6.5-300 WEATHERBY MAGNUM

Brian Pearce

In the 1940s, Roy Weatherby began developing a series of hunting cartridges that would become the famous Weatherby magnums. Perhaps the most popular and best known is the .300 Weatherby Magnum that is based on .300 H&H Magnum case with a double-radius shoulder. During the early 1950s, he took his .300 case and necked it down to accept 6.5mm/.264-inch bullets, but for several reasons that cartridge was not added to the Weatherby line, so it became a wildcat and has enjoyed a dedicated following.

Weatherby announced the 6.5-300 Weatherby Magnum cartridge in 2015 for its Mark V rifle.

Handloads for the Fastest Commercially Available 6.5mm

With new powders and a wide selection of new hunting bullets, along with renewed interest in 6.5-caliber cartridges from hunters and long-range shooters, in 2015 Weatherby announced the 6.5-300 Weatherby as a standard offering. Initial factory loads included a Barnes 127-grain LRX bullet at 3,531 fps, a Swift 130-grain Scirocco at 3,476 fps and a Swift 140-grain A-Frame at 3,395 fps (recorded from a 26-inch barrel). These impressive ballistics, along with low-drag bullets, results in an unusually flat trajectory. It is the fastest commercially available, SAAMI 6.5 cartridge.

The 6.5-300 is housed in Weatherby's flagship rifle, the Mark V, that is currently manufactured at Weatherby's Paso Robles, California, headquarters. Production began in early 2016, and sales have been strong. All 6.5-300 Weatherby Magnum ammunition is also manufactured under the Weatherby roof, which is the first time in over 50 years that the company has manufactured ammunition. Cases are still produced by Norma of Sweden and exhibit the usual high quality. I have watched the production of ammunition, tested it in Weatherby's shooting tunnel, on a 1,000-yard range and at home. It is carefully engineered to offer the best blend of velocity and accuracy with excellent big-game hunting bullets.

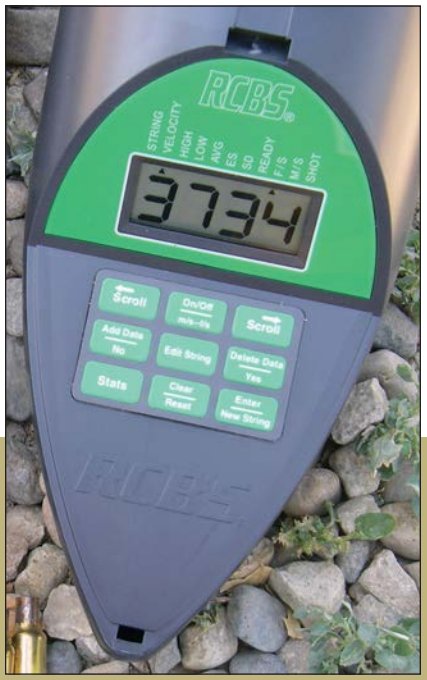
With a maximum overall cartridge length of 3.600 inches, the 6.5-300 requires the use of a .375 H&H Magnum length action. Like other Weatherby cartridges adopted by SAAMI, it has a maximum average pressure of 65,000 psi.

Using full-length sized virgin brass, water capacity, filled level with the case mouth, was 96.9 grains. It should be mentioned that the method of measuring water capacity varies. Some resources prefer to measure to the bottom of the neck. Others determine the water capacity of a specific load, which is dependent on bullet choice and how deeply it is seated. An example is the *Nosler Reloading Guide* that lists water capacity of a given cartridge with a specific bullet seated to a specific depth. That capacity changes with each bullet choice. For handloading purposes, total case capacity is probably most relevant.

In the fall of 2015, I hunted with a preproduction Weatherby Mark V Accumark 6.5-300 and ammunition with the Barnes 127-grain LRX bullet. On the Wyoming plains at over 5,000 feet elevation, the loads recorded an average of 3,450 fps (some 81 fps short of advertised figures) but yielded an impressive extreme spread of just 27 fps. That same rifle was later shipped to me for further testing and load development. Switching to production ammunition with the same Barnes 127-grain LRX bullet, average velocity jumped to an impressive 3,605 fps – some 74 fps faster than advertised figures.

