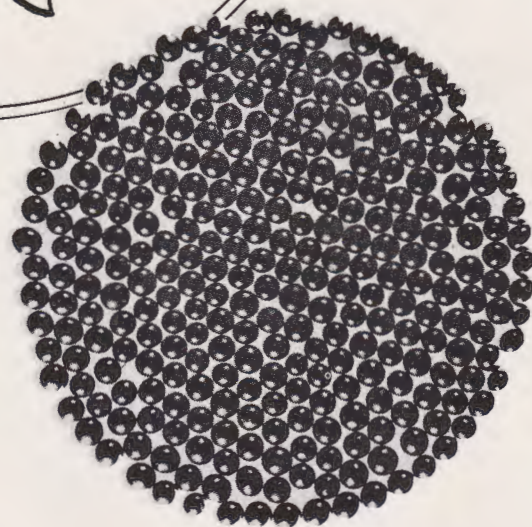
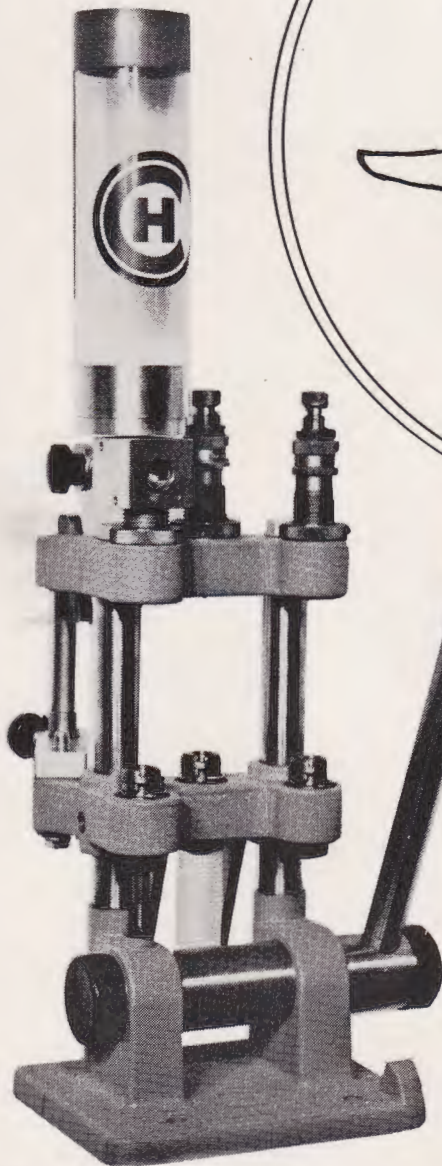


**"The
Gun
Pro
School"**

A Supplement of
North American
Correspondence Schools

SHOTSHELL. Powder, Wad and Shot Combinations



Shotgun Powder, Wad and Shot Combinations



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Education Service Center
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The Modern Shotgun Is a Versatile Arm...

It is capable, with appropriate loads, of taking everything from two-ounce doves to two-ton bear! While chamber pressures remain in essentially the same range with given maximum and minimum loads, regardless of the projectiles used, the exterior ballistics vary greatly according to the size, weight, and shape of the shot charge.

Exterior ballistics refers to velocity fall-off, drop, and resultant energy loss. The tables and information that follow will show you how exterior ballistics are affected by the various combinations of powder, wad, and shot.

Much of the information in this supplement is based on commercially loaded ammunition. However, the ballistics tables on Pages 5 through 7 also apply to shotshells hand-loaded to equivalent velocities.

The subject of shotshell reloading is fully covered in your lesson material. Our purpose here is to acquaint you generally with the ballistics of given shotshell projectiles and the powders and other components that influence their performance.

We are indebted to the Winchester-Western division of Olin Industries for much of the material that follows.

Shot Charge (Ounces)	BB (.18")	#2 (.15")	#4 (.13")	#5 (.12")	#6 (.11")	Shot Size #7½ (.095")	#8 (.09")	#8½ (.085")	#9 (.08")	#12 (.05")
½		45	67	85	112	175	205	242	292	1192
¾		67	101	127	168	262	308	363	439	1788
7/8		79	118	149	197	306	359	425	512	2120
1	50	90	135	170	225	350	410	485	585	2385
1¼	56	101	152	191	253	393	461	545	658	
1½	62	112	169	213	281	437	513	605	731	
1¾	69	124	186	234	309	481	564	665	804	
1½	75	135	202	255	337	525	615	730	877	
1¾	81	146	220	276	366	569	666	790	951	
1¾	94	169	253	319	422	656	769	850	1097	
2	100	180	270	340	450	700	820	910	1170	

Winchester Standard Shot Chart

No.	12	11	10	9	8	7½	6	5	4	2
DIAMETER IN INCHES	•	•	•	•	•	•	•	•	•	•
	.05	.06	.07	.08	.09	.095	.11	.12	.13	.15
	APPROXIMATE NUMBER OF PELLETS TO THE OUNCE									
	2385	1380	870	585	410	350	225	170	135	90

	Air Rifle	BB	No. 4 Buck	No. 3 Buck	No. 1 Buck	No. 0 Buck	No. 00
DIAMETER IN INCHES	•	•	•	•	•	•	•
	.175	.18	.24	.25	.30	.32	.33
	NUMBER TO THE OUNCE		APPROXIMATE NUMBER TO THE POUND				
	55	50	340	300	175	145	130

The table above lists approximate shot count per charge weight. At left is an example of manufacturers' shot charts available to the hunter or reloader. Small shot means more pellets in the pattern and a better chance for sufficient hits. Small shot, however, loses velocity sooner than large and may not give enough penetration at longer ranges. While large shot retains velocity and energy better in flight for better penetration at long range, it does not give a dense pattern.

The Shotshell Reloader

Today's shotshell reloader deals with modern smokeless powders. The old blackpowder term of "so many drams" of powder has no direct significance other than a modern powder charge being "equivalent" to so many drams of blackpowder. Smokeless powder has very little bulk compared to its energy potential, and an error of just a few grains in a powder charge can jump pressures way beyond the safe limit. Most shotgun powders look very much alike, even though they have vastly different burning characteristics. For this reason, positive identification is at least as important as when using rifle powders. Shotshell powders that cannot be positively identified should always be discarded!



Unlike metallic cartridges, shotshell loads are never "worked up." The reloader must rely upon data compiled on each available powder by manufacturers of powder, components, and loading accessories. In shotshells, unlike metallic cartridges, pressures and velocities are not always directly related. Some shotshell powders will produce relatively low pressures and high velocities. This is *not* the case with rifle ammunition.

For this reason, loading data as listed by reputable firms should never be modified or changed in any way. The big companies have done the experimenting for you!

Shotshell Reloading Manuals

There are several sources for loading data, including pamphlets put out by Dupont and Hercules and manuals by Lyman, Winchester, Pacific, and others.

It is an advantage in some instances to use a manual such as Lyman's that provides data on nearly all powders, components, and shell cases produced. The booklets produced by Dupont, Hercules, Winchester, and other powder manufacturers provide data on only their powders. Lyman, on the other hand, lists 18 powders produced by four different manufacturers.

The data printed in these manuals should be adhered to without modification. For example, a change from a listed primer to another can increase pressure by 1,800 pounds per square inch (psi). The current pressure designation widely used is "L.V.P.," meaning "lead units of pressure" (the pressure is the same as with the "psi" tag). Lyman's loading manual gives the following example of how pressures and velocities change when primers and wads are changed:



Example No. 1 — 12-gauge Remington All-American target case, 16.2 grains, Hi-Skor 700X, Remington Power P No. W23694 and 1-1/8 ounce shot.

Primer	Velocity (Feet Per Second)	Pressure
CCI	1,130 fps	8,500 L.V.P.
Remington 97	1,135 fps	8,900 L.V.P.
Alcan 220 Max-Fire	1,150 fps	10,300 L.V.P.

Example No. 2 — The same load as above, showing changes due to wad substitution:

Wad	Velocity (Feet Per Second)	Pressure
Winchester WAA12R	1,110 fps	7,900 L.V.P.
Remington Power Piston W23694	1,135 fps	8,900 L.V.P.
Alcan Flite-Max No. 4	1,140 fps	10,000 L.V.P.

Note that in both cases the velocity gain is insignificant compared to the extreme and possibly dangerous increase in pressure. The point is that a great amount of testing has gone into developing safe loading tables — and they should be rigidly adhered to. Your only guide to pressures and velocities attained with various components exists in the loading manuals. Change data even slightly and you may develop case separation, heavy recoil, noticeably louder report, and loose or “blown” primers.

Develop 3 Basic Loads

Generally speaking, the beginner should study and select only three basic loads, which will meet 90% of his needs.

