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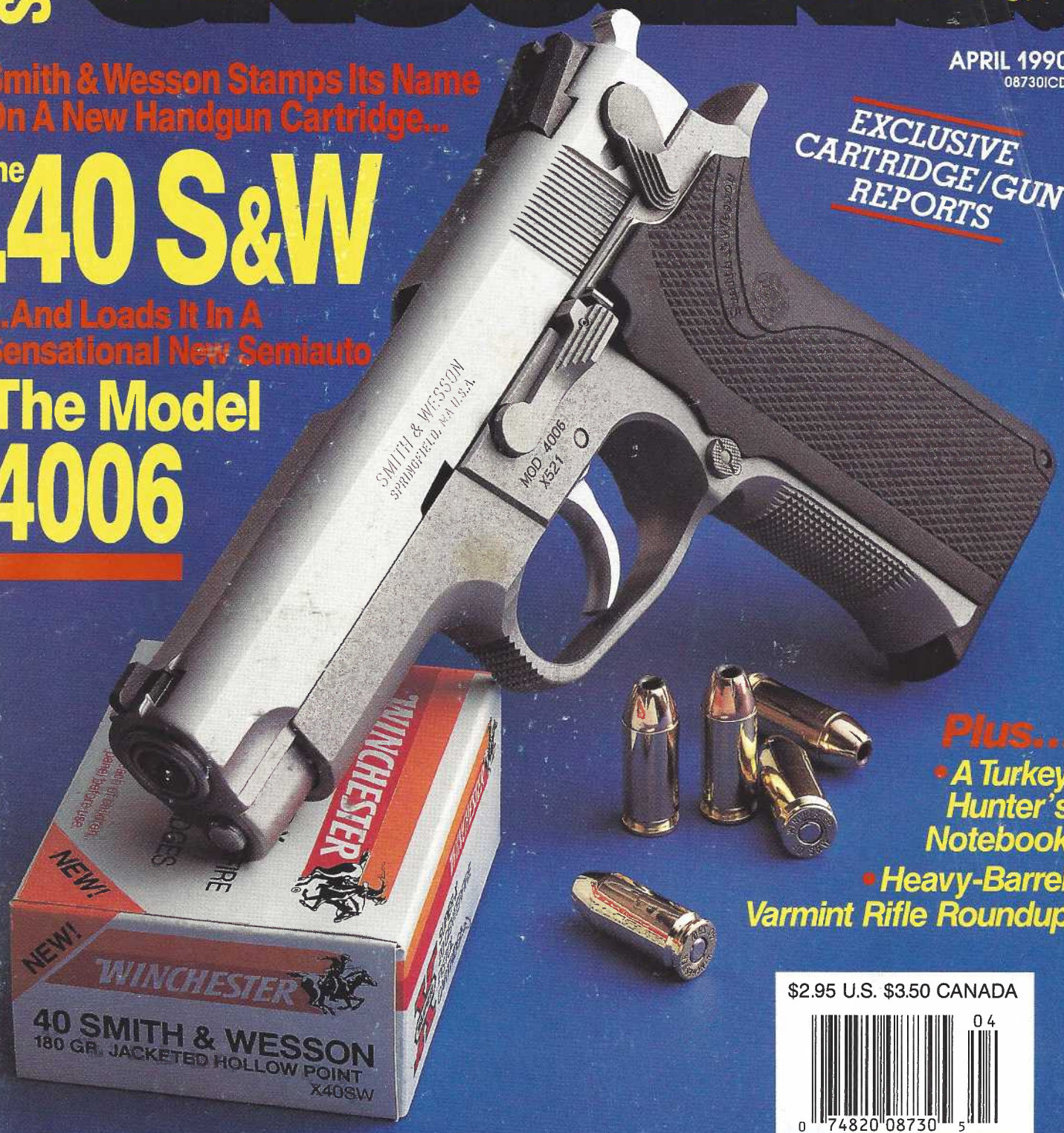
Smith & Wesson Stamps Its Name On A New Handgun Cartridge...

The .40 S&W

...And Loads It In A Sensational New Semiauto

The Model 4006

EXCLUSIVE CARTRIDGE/GUN REPORTS



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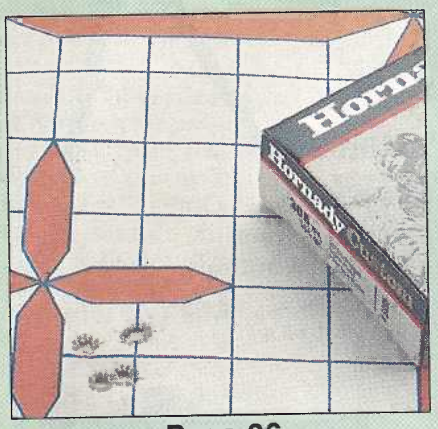

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ON THE COVER: S&W Model 4006 **PHOTO:** Clarence Lynxwiler