That Mark V was used to establish the velocities of all handload data contained herein. A second Mark V Accumark, also fitted with a 26-inch barrel but with a muzzle brake, was used to establish potentially the most accurate loads with a given bullet, which helped the testing move along at a faster rate.

With a capacity of nearly 100 grains of water, the 6.5-300 Weatherby Magnum is a significantly overbore cartridge that requires slow-burning powders to achieve optimal velocities and reason-



Left, the 6.5-300 Weatherby Magnum (right) is based on a necked-down, full-length .300 Weatherby Magnum case (left), and above, it offers the highest velocity of any regularly available commercial 6.5-caliber cartridge.

6.5-300 WEATHERBY MAGNUM

To achieve best accuracy with the Barnes 127-grain LRX bullet, it should be seated comparatively deep. Note the unusual bullet length and how it seats into the powder capacity.

able extreme velocity spreads while keeping pressures in check. As of this writing, there is no published load data from credible sources using current powders, and neither do any of the labs that I regularly work with have a SAAMI specification pressure barrel. As a result, none of the accompanying handloads have been pressure tested. However, factory loads are known to develop less than the specified 65,000 psi. Based on that information, along with pressure indicators, I believe all the handloads in the accompanying tables are within industry pressure specifications. Nonetheless, it is suggested to *always* begin with "start" loads and carefully work up to "maximum" listed charges while watching for signs of excess pressure in your rifle. Furthermore, the loads listed here were developed specifically for production Mark V rifles and may not be suitable in rifles built as wildcats or custom rifles with chamber and throat specifications that are different from Weatherby rifles. "Start" loads should not be reduced, as hangfires and erratic pressures may result, which is especially a concern when using Ball, or spherical, powders.

Having worked with two 6.5-300 rifles and checking accuracy at a variety of distances, some loads only produce mediocre accuracy at 100 yards, but at 300 yards the groups are only slightly larger than those produced at 100 yards. More testing will be needed to draw absolute conclusions, but all indicators are that the comparatively long and usually high ballistic coefficient (BC) bullets are not fully stabilized at 100 yards, which is a condition often referred to as bullet yaw. In essence, yaw is where a bullet rotates around its axis, with the tip usually in line with the axis path while the base is spiraling outside that axis. Eventually the bullet fully stabilizes and explains why groups can be similar in size at longer distances. This should not be a concern for a long-range rifle; group sizes at extended distances reveal the actual performance level of that rifle, cartridge and load. Incidentally, the Weatherby Mark V features a one-in-8-inch rifling twist rate, making it suitable for a wide range of bullet weights.

The 6.5-300 Weatherby Magnum thrives on slow-burning powders that typically have a burn rate that ranges roughly between Vihtavuori N165 through Hodgdon US 869. Although more than 15 powders were tried with bullets ranging in weight from 95 through 160 grains, the single powder that gave the best overall high-velocity performance was Hodgdon US 869. It was generally right near the top in accuracy, with occasional groups that were the best with a given bullet. Other notable "accuracy" powders included Norma 217, Vihtavuori N165, Ramshot Magnum and Alliant Reloder 25, with each producing a best single group with a specific bullet.

It is possible to use standard (non-magnum) large rifle primers to achieve uniform ignition; however, this may not be possible with all powder and bullet combinations and will probably be-

Left, this Mark V Accumark 6.5-300 Weatherby Magnum, fitted with a muzzle brake, was used for accuracy testing. Right, a Mounting Solutions Plus anticant device on the scope tube aids in long-range shooting.