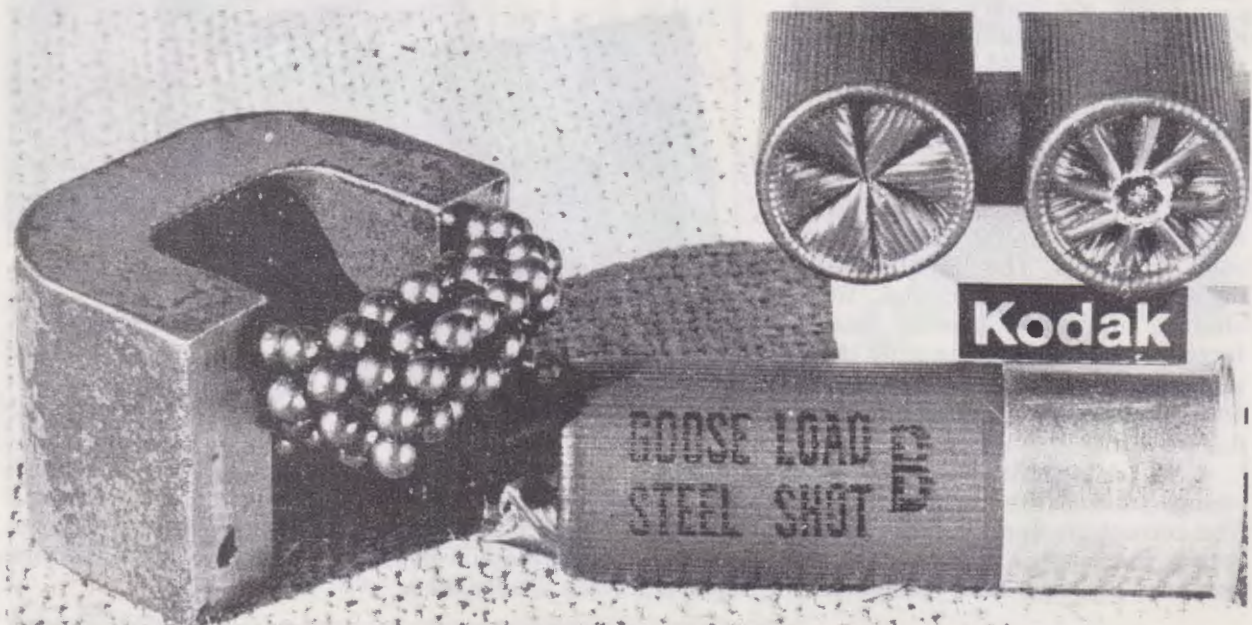
The first is a skeet and trap load which is also suitable for small game in the dove, quail, and cottontail class.

The second would be a “medium load” for such game as grouse, decoyed ducks, pheasant, etc.

The third would be for ducks and pheasant at extreme ranges, and, with larger shot, for geese and turkeys.

By this method, you will require only three types of powder, three different wad lengths, two primers (depending on manual recommendations), and one type of shell case. Shot size will, of course, vary according to the target or game.

Velocities will range from about 1,100 to 1,400 fps, with pressures from 7,500 to 10,500 L.V.P.



Selecting Cases



The key to any load is the shell case. Many reloaders choose tough, compression-formed plastic cases such as the Winchester AA, which will stand up under repeated reloadings. The Remington All-American and RXP cases are other good choices, as is the Federal plastic case. All will produce an excellent crimp if the proper wad column is selected.

Plastic wads and plastic cases produce higher pressures than paper wads and paper cases. Also, paper cases require one or two grains more powder to produce equal velocities. These factors are taken into consideration and balanced in all loading data.

Federal is the only U.S. firm producing paper cases today. They can be reloaded, but paper cases will usually require additional equipment, including a different crimp starter, and their reloading "life" is short.

There are several inexpensive, poor-quality shells available that are not satisfactory for reloading, largely because of their paper base wads which sometimes remain in the bore after one or two reloadings, causing a barrel obstruction hazard.

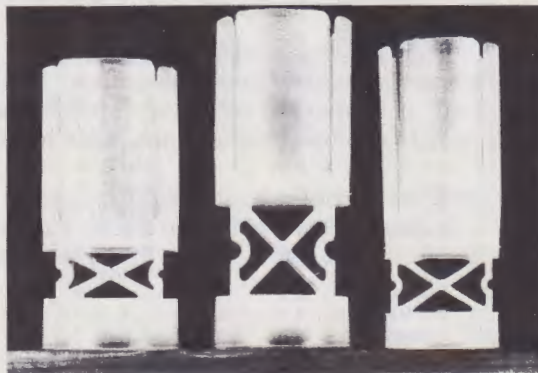
Selecting Wads

The old-style felt, "nitro" (cardboard), and fiber wads will be touched on as you will still see them listed in the manuals. The nitro wad was used initially as an "over-shot" wad in paper cases and a "roll" crimp retained the wad. It may also be used as a thin spacer wad to develop an exact wad column length to assure a proper crimp (the mark of the expert loader, by the way).

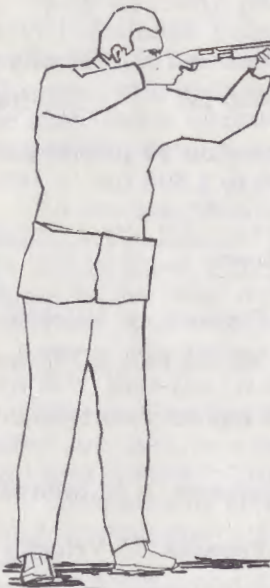
Other felt or fiber wads are available in thicknesses of from 1/4" to 1/2" and may be used in any combination to provide a proper wad column length, which is necessary for proper powder ignition and pressure. These are cheaper than plastic wads, but require considerably more time to load.

Plastic wads usually, and should, incorporate a protective shot sleeve. Only one wad of appropriate length is used in any given case.

These wads add pressure so less powder is used to produce a desired pressure than with a felt wad. They also produce a tight shot pattern, often 1° tighter than the gun's choke designation would indicate.



Shotshell Exterior Ballistics



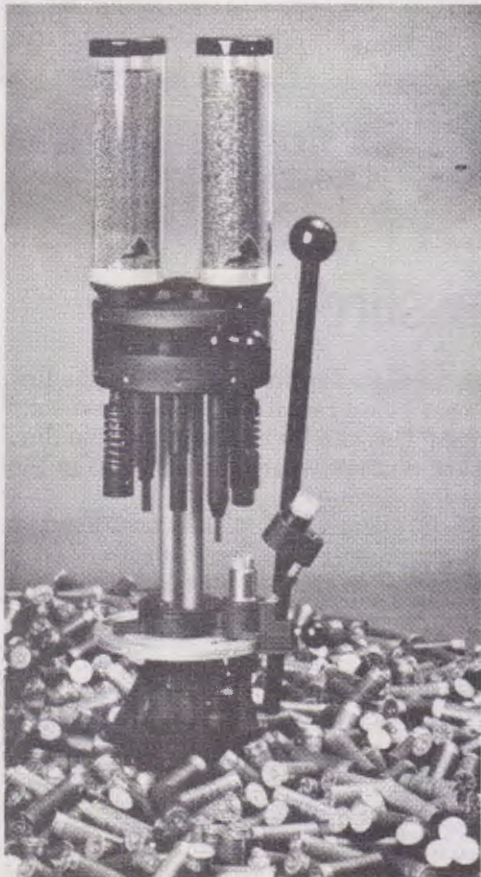
A major factor in shotgun exterior ballistics is the energy developed by any given load.

For example, with a muzzle velocity of 1,330 fps for No. 6 shot, velocity drops to 970 at 20 yards, 765 at 40 yards, and 635 at 60 yards. Pellet energy starts at the muzzle at 7.62 foot pounds; at 20 yards, 4.05; at 40 yards, 2.52; and at 60 yards is down to 1.74.

Looking at energy from a practical standpoint, at close range, small shot, due to the many pellets in the charge, will kill small game cleanly. Larger shot retains more energy at longer ranges. A minimum of four pellets is required to kill a mallard duck — providing the duck is within 40 yards for No. 6, and not over 50 yards away with No. 4. The use of larger shot and heavier charges increases the chances for additional hits with a corresponding increase in the energy expended on the bird. For this reason, magnum loads are most effective.

Increasing the shot charge, and then backing up the charge with the proper powder and primer combination, will provide added energy and, more important, added hit potential. It will also extend range and produce fewer cripples.

Shotguns, Like Rifles, “Prefer” Certain Loads



Most shotgun shooters tend to accept any load, factory or reload, as listed in the various manuals. They don't realize that shotguns, like rifles, produce the best performance with a given set of reloading components. The rifle gains optimum accuracy, the shotgun produces superior patterns.

First, before deciding on any load you will use consistently, pattern that load at the expected ranges for which it will be used: 25-30 yards for a skeet or quail, 35-40 yards for decoyed ducks, 45-55 yards for ducks and geese. (This is a rough guide only and should be adjusted to provide maximum information at the ranges at which you will be shooting.) Trap loads should not be patterned at the same ranges as skeet or quail loads. Dove and trap loads would be a suitable combination.

Use old catalogs such as Sears or telephone books. First determine penetration using factory loads or reloads of known velocities. Then fire a handload using the same size shot from the same distance and compare penetration. Velocity can then be estimated based on a comparison with the factory loads.

Velocity, Energy, Time of Flight and Trajectory

Velocity determines time of flight (of the shot charge), which in turn has a bearing on the lead necessary to hit a crossing target. All other factors being equal, a high-velocity load with the same quantity of shot usually provides a higher percentage of hits on a given target as the lead can be less, and most shooters simply don't lead enough.

The drop in inches will also be less, helping compensate for a "low hold."

It can be readily seen that more shot moving faster aids in hitting a moving target. However, such heavy charges can actually destroy such game as doves and quail at close range. Larger shot is most desirable for long ranges (50 to 60 yards) to maintain energy (and velocity), depending upon the game to be taken.

