullet diameter was .224 inch. Nosler Custom cases and Federal 205 GM (Small Rifle Bench Rest) primers used throughout. Maximum case length: 1.760 inches; trim-to case length: 1.750 inches. The SAAMI maximum pressure: 52,000 CUP.

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

to work up to the maximum charge for a given powder/bullet combination, then check the rifle to see how well it is shooting. Sometimes maximum loads are producing the best accuracy, but in many instances, loads that are below maximum often produce better accuracy, not to mention longer case life. It is usually productive to choose a powder or several powders, assemble a number of cartridges with small changes in the powder charge and check each load for accuracy. Likewise the bullet seating depth should be experimented with.

The choice of great powders for

handloading the .223 Remington is broad. As was discussed in Part II of this series, spherical powders tend to throw more uniformly than extruded cylindrical powders, but if care is used in charging cases, both are capable of producing super accuracy. Notable performers included Vihtavuori N135 and N140, Alliant Reloder 15, Hodgdon BL-C(2), Varget and Accurate Arms AAC-2520.

In the spirit of obtaining competition type accuracy, all loads were assembled using the Federal 205 Gold Medal Bench Rest primers, a primer that offers unusually good results in the .223 Remington.