6.5-300 Weatherby Magnum Handloads

bullet (*grains*)	powder	charge (*grains*)	overall loaded length (*inches*)	velocity (*fps*)
95 Hornady V-MAX	VV-N165	75.0	3.520	3,273
		76.0		3,320
		77.0		3,388
		78.0		3,444
		79.0		3,520
		80.0		3,587*
		81.0		3,637
	IMR-7828 SSC	74.0		3,197
		75.0		3,279
		76.0		3,371
		77.0		3,474
		78.0		3,579
		79.0		3,665
	Retumbo	80.0		3,356
		81.0		3,381
		82.0		3,431
		83.0		3,493
		84.0		3,523
		85.0		3,567
100 Hornady A-MAX	RL-33	87.0	3.520	3,415
		88.0		3,460
		89.0		3,522
		90.0		3,610
		91.0		3,677
		92.0		3,734
	Magnum	81.0		3,534
		82.0		3,559
		83.0		3,599
		84.0		3,644
		85.0		3,674
		86.0		3,714
	Norma 217	82.0		3,460
		83.0		3,504
		84.0		3,561
		85.0		3,652
		86.0		3,704*
	RL-25	80.0		3,599
		81.0		3,641
		82.0		3,700
		83.0		3,777
		84.0		3,829
		84.5		3,861
100 Sierra HP	RL-25	80.0	3.510	3,612
		81.0		3,655
		82.0		3,718
		83.0		3,782
		84.0		3,836
		84.5		3,879*
	Magnum	82.0		3,544
		83.0		3,577
		84.0		3,638
		85.0		3,666
		86.0		3,698
107 Sierra HPBT	US 869	93.0	3.545	3,597
		94.0		3,614
		95.0		3,660
		96.0		3,702
		97.0		3,731

(*Continued*)

6.5-300 Weatherby Magnum Handloads (*Continued*)

bullet (*grains*)	powder	charge (*grains*)	overall loaded length (*inches*)	velocity (*fps*)
107 Sierra HPBT	US 869	98.0	3.545	3,774
	Magpro	80.0		3,570
		81.0		3,590
		82.0		3,621
		83.0		3,651
		84.0		3,660
		85.0		3,720
		85.5		3,752
		86.0		3,788
	Norma 217	82.0		3,455
		83.0		3,497
		84.0		3,560
		85.0		3,630
		86.0		3,703*
		87.0		3,764
120 Nosler Ballistic Tip	RL-33	82.0	3.545	3,216
		83.0		3,248
		84.0		3,297
		85.0		3,350
		86.0		3,410
		87.0		3,441
		88.0		3,491
	VV-N165	71.0		3,147
		72.0		3,180
		73.0		3,201
		74.0		3,271
		75.0		3,322
		76.0		3,379
		77.0		3,404
		78.0		3,452*
	H-1000	73.0		3,147
		74.0		3,177
		75.0		3,204
		76.0		3,241
		77.0		3,287
		78.0		3,333
		79.0		3,365
		80.0		3,416
	Magnum	79.0		3,377
		80.0		3,400
		81.0		3,443
		82.0		3,494
		83.0		3,528
	IMR-7828 SSC	70.0		3,127
		71.0		3,159
		72.0		3,202
		73.0		3,251
		74.0		3,311
		75.0		3,370
		76.0		3,415
	US 869	89.0		3,392
		90.0		3,416
		91.0		3,451
		92.0		3,501
		93.0		3,551
		94.0		3,588
		95.0		3,627
		96.0		3,661

(*Continued on page 56*)

6.5-300 Weatherby Magnum Handloads (Continue from page 55)

bullet (*grains*)	powder	charge (*grains*)	overall loaded length (*inches*)	velocity (*fps*)
120 Hornady A-MAX	Magnum	79.0	3.560	3,389
		80.0		3,417
		81.0		3,452
		82.0		3,509
		83.0		3,536
	US 869	91.0		3,462
		92.0		3,509
		93.0		3,563
		94.0		3,597
		95.0		3,605
		96.0		3,654*
123 Hornady SST	Magnum	77.0	3.560	3,274
		78.0		3,290
		79.0		3,320
		80.0		3,359
		81.0		3,373*
		82.0		3,402
	RL-33	77.0		2,884
		78.0		2,909
		79.0		2,971
		80.0		3,007
		81.0		3,071
		82.0		3,127
		83.0		3,170
		84.0		3,222
123 Sierra HPBT Match	Magnum	77.0	3.555	3,288
		78.0		3,289
		79.0		3,313
		80.0		3,342
		81.0		3,351
		82.0		3,389*
125 Nosler Partition	Magpro	76.0	3.530	3,240
		77.0		3,277
		78.0		3,331
		79.0		3,398
		80.0		3,443
	VV-N165	68.0		3,017
		69.0		3,055
		70.0		3,109
		71.0		3,185
		72.0		3,233*
		73.0		3,299
	H-1000	70.0		3,040
		71.0		3,060
		72.0		3,101
		73.0		3,128
		74.0		3,175
		75.0		3,216
		76.0		3,240
	Norma 217	75.0		3,111
		76.0		3,160
		77.0		3,188
		78.0		3,263
		79.0		3,306
	US 869	88.0		3,308
		89.0		3,339
		90.0		3,380
		91.0		3,440