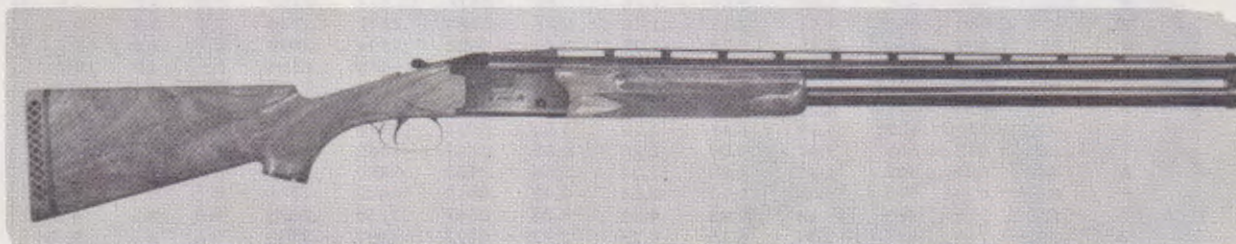
Shotshell trajectory (drop of the shot charge) is not nearly as critical as with a rifle, but it can result in a "fringed" and lost bird at maximum ranges of 50 to 60 yards. Low-velocity loads starting out at 1,135 fps with No. 6 shot drop 10.5" at 60 yards and can result in a clean miss or a crippled bird if the hold is a bit low.

The 16 and 20-gauges "magnify" the ballistics shortcomings of the 12-gauge, and this must be taken into consideration. The 28-gauge and .410 should never be used on game by a beginner. Nor will these gauges produce good skeet scores for the beginner. They should be used only by an experienced shooter.

The 10-gauge will contribute little to the hunter's bag until considerable experience permits the gunner to take advantage of the added velocity and shot charges, up to four drams equivalent, and two ounces of shot! He must also consider the excessive recoil!

A final word of caution. The above information provides only *brief* guidance. All reloading must be done with a loading manual at hand. Check and recheck data.

Reloading is one activity that seldom excuses mistakes. Never guess or depend upon memory. Use a manual and always check and recheck.



Shotgun Shells

Velocity—Energy—Flight Time—Drop
(Courtesy of Winchester-Western Div., Olin)

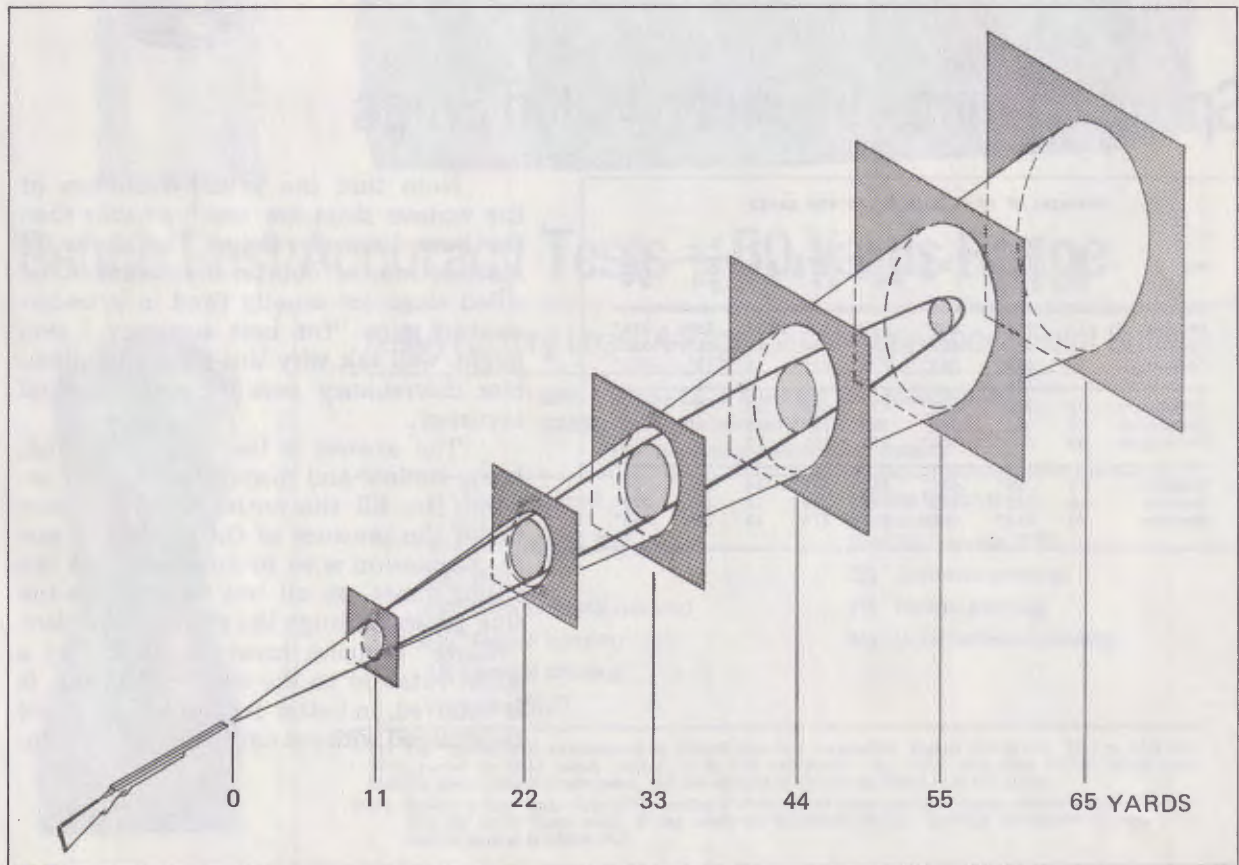
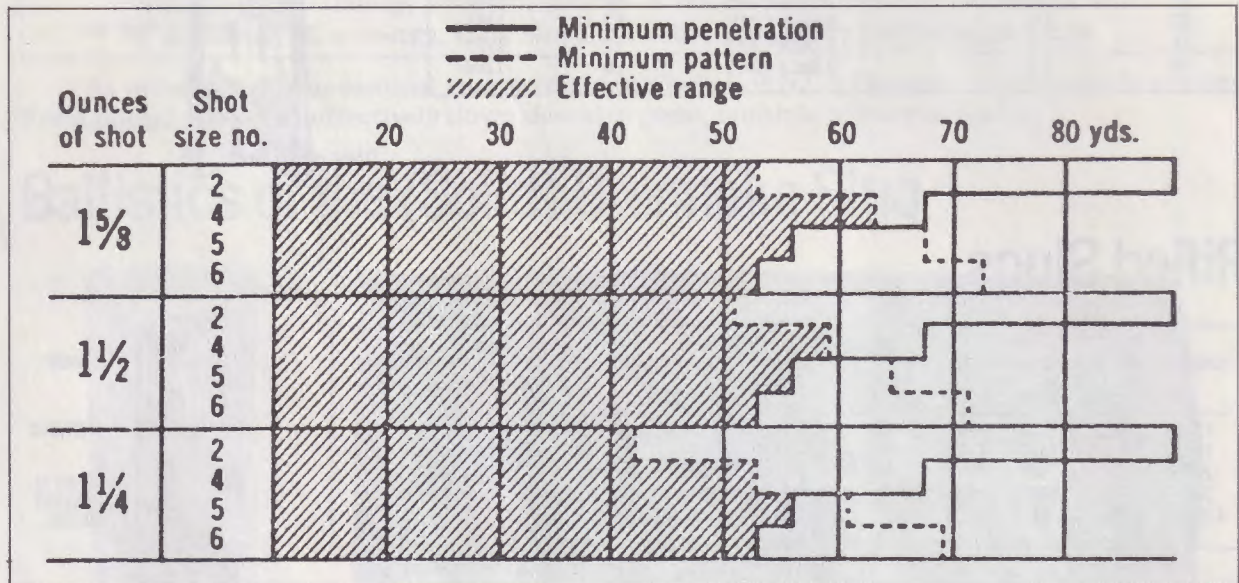
Muzzle Velocity (f.p.s.)	Shot Size	Velocity (f.p.s.)			Energy per pellet (ft.-lbs.)				Time in flight (secs.)			Drop (ins.)		
		20 yds.	40 yds.	60 yds.	Muzzle	20 yds.	40 yds.	60 yds.	20 yds.	40 yds.	60 yds.	20 yds.	40 yds.	60 yds.
1330	BB	1085	915	790	34.37	22.87	16.27	12.23	.0502	.1107	.1815	0.5	2.4	6.4
	2	1045	860	730	19.07	11.77	7.98	5.76	.0513	.1148	.1908	0.5	2.6	7.0
	4	1010	815	685	12.70	7.34	4.77	3.35	.0522	.1187	.1993	0.5	2.7	7.7
	5	990	790	655	10.08	5.60	3.56	2.46	.0528	.1210	.2047	0.5	2.8	8.1
	6	970	765	630	7.61	4.04	2.50	1.70	.0535	.1238	.2108	0.6	3.0	8.6
	7½	930	715	580	4.88	2.38	1.41	0.93	.0548	.1291	.2228	0.6	3.2	9.6
	9	880	660	525	2.92	1.28	0.71	0.45	.0566	.1364	.2392	0.6	3.6	11.0
1315	BB	1075	905	785	33.60	22.45	15.91	11.97	.0508	.1118	.1830	0.5	2.4	6.5
	2	1035	855	725	18.64	11.56	7.86	5.69	.0518	.1159	.1923	0.5	2.6	7.1
	4	1005	810	680	12.42	7.22	4.71	3.32	.0527	.1197	.2009	0.5	2.8	7.8
	5	985	785	655	9.86	5.51	3.51	2.43	.0533	.1221	.2062	0.6	2.9	8.2
	6	960	760	625	7.44	3.98	2.47	1.68	.0540	.1248	.2124	0.6	3.0	8.7
1295	2	1025	845	720	18.01	11.28	7.71	5.60	.0525	.1173	.1944	0.5	2.6	7.3
	4	990	800	675	12.04	7.05	4.62	3.26	.0534	.1211	.2030	0.6	2.8	8.0
	5	970	780	650	9.56	5.38	3.45	2.40	.0540	.1235	.2083	0.6	2.9	8.4
	6	950	750	620	7.21	3.89	2.43	1.66	.0547	.1262	.2145	0.6	3.1	8.9
	7½	910	705	575	4.63	2.30	1.37	0.91	.0560	.1316	.2265	0.6	3.3	9.9
	9	865	650	520	2.77	1.23	0.70	0.45	.0579	.1388	.2428	0.6	3.7	11.4
1255	BB	1035	880	765	30.60	20.81	15.05	11.37	.0529	.1160	.1894	0.5	2.6	6.9
	2	995	830	705	16.98	10.67	7.43	5.36	.0541	.1201	.1994	0.6	2.8	7.7
	4	965	785	665	11.31	6.72	4.45	3.16	.0549	.1240	.2074	0.6	3.0	8.3
	5	950	765	640	8.98	5.13	3.32	2.32	.0555	.1264	.2128	0.6	3.1	8.7
	6	930	740	610	6.77	3.71	2.34	1.61	.0562	.1292	.2189	0.6	3.2	9.2
	7½	890	690	565	4.35	2.19	1.31	.88	.0575	.1345	.2309	0.6	3.5	10.3
	8	880	675	550	3.69	1.80	1.07	0.70	.0581	.1367	.2358	0.6	3.6	10.7
	9	845	640	515	2.60	1.18	.68	.44	.0594	.1418	.2473	0.7	3.9	11.8
1240	2	990	820	705	16.58	10.53	7.28	5.33	.0545	.1214	.2006	0.6	2.8	7.8
	4	960	780	660	11.04	6.59	4.38	3.12	.0555	.1252	.2092	0.6	3.0	8.4
	5	940	760	635	8.76	5.04	3.27	2.29	.0561	.1276	.2145	0.6	3.1	8.9
	6	920	730	610	6.61	3.65	2.30	1.58	.0568	.1303	.2206	0.6	3.3	9.4
	7½	885	690	560	4.24	2.16	1.30	0.87	.0581	.1357	.2332	0.6	3.6	10.5
1235	4	955	780	660	10.95	6.55	4.36	3.10	.0557	.1256	.2097	0.6	3.0	8.5
	5	940	755	635	8.69	5.01	3.25	2.28	.0563	.1280	.2151	0.6	3.2	8.9
	6	920	730	605	6.56	3.62	2.29	1.58	.0570	.1307	.2212	0.6	3.3	9.4
	8	870	670	545	3.57	1.76	1.05	0.69	.0588	.1382	.2384	0.7	3.7	11.0
1220	2	975	815	695	16.04	10.26	7.13	5.23	.0553	.1230	.2029	0.6	2.9	8.0
	4	945	775	655	10.69	6.43	4.29	3.06	.0563	.1268	.2115	0.6	3.1	8.6
	5	930	750	630	8.48	4.92	3.21	2.25	.0569	.1292	.2169	0.6	3.2	9.1
	6	910	725	605	6.40	3.56	2.26	1.59	.0576	.1319	.2230	0.6	3.6	9.6
	7½	875	680	560	4.11	2.11	1.28	0.86	.0589	.1372	.2350	0.7	3.6	10.2
	8	860	665	540	3.48	1.73	1.03	0.69	.0594	.1394	.2399	0.7	3.8	11.1
	9	830	630	505	2.46	1.14	0.65	0.42	.0607	.1445	.2514	0.7	4.0	12.2
1200	4	935	765	650	10.34	6.27	4.20	3.01	.0571	.1284	.2140	0.6	3.2	8.8
	5	915	740	625	8.21	4.80	3.14	2.22	.0577	.1308	.2193	0.6	3.3	9.3
	6	900	720	600	6.19	3.47	2.22	1.54	.0584	.1336	.2255	0.7	3.4	9.8
	7½	865	675	555	3.97	2.06	1.26	0.85	.0597	.1389	.2375	0.7	3.7	10.9
	8	850	660	540	3.37	1.69	1.02	0.68	.0603	.1410	.2423	0.7	3.8	11.3
	9	820	625	505	2.38	1.11	0.64	0.42	.0615	.1462	.2538	0.7	4.1	12.4
1185	2	955	795	685	15.14	9.83	6.81	5.06	.0568	.1259	.2073	0.6	3.1	8.3
	4	925	760	645	10.08	6.15	4.13	2.97	.0577	.1297	.2159	0.6	3.2	9.0
	5	910	735	620	8.00	4.72	3.08	2.19	.0583	.1321	.2212	0.7	3.4	9.4
	6	890	715	595	6.04	3.41	2.18	1.52	.0590	.1348	.2274	0.7	3.5	10.0
	7½	855	670	550	3.88	2.02	1.24	0.83	.0604	.1401	.2394	0.7	3.8	11.1
	8	845	655	535	3.29	1.66	1.00	0.67	.0609	.1423	.2442	0.7	3.9	11.5
	9	815	620	500	2.32	1.10	0.63	0.41	.0622	.1474	.2557	0.8	4.2	12.6
1165	4	915	750	635	9.74	5.98	4.04	2.91	.0586	.1314	.2185	0.7	3.3	9.2
	5	895	730	615	7.74	4.58	3.03	2.15	.0592	.1338	.2238	0.7	3.5	9.7
	6	880	705	590	5.84	3.32	2.14	1.49	.0599	.1366	.2300	0.7	3.6	10.2
	7½	845	665	545	3.75	1.97	1.22	0.82	.0612	.1419	.2420	0.7	3.9	11.3
	8	835	650	530	3.18	1.62	0.98	0.66	.0618	.1440	.2469	0.7	4.0	11.8
	9	805	615	495	2.24	1.07	0.62	0.41	.0630	.1492	.2584	0.8	4.3	12.9
1155	4	905	745	635	9.58	5.90	4.00	2.80	.0591	.1323	.2198	0.7	3.4	9.3
	5	890	725	615	7.60	4.52	3.00	2.17	.0596	.1347	.2252	0.7	3.5	9.8
	6	875	700	585	5.74	3.28	2.12	1.48	.0603	.1374	.2313	0.7	3.6	10.3
	8	830	645	530	3.18	1.60	0.97	0.65	.0622	.1449	.2482	0.8	4.0	11.9
	9	800	610	495	2.20	1.06	0.62	0.40	.0635	.1500	.2597	0.8	4.3	13.0
1150	9	800	610	495	2.18	1.05	0.61	0.40	.0637	.1505	.2604	0.8	4.4	13.1
1145	7½	835	655	540	3.62	1.93	1.19	0.81	.0621	.1437	.2447	0.7	4.0	11.6
	8	825	640	525	3.07	1.58	0.96	0.65	.0627	.1458	.2496	0.8	4.1	12.0
	9	795	610	495	2.16	1.04	0.61	0.40	.0639	.1510	.2610	0.8	4.4	13.1
1135	4	895	740	630	9.25	5.74	3.91	2.83	.0600	.1342	.2226	0.7	3.5	9.6
	5	880	715	605	7.34	4.40	2.93	2.09	.0606	.1365	.2279	0.7	3.6	10.0
	6	860	695	580	5.54	3.19	2.07	1.45	.0612	.1393	.2341	0.7	3.7	10.6
	7½	830	655	540	3.56	1.90	1.18	0.80	.0626	.1446	.2461	0.8	4.0	11.7