(Continued)

6.5-300 Weatherby Magnum Handloads (Continued)

bullet (*grains*)	powder	charge (*grains*)	overall loaded length (*inches*)	velocity (*fps*)
125 Nosler Partition	US 869	92.0	3.530	3,480
		93.0		3,543
		94.0		3,574
127 Barnes LRX	H-50BMG	82.0	3.500	2,977
		83.0		2,998
		84.0		3,030
		85.0		3,061
		86.0		3,110
		87.0		3,145
		88.0		3,179
		89.0		3,199
		90.0		3,241
	VV-20N29	82.0		2,836
		83.0		2,865
		84.0		2,913
		85.0		2,960
		86.0		3,001
		87.0		3,059
		88.0		3,111
		89.0		3,147
		90.0		3,202
	US 869	88.0		3,345
		89.0		3,361
		90.0		3,401
		91.0		3,440
		92.0		3,456
		93.0		3,511*
		94.0		3,561*
	RL-33	79.0		3,182
		80.0		3,188
		81.0		3,207
		82.0		3,238
		83.0		3,251
	Magnum	75.0		3,069
		76.0		3,120
		77.0		3,143
		78.0		3,267
		79.0		3,323
	IMR-7828 SSC	71.0		3,129
		72.0		3,179
		73.0		3,241
		74.0		3,321
		75.0		3,375
129 Hornady SST	Magpro	75.0	3.575	3,261
		76.0		3,279
		77.0		3,311
		78.0		3,369
		79.0		3,390
	H-1000	72.0		3,060
		73.0		3,082
		74.0		3,121
		75.0		3,170
		76.0		3,194
	Retumbo	71.0		3,020
		72.0		3,043
		73.0		3,071
		74.0		3,099
		75.0		3,149

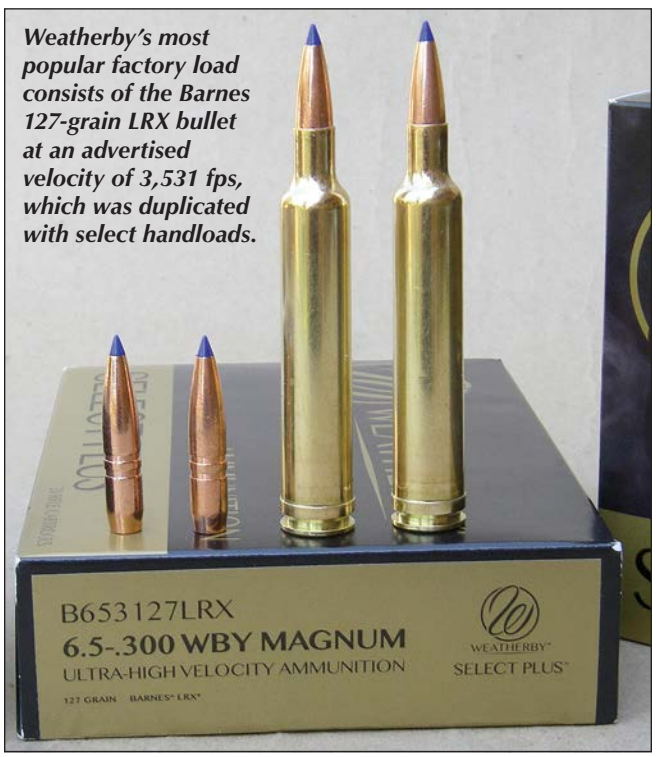
(Continued on page 57)

Brian shot this Wyoming pronghorn using the new 6.5-300 Weatherby Magnum Mark V Accumark rifle.

come problematic when temperatures plummet. It is, therefore, strongly suggested to use a large rifle magnum primer, with the CCI 250 used to develop all accompanying load data. The Federal 215 primer is also recommended with all the accompanying data, which is one of the least temperature-sensitive primers I have tested.