Effective Range of Shotshells

The effective range of a shot charge is the lesser of the range of minimum penetration or the range of minimum pattern.

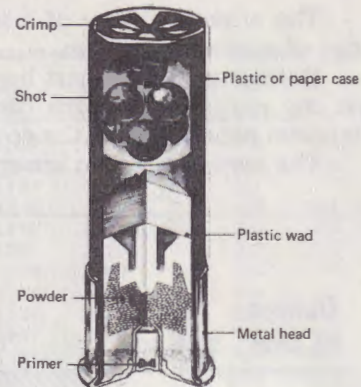
Referring to the chart below, the shaded area shows the effective range of various loads. Note that the minimum pattern of No. 2 and No. 4 shot is the factor governing effective range, while minimum penetration is the governing factor with No. 5 and No. 6 shot.

The yardages shown are approximate for long-range shotshells.



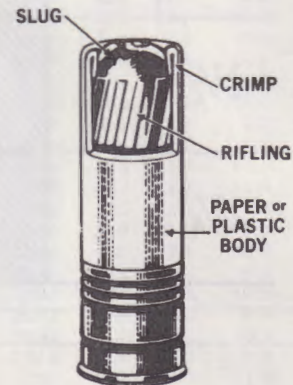
Buckshot Loads

GAUGE	SHELL LENGTH	SHOT SIZE	NUMBER OF PELLETS	MUZZLE VELOCITY
12	2¾	00 buck (.33")	9	1325
12	2¾ magnum	00 buck (.33")	12	1325
12	2¾ magnum	1 buck (.30")	20	1325
12	3 magnum	00 buck (.33")	15	1250
12	3 magnum	4 buck (.24")	41	1225
12	2¾	0 buck (.32")	12	1300
12	2¾	1 buck (.30")	16	1250
12	2¾	4 buck (.24")	27	1325
16	2¾	1 buck (.30")	12	1225
20	2¾	3 buck (.25")	20	1200



Rifled Slugs

GAUGE	LOAD	SLUG WT. OZS.	MUZZLE	VELOCITY				MUZZLE	ENERGY			
				25 yds.	50 yds.	75 yds.	100 yds.		25 yds.	50 yds.	75 yds.	100 yds.
12	3¾	1	1600	1365	1175	1040	950	2485	1810	1340	1050	875
16	3	7/8	1600	1365	1175	1040	950	2175	1585	1175	920	765
20	2¾	5/8	1600	1365	1175	1040	950	1555	1130	840	655	550
28	2¼	½	1600	1365	1175	1040	950	1245	905	670	525	440
410	2¼	¼	1830	1560	1335	1150	1025	650	475	345	255	205



Specifications, American Rifled Slugs

Averages of 10 in each brand and gauge										
Mfg.	Gauge	Nominal Bore Diameter	O.D. of Slug	Rated Weight Grs.	Actual Weight Grs.	No. Lands & Grooves	Angle of Rifling	Groove Depth		
Federal	12	.729"	.665"	437	401	14	15°	.014"		
Federal	16	.662"	.620"	382	346	12	15°	.022"		
Federal	20	.615"	.563"	273	275	15	15°	.015"		
Remington	12	.729"	.690"	437	402	14	9°	.023"		
Remington	16	.662"	.645"	382	355	14	9°	.028"		
Remington	20	.615"	.604"	273	291	13	9°	.028"		
Western	12	.729"	.671"	437	401	14	15°	.014"		
Western	16	.662"	.620"	382	346	12	15°	.020"		
Western	20	.615"	.562"	273	275	15	15°	.018"		

Note that the actual diameters of the various slugs are much smaller than the bore diameters listed. The choke diameters are, of course, even smaller. As rifled slugs are usually fired in cylinder-choked guns "for best accuracy," you might well ask why this bore/slug diameter discrepancy permits even marginal accuracy.

The answer is that the rifled slug, being hollow and made of soft lead, expands to fill the entire bore diameter under the pressure of the expanding gases. Expansion is so pronounced that the rifling vanes are all but worn off as the slug passes through the choke. Sufficient "rifling" remains, however, to impart a slight rotation to the slug — resulting, it is believed, in better accuracy than could be attained without any vanes or rotation.

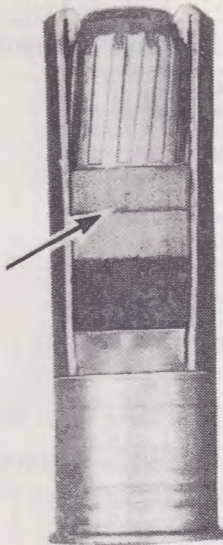
Comparative Energy, Buckshot vs. Rifled Slugs

Projectile Slug	12-Gauge 1 Ounce	16-Gauge 7/8 Ounce	Buckshot	00	No. 1
V (muzzle)	1,550 fps	1,550 fps	V (muzzle)	1325	1225
E (muzzle)	1,315 ft. lbs.	1,045 ft. lbs.	*E (muzzle)	211	133
			V (50 yds.)	1065	945
			*E (50 yds.)	136	79

*A single pellet. Energy with which target is struck will depend on number of hits.
V is velocity, E is energy. Only No. 1 buckshot is regularly loaded in 16-gauge.

As shown above, the residual energy of a single pellet of No. 1 buckshot at 50 yards is minimal. For a buckshot load to effectively down deer-size game, multiple hits are required.

Ballistics of the (Solid) Brenneke Slug



Gauge	Bullet Wgt., grains*	Barrel Lgth., Ins.	Velocity—feet per second—yards					Energy—foot pounds—yards				
			V0	V25	V50	V75	V100	E0	E25	E50	E75	E100
12	491	30	1593	1384	1213	1083	997	2756	2090	1606	1280	1049
16	427	28	1510	1303	1129	997	903	2163	1606	1208	947	774
20	364	28	1513	1300	1123	988	890	1852	1367	1020	788	637

Height of trajectory in inches when zeroed at ranges shown.

Gauge	Iron sights: line of sight 0.79" above center line of barrel.				Telescope sights: line of sight 2.0" above center line of barrel.			
	25 yds.	50 yds.	75 yds.	100 yds.	25 yds.	50 yds.	75 yds.	100 yds.
12	+0.24	±0	-1.62	-4.96	-0.35	±0	-1.02	-3.85
	+0.75	+1.06	±0	-2.79	-0.08	+0.71	±0	-2.52
	+1.46	+2.48	+1.69	±0	+0.51	+1.93	+1.89	±0
16	+0.35	±0	-1.89	-5.49	-0.08	±0	-1.26	-4.80
	+0.98	+1.26	±0	-3.43	+0.24	+0.86	±0	-3.03
	+2.25	+3.78	+3.74	±0	+1.38	+3.07	+3.27	±0
20	+0.35	±0	-1.89	-5.49	-0.08	±0	-1.26	-4.80
	+0.98	+1.26	±0	-3.43	+0.24	+0.86	±0	-3.03
	+2.25	+3.78	+3.74	±0	+1.38	+3.07	+3.27	±0

*Weight of slug, including felt and cardboard wads.

Bench Rest Accuracy Tests—50 Yards Range



12-GA Factory Load, 440 gr. Sabot-Type Shock Point Bullet

GUN: Mossberg 12-ga. Model 500 Slide-Action Repeater

SIGHTS: Lyman All-American 2½x Scope

(Five-shot groups measured on centers)

24" "Slugster" barrel	26" Imp Cyl barrel
3" chamber	3" chamber
Bore .733", muzzle .733"	Bore .732", muzzle .729"
6⅝" (4 in 2½")	2⅞" (horizontal grouping)
6½" (loose horizontal grouping)	3⅝" (vertical grouping)
3½" (vertical stringing)	3½" (loose horizontal grouping)
6⅝" (vertical stringing)	
3½" (4 in 2⅝")	

* BRI 2¼" plastic shell manufactured by Federal Cartridge Corporation, Federal 209 primer, 26.1 to 27.9 grs. Herco powder for three rounds checked, Alcan PGS over-powder cup, .200" nitro card, 440-gr. Shock Point bullet in brown-colored plastic sabot, and roll crimped to an over-all length of 2.475 inches.

NOTE: Current factory loads (late 1971) employ a white-colored sabot having a slightly smaller outside diameter than the earlier brown sabot. At last report, the Winchester-Western Universal over-powder cup was being used in place of the Alcan PGS.

International Shot Sizes

Millimeters (1mm.=approx. .04")	5.50	5.25	5.16	5.00	4.93	4.75	4.57	4.50	4.32	4.25	4.09	4.00	3.91	3.75	3.63	3.50	3.43	3.25	3.05	3.00	2.87	2.79	2.75	2.72	2.59	2.51	2.50	2.41	2.25	2.21	2.03	2.00	1.78	1.75	1.68	1.57	1.50	1.25		
America—Eastern	F	TT		T		BBB		BB		B		1		2		3		4		5		6						7 7½	8		9	10		10		11	12			
Western	000	00		0		BBB		BB		B		1		2		3		4		5		6					7 7½	8		9	10		10		11	12				
Belgium							000 00		0000		000		00		0		2	3	4			5				6	6½	7		8	9		10		11	12				
Germany	6/0	5/0		4/0		3/0		2/0		0		1		2		3		4		5		6					7		8		9	10		10		11	12			
England			AAA		AA		A		BBB		BB		B		1		2	3	4		4½	5		5½		6	6½	7		8	9		10		11	12				
France—Paris		5/0		4/0		3/0		2/0		0		1		2		3		4		5		6					7		8		9	10		10		11				
Lyon	3/0	2/0		0		1		2		3		4		5	5/P		6		7			7/P					8		8/P		9		10		10		11			
Marseille	5/0 4/0	4/0 3/0		3/0 2/0		2/0 0		0 1		1 2		2 3		3 4		4 5		5 6		6 7		7 8						8 9		9 10		10 11		11 12		12 13				
Nantes								2/0		0		1		2		3		4		5		6					7		8		9	10		10		11				
Angers				12		11		10		9		8		7		6		5		4		3					2		1		c		2/c		3/c					
Pontgibaud		5/0		4/0		3/0		2/0		0		1		2		3		4		5		6					7		8		9	10		10		11				
Arras						3/0		2/0		0		1		2		3		4		5		6					7		8		9	10		10		11				
Holland									00		0		1		3		4		G6			K6						7		8	9		10		11	12				
Italy			6/0		5/0		3/0		2/0				1		2 2/0	0	3 1	2 2	4 3		4	5		6		6		7		8	9		10		11	12				
Canada	AA		A		BBB		BB		B		1		2		3		4	5				6					7		7½		8	9		10						
Austria	00	0				2		4				6				8				10							12		14											
Poland	2/0	0				2		4				6				8				10							12		14											
Russia	6/0	4/0		4/0		3/0		2/0		0		1		2		3		4		5		6					7		8		9	10								
Spain—Linares	7/0	6/0						4/0		3/0		2/0		1			2				4						5	6	7		8	9	10							
Barcelona												1				4		5			6						7	8							11					
Sevilla																				4	5	6					7	8										12		
Sweden		12		11		10		9		8		7		6		5		4		3			2				1		0				2/0							
Switzerland										3					4		5		6				7					8					9	10						
Turkey			13/A 4/0		12/A 3/0		11/A 0		10/A 1		9/A 2		8/A		7/A 3		6/A 4	5/A 5	4/A 6				3/A			7		2/A		1/A		1/0 9	2/0 10					3/0		12

Winchester—Western Shotgun Loads

SUPER SPEED GAME LOADS

Gauge	Length Of Shell Inches	Powder Dram Equiv.	Oz. Shot	Standard Shot Sizes
10†	2 ⁷ / ₈	4 ³ / ₄	1 ⁵ / ₈	4
12	2 ³ / ₄	3 ³ / ₄	1 ¹ / ₄	BB, 2, 4, 5, 6, 7 ¹ / ₂ , 9
12	2 ³ / ₄ Mag.	4	1 ¹ / ₂	2, 4, 5, 6
12	3 Mag.	4	1 ³ / ₈	2, 4, 6
12	3 Mag.	4 ¹ / ₄	1 ⁵ / ₈	2, 4, 6
12	3 Mag.	Max.	1 ⁷ / ₈	BB, 2, 4
16	2 ³ / ₄	3 ¹ / ₄	1 ¹ / ₈	4, 5, 6, 7 ¹ / ₂ , 9
16	2 ³ / ₄ Mag.	3 ¹ / ₂	1 ¹ / ₄	2, 4, 6
20	2 ³ / ₄	2 ³ / ₄	1	4, 5, 6, 7 ¹ / ₂ , 9
20	2 ³ / ₄ Mag.	3	1 ¹ / ₈	4, 6, 7 ¹ / ₂
20	3 Mag.	Max.	1 ¹ / ₄	4, 6, 7 ¹ / ₂
28	2 ³ / ₄	2 ¹ / ₄	³ / ₄	6, 7 ¹ / ₂ , 9†
410	2 ¹ / ₂	Max.	¹ / ₂	4, 6, 7 ¹ / ₂ , 9†
410	3	Max.	³ / ₄	4, 5, 6, 7 ¹ / ₂ , 9

SUPER-X GAME LOADS

Gauge	Length Of Shell Inches	Powder Dram Equiv.	Oz. Shot	Standard Shot Sizes
10‡	2 ⁷ / ₈	Max.	1 ⁵ / ₈	4
10‡	3 ¹ / ₂ Mag.	Max.	2	2
12	2 ³ / ₄	Max.	1 ¹ / ₄	BB, 2, 4, 5, 6, 7 ¹ / ₂ , 9
12	2 ³ / ₄ Mag.	Max.	1 ¹ / ₂	2, 4, 5, 6
12	3 Mag.	Max.	1 ³ / ₈	2, 4, 6
12	3 Mag.	Max.	1 ⁵ / ₈	2, 4, 6
12	3 Mag.	Max.	1 ⁷ / ₈	BB, 2, 4
16	2 ³ / ₄	3 ¹ / ₄	1 ¹ / ₈	4, 5, 6, 7 ¹ / ₂ , 9
16	2 ³ / ₄ Mag.	Max.	1 ¹ / ₄	2, 4, 6
20	2 ³ / ₄	Max.	1	4, 5, 6, 7 ¹ / ₂ , 9
20	2 ³ / ₄ Mag.	Max.	1 ¹ / ₈	4, 6, 7 ¹ / ₂
20	3 Mag.	Max.	1 ¹ / ₄	4, 6, 7 ¹ / ₂
28	2 ³ / ₄	Max.	³ / ₄	6, 7 ¹ / ₂ , 9†
410	2 ¹ / ₂	Max.	¹ / ₂	4, 6, 7 ¹ / ₂ , 9†
410	3	Max.	³ / ₄	4, 5, 6, 7 ¹ / ₂ , 9

†NO. 9 SHELLS MARKED "SKEET LOADS."

SUPER-X WITH LUBALOY (COPPERIZED SHOT)

Gauge	Length Of Shell Inches	Powder Dram Equiv.	Oz. Shot	Standard Shot Sizes
12	2 ³ / ₄	Max.	1 ¹ / ₄	2, 4, 5, 6, 7 ¹ / ₂
12	2 ³ / ₄ Mag.	Max.	1 ¹ / ₂	2, 4
12	3 Mag.	Max.	1 ³ / ₈	2, 4, 6
12	3 Mag.	Max.	1 ⁵ / ₈	2, 4, 6
20	2 ³ / ₄	Max.	1	4, 5, 6, 7 ¹ / ₂
20	3 Mag.	Max.	1 ¹ / ₈	6
20	3 Mag.	Max.	1 ³ / ₁₆	4

SUPER-X AND WINCHESTER XX MAGNUM

12	2 ³ / ₄ Mag.	4	1 ¹ / ₂	2, 4
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SUPER-X AND SUPER-SPEED SUPER BUCKSHOT LOADS

Gauge	Length Of Shell Inches	Pellets Total	Buckshot Size
12	2 ³ / ₄	9	00 Buck
12	2 ³ / ₄ Mag.	12	00 Buck
12‡	3 Mag.	15	00 Buck
12	2 ³ / ₄	12	0 Buck
12	2 ³ / ₄	16	1 Buck
12	2 ³ / ₄ Mag.	20	1 Buck
12	2 ³ / ₄	27	4 Buck
12‡	3 Mag.	41	4 Buck
16	2 ³ / ₄	12	1 Buck
20	2 ³ / ₄	20	3 Buck

‡Plastic, not compression-formed.

SUPER-X AND SUPER-SPEED RIFLED SLUG LOADS

Gauge	Length Of Shell Inches	Powder Dram Equiv.	Slug Wt. Oz.	
12	2 ³ / ₄	Max.	1	Rifled Slug
16	2 ³ / ₄	Max.	⁷ / ₈	Rifled Slug
20	2 ³ / ₄	Max.	³ / ₈	Rifled Slug
410	2 ¹ / ₂	Max.	¹ / ₅	Rifled Slug

UPLAND PLASTIC MARK 5 FIELD LOADS

■ Winchester Brand Only.

Gauge	Length Of Shell Inches	Powder Dram Equiv.	Oz. Shot	Standard Shot Sizes
■ 10‡	2 ⁷ / ₈	8	Black Powder	Blank
12	2 ³ / ₄	3	1	4, 5, 6, 8
12	2 ³ / ₄	3 ¹ / ₄	1 ¹ / ₈	4, 5, 6, 7 ¹ / ₂ , 8, 9
12	2 ³ / ₄	3 ¹ / ₄	1 ¹ / ₄	7 ¹ / ₂ , 8
12‡	2 ³ / ₄	6	Black Powder	Blank
16	2 ³ / ₄	2 ¹ / ₂	1	6, 8
16	2 ³ / ₄	2 ³ / ₄	1 ¹ / ₈	4, 5, 6, 7 ¹ / ₂ , 8, 9
20	2 ³ / ₄	2 ¹ / ₄	⁷ / ₈	6, 8
20	2 ³ / ₄	2 ¹ / ₂	1	4, 5, 6, 7 ¹ / ₂ , 8, 9

UPLAND BRUSH LOAD

12‡	2 ³ / ₄	3	1 ¹ / ₈	8
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WESTERN FIELD TRIAL POPPER LOAD

Gauge	Length Of Shell Inches	Powder Dram Equiv.	Oz. Shot	Standard Shot Sizes
12	2 ³ / ₄	—	—	Blank

WINCHESTER AND WESTERN DOUBLE A TRAP LOADS

Gauge	Length Of Shell Inches	Powder Dram Equiv.	Oz. Shot	Standard Shot Sizes
12	2 ³ / ₄	2 ³ / ₄	1 ¹ / ₈	7 ¹ / ₂ , 8
12	2 ³ / ₄	3	1 ¹ / ₈	7 ¹ / ₂ , 8

WINCHESTER DOUBLE A INTERNATIONAL TRAP LOADS

N - Nickel Plated Shot. B - Black Shot.

12	2 ³ / ₄	3 ¹ / ₄	1 ¹ / ₄	7 ¹ / ₂ , 8N
12	2 ³ / ₄	3 ¹ / ₄	1 ¹ / ₄	7 ¹ / ₂ , 8B

WINCHESTER AND WESTERN DOUBLE A SKEET LOADS

Gauge	Length Of Shell Inches	Powder Dram Equiv.	Oz. Shot	Standard Shot Sizes
12	2 ³ / ₄	2 ³ / ₄	1 ¹ / ₈	9
12	2 ³ / ₄	3	1 ¹ / ₈	9
20	2 ³ / ₄	2 ¹ / ₄	⁷ / ₈	9
28	2 ³ / ₄	Max.	³ / ₄	9
410	2 ¹ / ₂	Max.	¹ / ₂	9