Bullet selection included varmint, match and big-game hunting bullets. Although some load data was developed using bullets lighter than 95 grains, the results were less than stellar. Good accuracy was achieved using Hornady 95- and 100-grain V-MAX bullets and the Sierra 100-grain hollowpoint, all of which are proven performers on a variety of varmints.

Various 120- through 125-grain bullets designed for deer and similar sized game performed well. Consistent accuracy was displayed by the Nosler 120-grain Ballistic Tip, Hornady 120-grain A-MAX, Hornady 123-grain SST and Nosler 125-grain Partition. Using



Weatherby's most popular factory load consists of the Barnes 127-grain LRX bullet at an advertised velocity of 3,531 fps, which was duplicated with select handloads.

6.5-300 Weatherby Magnum Handloads (Continued from page 56)

bullet (*grains*)	powder	charge (*grains*)	overall loaded length (*inches*)	velocity (*fps*)
129 Hornady SST	Retumbo	75.5	3.575	3,173
		76.0		3,220
		77.0		3,261
	Norma 217	71.0		2,991
		72.0		3,016
		73.0		3,055
		74.0		3,098
		75.0		3,160
		76.0		3,203
		77.0		3,238*
	US 869	88.0		3,364
		89.0		3,390
		90.0		3,414
		91.0		3,475
		92.0		3,509
		93.0		3,559
		93.5		3,595
		94.0		3,629
130 Swift Scirocco II	Norma 217	72.0	3.565	2,991
		73.0		3,024
		74.0		3,068
		75.0		3,142
		76.0		3,187*
		77.0		3,213
	Magpro	75.0		3,233
		76.0		3,252
		77.0		3,291
		78.0		3,347
	US 869	88.0		3,342
		89.0		3,371
		90.0		3,392
		91.0		3,462
		92.0		3,495
		93.0		3,542
140 Nosler Ballistic Tip	Magnum	70.0	3.555	2,913
		71.0		2,955
		72.0		2,967
		73.0		3,009
		74.0		3,066
		75.0		3,092
		76.0		3,133
	RL-33	74.0		2,950
		75.0		2,961
		76.0		2,999
		77.0		3,013
		78.0		3,061
		79.0		3,098
		80.0		3,131
		80.5		3,152
		81.0		3,180
	H-50BMG	79.0		2,899
		80.0		2,907
		81.0		2,928
		82.0		2,977
		83.0		3,020
		83.5		3,048
		84.0		3,079
		85.0		3,116

(Continued on page 58)

6.5-300 Weatherby Magnum Handloads (Continued from page 57)

bullet (*grains*)	powder	charge (*grains*)	overall loaded length (*inches*)	velocity (*fps*)
140 Nosler Ballistic Tip	Norma 217	70.0	3.555	3,011
		71.0		3,029
		72.0		3,061
		73.0		3,100
		74.0		3,142
		75.0		3,163
	US 869	83.0		3,116
		84.0		3,131
		85.0		3,177
		86.0		3,222
		87.0		3,276
		88.0		3,304
		89.0		3,369*
		89.5		3,394
	VV-20N29	81.0		2,955
		82.0		2,971
		83.0		2,996
		84.0		3,032
		85.0		3,058
		86.0		3,097
		87.0		3,119
		88.0		3,149
140 Hornady A-MAX	Magnum	71.0	3.580	2,969
		72.0		2,977
		73.0		3,016
		74.0		3,078
		75.0		3,104
		76.0		3,140
	Norma 217	70.0		3,002
		71.0		3,018
		72.0		3,054
		73.0		3,114
		74.0		3,155
		75.0		3,177
	US 869	83.0		3,105
		84.0		3,122
		85.0		3,165
		86.0		3,229
		87.0		3,280
		88.0		3,316
		89.0		3,383*
		89.5		3,405
140 Nosler AccuBond	US 869	83.0	3.555	3,102
		84.0		3,122
		85.0		3,154
		86.0		3,231
		87.0		3,256
		88.0		3,298
		89.0		3,354*
		89.5		3,381
160 Hornady InterLock RN	H-50BMG	72.0	3.505	2,481
		73.0		2,496
		74.0		2,507
		75.0		2,556
		76.0		2,576
		77.0		2,602
	US 869	78.0		2,831
		79.0		2,858