Remington—Peters Shotgun Game Loads & Recommendations

TYPE OF LOAD	GAUGE	LENGTH SHELL INCHES	POWDER EQUIV. DRAMS	OUNCES OF SHOT	SHOT SIZES
LONG RANGE LOADS "EXPRESS" "HIGH VELOCITY"	* 10	2 7/8	8	—	Yacht Gun Blank **
	* 10	2 7/8	4 3/4	1 3/8	4 **
	12	2 3/4	3 3/4	1 1/4	BB, 2, 4, 5, 6, 7 1/2, 9 #5 shot
	16	2 3/4	3 1/4	1 1/8	4, 5, 6, 7 1/2, 9 Remington brand only.
	20	2 3/4	2 3/4	1	4, 5, 6, 7 1/2, 9
	28	2 3/4	2 1/4	3/4	6, 7 1/2, 9†
410	2 1/2	Max.	1/2	4, 5, 6, 7 1/2, 9†	
410	3	Max.	1 1/16	4, 5, 6, 7 1/2, 9†	
MAGNUM LOADS "EXPRESS" "HIGH VELOCITY"	* 10	3 1/2	Max.	2	2 (Mag.) **
	12	2 3/4	Max.	1 1/2	2, 4, 5, 6 (Mag.)
	12	3	Max.	1 3/8	2, 4, 6 (Mag.)
	12	3	4	1 3/8	BB, 2, 4 (Mag.) #5 shot
	16	2 3/4	Max.	1 1/4	2, 4, 6 (Mag.) Remington brand only.
	20	2 3/4	Max.	1 1/4	4, 6, 7 1/2 (Mag.)
20	3	Max.	1 1/4	4, 6, 7 1/2 (Mag.)	
"POWER-PAKT" • BUCKSHOT LOADS	12	2 3/4	3 3/4	—	00 Buck-9 Pellets
	12	2 3/4	3 3/4	—	0 Buck-12 Pellets
	12	2 3/4	3 3/4	—	1 Buck-16 Pellets
	12	2 3/4	3 3/4	—	4 Buck-27 Pellets
	16	2 3/4	3 3/4	—	1 Buck-12 Pellets
20	2 3/4	2 3/4	—	3 Buck-20 Pellets	
"POWER-PAKT" • MAGNUM BUCKSHOT LOADS	12	2 3/4	4	—	00 Buck-12 Pellets
	12	3	4 1/2	—	00 Buck-15 Pellets
	12	2 3/4	4	—	1 Buck-20 Pellets
	12	3	4 1/2	—	4 Buck-41 Pellets
RIFLED SLUG LOADS	12	2 3/4	3 3/4	3/8	Velocity Muz. 50 Yds.
	16	2 3/4	3	4/5	Rifled Slug 1600 1175 2175 1175
	20	2 3/4	2 3/4	3/8	Rifled Slug 1600 1175 1990 1075
	410	2 1/2	Max.	1/5	Rifled Slug 1600 1175 1555 840
					Rifled Slug 1830 1335 650 345
FIELD LOADS "SHUR SHOT" "VICTOR"	12	2 3/4	3 1/4	1	4, 5, 6, 8
	12	2 3/4	3 1/4	1 1/4	4, 5, 6, 7 1/2, 8, 9
	12	2 3/4	3 1/4	1 1/4	7 1/2, 8
					May also be used where heavier trap loads are permissible
SCATTER LOADS	16	2 3/4	2 1/2	1	6, 8
	16	2 3/4	2 3/4	1 1/4	4, 5, 6, 7 1/2, 8, 9
	20	2 3/4	2 1/2	3/4	6, 8
	20	2 3/4	2 1/2	1	4, 5, 6, 7 1/2, 8, 9
	***12	2 3/4	3	1 1/4	8

†28 Ga. and 410 Ga. 9 shot marked "Skeet Loads". *Standard wad column **Remington Brand ***Special wad column
 • "POWER-PAKT" BUCKSHOT LOADS. Controlled distribution of a granulated polyethylene filler material helps to cushion the shot pellets . . . reducing shot distortion, and improving shot patterns.

GAME	SHELL	SHOT SIZES	SUGGESTED CHOKES	WHAT EXPERIENCED HUNTERS SAY . . .
DUCKS	"Express" "High Velocity"	4, 5, 6	Full—For Pass Shooting Modified—Over Decoys	Use No. 4 shot for long range and pass shooting. For normal range—No. 5 or No. 6 shot while some hunters use No. 7 1/2 shot for closer range shooting over decoys.
GEESE	"Express" "High Velocity"	BB, 2, 4	Full	Goose hunters need wallop to fold up their birds so they use the big loads with large shot. Many hunters prefer No. 4 shot for a denser pattern at shorter ranges over decoys.
PHEASANTS	"Express" "High Velocity"	5, 6	Improved Cylinder—Close Cover Modified or Full—For Long Cornfield Shots	For cornfield shooting where long shots are usual—better use No. 5. On a normal rise over dogs and for all around use, No. 6 is the favorite. Bigger shot may be dangerous when hunting in large groups.
GROUSE OR PARTRIDGE	"Express" "High Velocity" or "Shur Shot" "Victor"	5, 6 7 1/2, 8	Improved Cylinder or Modified—For Brush Work Full—For Open Ranges	On the smaller birds such as ruffed grouse or Hungarian Partridge use the smaller shot. The big western grouse (sage, sooty, and blue) call for heavier loads and larger shot.
QUAIL	"Shur Shot" "Victor"	7 1/2, 8, 9	Improved Cylinder or Modified	For early season shooting on bob-whites when feathers are light some hunters use No. 9 shot. Later they switch to No. 7 1/2 or No. 8. On the running and wild flushing type of quail, such as the Gambel's, larger shot is sometimes used.
DOVES & PIGEONS	"Express" "High Velocity" or "Shur Shot" "Victor"	6, 7 1/2, 8	Modified	You can do a good job on mourning doves at normal ranges with the lighter loads and No. 7 1/2 or No. 8 shot—but for longer ranges use the heavy loads and No. 6 or No. 7 1/2. Use the same load on band-tailed pigeons and white wings.
WOODCOCK	"Shur Shot" "Victor"	7 1/2, 8, 9	Improved Cylinder or Modified	Your choice of shot size here will depend on ranges at which your game is shot. For fast shooting in the alder thickets, No. 8 shot is a good choice.
RABBITS	"Express" "High Velocity" or "Shur Shot" "Victor"	4, 5, 6	Improved Cylinder or Modified—For Brush Full—For Long Open Shots	For cottontail rabbits at normal range, the lighter loads are suitable, but for larger game such as jack rabbits and snow shoe rabbits use heavy loads.
SQUIRRELS	"Express" "High Velocity"	5, 6	Modified	Most hunters use 5's or 6's and prefer the heavy loads particularly in the tall timber.
RAIL	"Shur Shot" "Victor"	7 1/2, 8, 9	Improved Cylinder	For the little sora rail No. 8 or No. 9 does the job while many hunters use No. 7 1/2 on the marsh hen or clapper rail.
TURKEY	"Express" "High Velocity"	BB, 2, 4 5, 6, 7 1/2	Full	Choice of shot size depends on your range. If you're a good caller No. 6 or No. 7 1/2 shot makes a clean kill. BB's, No. 2's, 4's—and 5's are best for long shots.
FOX	"Express" "High Velocity"	BB, 2, 4	Full	It's a toss-up between BB's and No. 2 shot. But remember—the smaller the shot, the denser the pattern.
DEER, BLACK BEAR & WOLF	"Express" "High Velocity"	Rifled Slug and Buck Shot	For rifled slugs and buckshot any choke may be used. Best results are obtained with Improved Cylinder	For deer and black bear 12 and 16 gauge slugs are the best. 0 and 00 Buckshot are the most popular sizes for deer hunters who use buckshot.

Federal Shotshell Loads

HI-POWER LOADS

Gauge	Federal Load Number	Shell Length Inches	Powder Drams Equiv.	Ounces of Shot	Shot Sizes
12	F127	2¾	3¾	1¼	BB, 2, 4, 5, 6, 7½, 9
16	F164	2¾	3¼	1⅝	4, 5, 6, 7½, 9
20	F203	2¾	2¾	1	4, 5, 6, 7½, 9
28	F283	2¾	2¼	⅞	6, 7½, 8
410	F412	2½	Max.	½	6, 7½, 9
410	F413	3	Max.	11/16	4, 5, 6, 7½, 9

MAGNUM LOADS

Gauge	Federal Load Number	Shell Length Inches	Powder Drams Equiv.	Ounces of Shot	Shot Sizes
12	F130	2¾	3¾	1½	2, 4, 5, 6
12	F131	3	4	1⅞	BB, 2, 4
12	F129	3	4	1⅞	2, 4, 6
16	F165	2¾	3¼	1¼	2, 4, 6
20	F205	2¾	2¾	1⅝	4, 6, 7½
20	F207	3	3	1¼	4, 6, 7½

12, 16 and 20 Gauge maximum loads have Triple-Plus wad column. 28 Gauge load has a plastic shot cup and conventional "Altite" filler wads. The F412 and F413 have all-plastic wad column. Magnums have plastic shot cup and conventional "Altite" filler wads.

12, 16, 20, 28 and 410 Gauge Target Loads

PAPER TUBE CHAMPION

Gauge	Federal Load Number	Shell Length Inches	Powder Drams Equiv.	Ounces of Shot	Shot Sizes
12	C117	2¾	2¾	1⅝	7½, 8, 8½, 9
12	C118	2¾	3	1⅝	7½, 8, 8½, 9

PLASTIC TUBE CHAMPION

Gauge	Federal Load Number	Shell Length Inches	Powder Drams Equiv.	Ounces of Shot	Shot Sizes
12	F117	2¾	2¾	1⅝	7½, 8, 8½, 9
12	F118	2¾	3	1⅝	7½, 8, 8½, 9
*12	F125	2¾	3¼	1⅝	7½, 8, 9

*For International competition only.

Gauge	Federal Load Number	Shell Length Inches	Powder Drams Equiv.	Ounces of Shot	Shot Sizes
16	F167	2¾	2¾	1⅝	7½, 8, 9
20	S206	2¾	2½	⅞	8, 9
20	F206	2¾	2½	⅞	8, 9
28	F280	2¾	Max.	¾	9
410	F412	2½	Max.	½	9

16 and 20 gauge loads have the Federal "Triple-Plus" plastic wad column. 28 gauge load has a plastic shot cup and conventional "Altite" filler wads. The F412 has an all-plastic wad column. S206 has paper case; all others have plastic case.

FIELD LOADS

Gauge	Federal Load Number	Shell Length Inches	Powder Drams Equiv.	Ounces of Shot	Shot Sizes
12	F124	2¾	3¼	1¼	7½, 8, 9
12	FN124	2¾	3¼	1¼	7½, 8
12	F123	2¾	3¼	1⅝	4, 5, 6, 7½, 8, 9
16	F162	2¾	2¾	1⅝	4, 5, 6, 7½, 8, 9
20	F202	2¾	2½	1	4, 5, 6, 7½, 8, 9

LIGHT FIELD LOADS

Gauge	Federal Load Number	Shell Length Inches	Powder Drams Equiv.	Ounces of Shot	Shot Sizes
12	F120	2¾	3¼	1	6, 8
16	F161	2¾	2½	1	6, 8
20	F201	2¾	2½	⅞	6, 8

"F" prefix load number indicates load in plastic case.
"FN" prefix load number indicates nicked shot.

Buckshot & Rifled Slugs

Gauge	Federal Load Number	Shell Length Inches	Powder Drams Equiv.	Shot Sizes
Buck	12	F131	3	Sup. Mag. 00 Buck—15 Pellets
Shot	12	F131	3	Sup. Mag. 4 Buck—41 Pellets
5	12	F130	2¾	Magnum 00 Buck—12 Pellets
Per	12	F130	2¾	Magnum 1 Buck—20 Pellets
Box	12	F130	2¾	Magnum 4 Buck—34 Pellets
	12	F127	2¾	Max. 00 Buck—9 Pellets
	12	F127	2¾	Max. 0 Buck—12 Pellets
	12	F127	2¾	Max. 1 Buck—16 Pellets
	12	F127	2¾	Max. 4 Buck—27 Pellets
	16	F164	2¾	Max. 1 Buck—12 Pellets
	20	F203	2¾	Max. 3 Buck—20 Pellets
Rifled Slugs	12	F127	2¾	Max. ⅞ oz. Rifled Slug
5	16	F164	2¾	Max. 4/5 oz. Rifled Slug
Per	20	F203	2¾	Max. ⅝ oz. Rifled Slug
Box	410	F412	2½	Max. ½ oz. Rifled Slug

Buckshot and Slugs do not have shot cup. All have plastic cases.

Ammo Manufacturers Offer Handloading Data



Handloading Data
for
BLUE DOT® SMOKELESS SHOTGUN POWDER
(A Premium Smokeless Powder for Magnum Shotshells)

All loads developed with once fired shells.

12 GAUGE - 2-3/4 INCH - 3-3/4 DE - 1-1/2 OUNCE LOAD - APPROX. VELOCITY 1275 fps

Shell	Primer	Shot Container	Charge Weight (Grains)	Approximate Pressure
Federal Plastic Game	Fed. 209	Alcan Flite Max No. 2	36.0	9800
RP Plastic Game	Rem. 57*	Alcan Flite Max No. E (See Note) ₁	35.5	10800
WW Plastic Game	Win. 209	Alcan Flite Max No. E	34.0	10700

12 GAUGE - 3 INCH - 3-3/4 DE - 1-3/8 OUNCE LOAD - APPROX. VELOCITY 1325 fps

Federal Plastic Game	Fed. 209	Rem. Power Piston #W29924	42.5	8400
RP Plastic Game	Rem. 57*	Rem. Power Piston #W29924	43.0	8200
WW Plastic Game	Win. 209	Rem. Power Piston #W29924	41.5	8100

12 GAUGE - 3 INCH - 4 DE - 1-5/8 OUNCE LOAD - APPROX. VELOCITY 1300 fps

Federal Plastic Game.	Fed. 209	Rem. Power Piston #W29924	41.5	9800
RP Plastic Game	Rem. 57*	Rem. Power Piston #W29928	41.5	9100
WW Plastic Game	Win. 209	Rem. Power Piston #W29928	41.0	10800

12 GAUGE - 3 INCH - 4 DE - 1-7/8 OUNCE LOAD - APPROX. VELOCITY 1250 fps

Federal Plastic Game	Fed. 209	Rem. Power Piston #W29926	39.5	10500
RP Plastic Game	Rem. 57*	Rem. Power Piston #W29926	38.5	9400
WW Plastic Game	Win. 209	Rem. Power Piston #W29926	38.5	10800

16 GAUGE - 2-3/4 INCH - 3-1/4 DE - 1-1/8 OUNCE LOAD - APPROX. VELOCITY 1325 fps

Federal Plastic Game	Fed. 209	Rem. Power Piston #W29934	30.0	9400
RP Plastic Game	Rem. 57*	Rem. Power Piston #W29934	30.0	9700
WW Plastic Game	Win. 209	Rem. Power Piston #W29934	30.0	9400

20 GAUGE - 2-3/4 INCH - 2-3/4 DE - 1-1/8 OUNCE LOAD - APPROX. VELOCITY 1200 fps

Federal Plastic Game	Fed. 209	Rem. Power Piston #W29944	23.0	10600
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20 GAUGE - 3 INCH - 3-1/4 DE - 1-1/8 OUNCE LOAD - APPROX. VELOCITY 1300 fps

Federal Plastic Game	Fed. 209	Rem. Power Piston #W29942	27.5	10400
RP Plastic Game	Rem. 57*	Rem. Power Piston #W29944	27.5	10900
WW Plastic Game	Win. 209	Rem. Power Piston #W29944	27.5	11200

20 GAUGE - 3 INCH - 3-1/2 DE - 1-3/16 OUNCE LOAD - APPROX. VELOCITY 1325 fps

Federal Plastic Game	Fed. 209	Rem. Power Piston #W29942	27.5	11300
RP Plastic Game	Rem. 57*	Rem. Power Piston #W29944	27.5	11300
WW Plastic Game	Win. 209	Rem. Power Piston #W29944	27.5	11500

20 GAUGE - 3 INCH - 3 DE - 1-1/4 OUNCE LOAD - APPROX. VELOCITY 1225 fps

Federal Plastic Game	Fed. 209	Rem. Power Piston #W29942	25.0	10600
RP Plastic Game	Rem. 57*	Rem. Power Piston #W29944	25.0	10700
WW Plastic Game	Win. 209	Rem. Power Piston #W29944	25.0	10900

NOTE:₁ Add a 20 Gauge card wad to shot container

The handloading of shotshells and center-fire metallic cartridges should be undertaken only by those who are familiar with and are extremely careful to observe all possible safety precautions and conservative practices. The data and other information above were developed by us under controlled conditions at our own facilities, and would not necessarily be the same under different circumstances elsewhere. Since we do not have any control over the manner in which our powder is stored, handled, loaded, or used after it leaves our plant, we cannot be responsible by warranty or otherwise for the results or effect of its use.

All-Purpose Shotgun

Any one-gun hunter can have a veritable hunting battery — if he knows how to load for the unforeseen. This chart, compiled by Burt Miller, converts a 12-gauge to an all-purpose gun.

LOADS FOR THE 12 GAUGE WITH MODIFIED AND FULL-CHOKE 28-INCH BARRELS							
"Scatter" Loads, Close Range							
Case	Wads	Powder	Grains	Primer	Shot	Weight (oz.)	Game
Rem. RXP Peters-Rem. or All American	2, 1/4" Felt 4, .070" Nitro*	700X	20 gr.	Rem. 97 Rem. 97	8, 9	1	Quail, Doves
AA	1, 1/4" Felt 1, 5/16" Felt 3, .070" Nitro*	G.D.	22 gr.	Rem. 97	8, 9	1	Quail
AA	1, 1/4" Felt 2, .070" Nitro 4, .070 Nitro*	G.D.	22 gr.	Rem. 97	7 1/2, 8, 9	1 1/8	Valley & Gambels Quail, Doves
Federal Paper	2, 1/4" Felt 4, .070 Nitro*	G.D.	22 gr.	Rem. 97	8, 9	1 1/8	Quail, Dove, Cottontail
AA	CCI	700X	22 gr.	Rem. 97	8, 9	1 1/8	Quail, Dove, Cottontail
Federal Paper	2, 1/4" Felt	G.D.	22 gr.		8, 9	1	Quail, Dove, Cottontail
Federal Hi-Base Plastic	4, .070 Nitro* CCI	700X	12 gr.	CCI 109	7 1/2, 8, 9	1 1/8	Quail, Dove, Cottontail
Medium Size Game or Longer Ranges							
RXP	CCI	700X	22 gr.	CCI 109	7 1/2	1 1/8	Gambels Quail, Doves,
AA	WAA12	G.D.	20 gr.	Fed. 209	7 1/2	1 1/8	Cottontail
AA	Alcan Unisleeve #A	Herco	30 gr.	CCI 109	6	1 1/4	Pheasant, Decoyed Ducks,
All American	Rem. W29926	Herco	27 gr.	CCI 109	6	1 1/4	Chukar, Bandtails
Alcan Plastic	Alcan Flight Max #4	700X	18 gr.	CCI 109	6	1 1/4	Pheasant, Chukar (Pointed w/dog)
Long Range & Larger Game							
Federal Plastic Target Cases	Rem. W29928	Herco	28 gr.	CCI 109	6, 5, 4	1 1/4	Duck, Chukar, Pheasant, Turkey (called)
Federal Plastic/ Paper	Rem. W23694	700X	21 gr.	CCI 109	7 1/2, 6 4, 2	1 1/4	Geese, Turkey
All American	Alcan Flight Max #E	SR 4756	27 gr.	Rem. 97	2, BB	1 1/2	Geese, Turkey

*Used as "Spreader"