(Continued)

6.5-300 Weatherby Magnum Handloads

bullet (*grains*)	powder	charge (*grains*)	overall loaded length (*inches*)	velocity (*fps*)
160 Hornady InterLock RN	US 869	80.0	3.505	2,902
		81.0		2,969*
		82.0		3,008
	Norma 217	63.0		2,577
		64.0		2,582
		65.0		2,600
		66.0		2,633
		67.0		2,646
		68.0		2,666

***** These loads are potentially the most accurate with a given bullet.

Notes: Weatherby Mark V Accumark with a 26-inch barrel (one-in-8-inch twist) was used to test-fire all the loads. Weatherby cases and CCI 250 Large Rifle Magnum primers were used throughout. Bullet diameter: 6.5mm/.264 inch; maximum OAL: 3.600 inches; minimum OAL: 3.450 inches; maximum case length: 2.825 inches; trim-to length: 2.815 inches.

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

US 869 powder, velocities exceeded 3,600 fps. Accuracy powders for bullets in this weight range included VV-N165, Hodgdon US 869 and Ramshot Magnum.

The Barnes 127-grain LRX seems to be a natural match with the 6.5-300 Weatherby cartridge and Mark V rifle. It performs unusually well on game when pushed to high velocity, but it also gives its best accuracy when seated well off the leade (with most Weatherby rifles featuring a rather long throat, or freebore). Constructed of solid copper with a plastic tip, this bullet is also long, measuring 1.400 inches and seats deeply, consuming powder capacity. Although some cases were loaded with 100 percent density, there was never an issue with compressing powder charges.

The Hornady 129-grain SST and Swift 130-grain Scirocco II bullets were easily handloaded to duplicate advertised factory load performance, while maximum loads exceeded those velocities. Again, Hodgdon US 869 powder produced the highest velocities, but Norma 217 showed an accuracy edge with both bullets.

Three 140-grain bullets tried included the Nosler Ballistic Tip, Hornady A-MAX and Nosler AccuBond. US 869 powder produced the highest velocities, but it also produced the best accuracy with all three bullets. Norma 217 and Alliant RL-33 powders likewise gave consistent velocities and accuracy.

In spite of a world filled with high demand for sleek, high BC and low-drag bullets that are often pushed to the highest possible velocities for maximum performance, data is included for the old Hornady 160-grain InterLock roundnose bullet. Many old-timers who hunt timber and brush country still swear by them, as they offer reliable expansion and deep penetration. The old Hornady roundnose bullet reached 3,000 fps and gave surprising accuracy.

There were no difficulties in developing handload data for the 6.5-300 Weatherby. Although bullets were

tested for velocity at specified overall cartridge lengths, it will be beneficial to the handloader to experiment with bullet seating depth to determine the accuracy "sweet spot" with a given bullet and rifle. The two Weatherby Mark V rifles used to establish the velocities and accuracy each showed a distinct preference for bullets seated to different depths.

The 6.5-300 Weatherby Magnum is purely a hunting cartridge intended for open country where shots can extend several hundred yards. Due to its unusually high velocity and the low drag of many 6.5 bullets, it is flat shooting by any measure. On the Wyoming hunt, several pronghorn antelope were shot, with each kill I witnessed being a clean, "drop-in-their-tracks" type performance using the Barnes 127-grain LRX bullet. With new powders and bullets, 6.5-300 Weatherby Magnum ballistics is impressive, and with carefully developed handloads, factory load performance can be duplicated.

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