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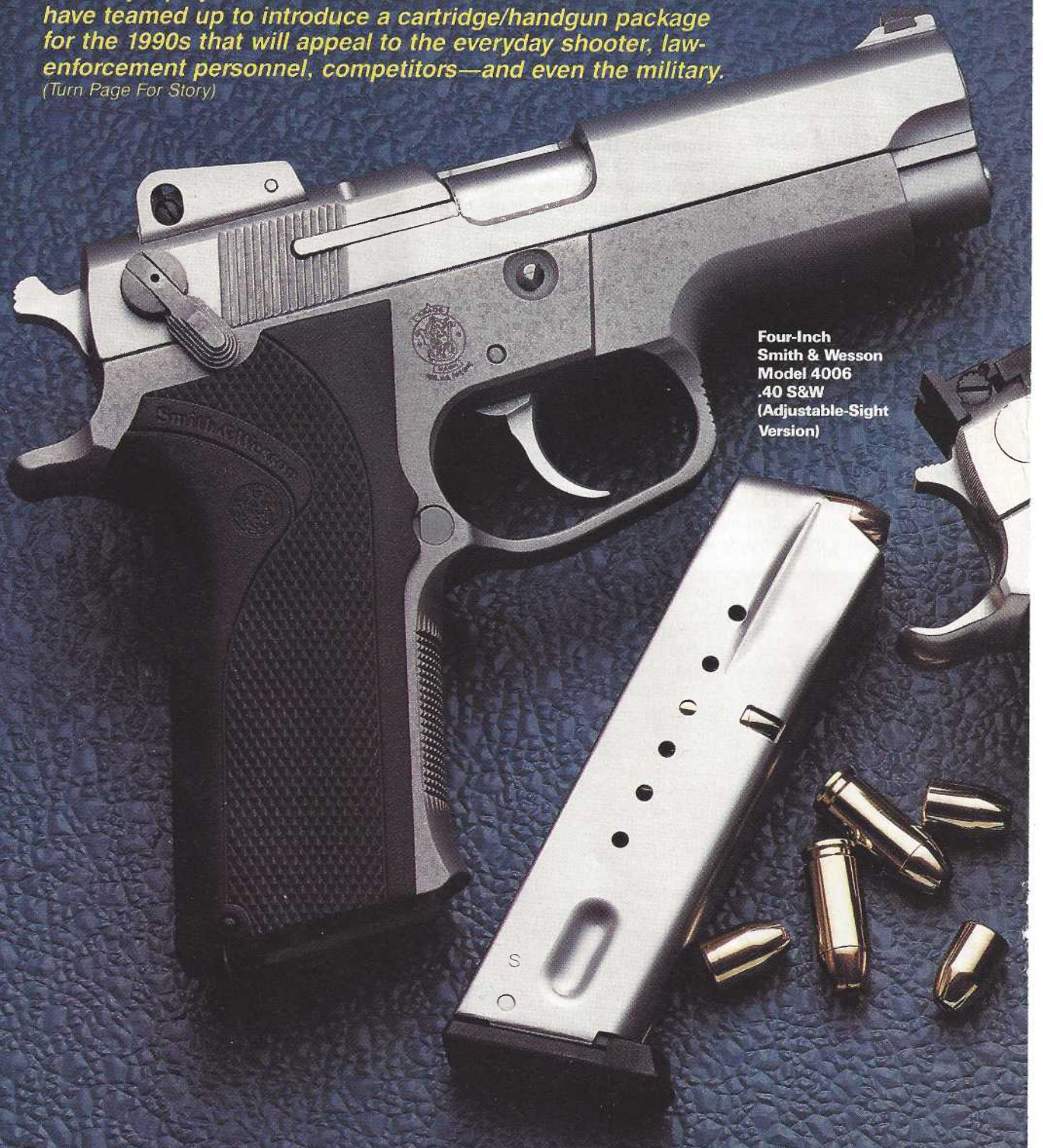
EXCLUSIVE CARTRIDGE/GUN REPORTS

The .40 S&W

BY DICK METCALF

Two major players— Winchester/Olin and Smith & Wesson— have teamed up to introduce a cartridge/handgun package for the 1990s that will appeal to the everyday shooter, law-enforcement personnel, competitors—and even the military.

(Turn Page For Story)



Four-Inch Smith & Wesson Model 4006 .40 S&W (Adjustable-Sight Version)

Cartridge

5½-Inch
Smith & Wesson
Model 4006
.40 S&W
(Compensated Version From
S&W Performance Center)

Winchester
180-Gr. J HP
.40 S&W

Photo by Clarence Lynxwiler

THE HANDGUN WORLD is beginning the last decade of the 20th century with a bang. For the first time in more than 50 years, a new handgun cartridge will officially be headstamped with the Smith & Wesson name. The cartridge—an autoloader round developed jointly by Winchester/Olin and Smith & Wesson— will be called the .40 S&W. It was unveiled at January's SHOT Show in Las Vegas after months of secrecy. Experts already agree it will have a major impact in both law enforcement and competitive handgunning.

What is the .40 S&W? Reduced to the simplest level of description, the .40 S&W is a shorter, less powerful version of the 10mm Auto, which for the last half of the 1980s has been the leading cartridge of discussion and controversy in regard to semiauto pistols. In external dimensions, the .40 S&W is identical to the 10mm except for length. Winchester's initial production load for the round will have a newly designed 180-grain JHP bullet and will develop 950 fps velocity from the four-inch S&W Model 4006 autoloader. From a five-inch closed-chamber ballistic test barrel, the .40 S&W's velocity is 975 fps. Maximum overall loaded cartridge length is 1.125 inches, essentially ⅛ inch shorter than the maximum 1.260-inch overall length of the commercial 10mm, which is rated at 1300 fps velocity in a standard 170-grain JHP loading.

To draw a coarse analogy, the .40 S&W compares to the 10mm in much the same way the .380 Auto compares to the 9mm Parabellum. But such a simplistic characterization does not begin to do justice to the ballistic capabilities and functional utility of this new load, nor does it indicate why the .40 S&W's appearance has sent such ripples throughout the handgun industry. To understand the true significance of the .40 S&W's appearance on the handgun scene, we must look at the background to its development and at the functional niche it is designed to fit.

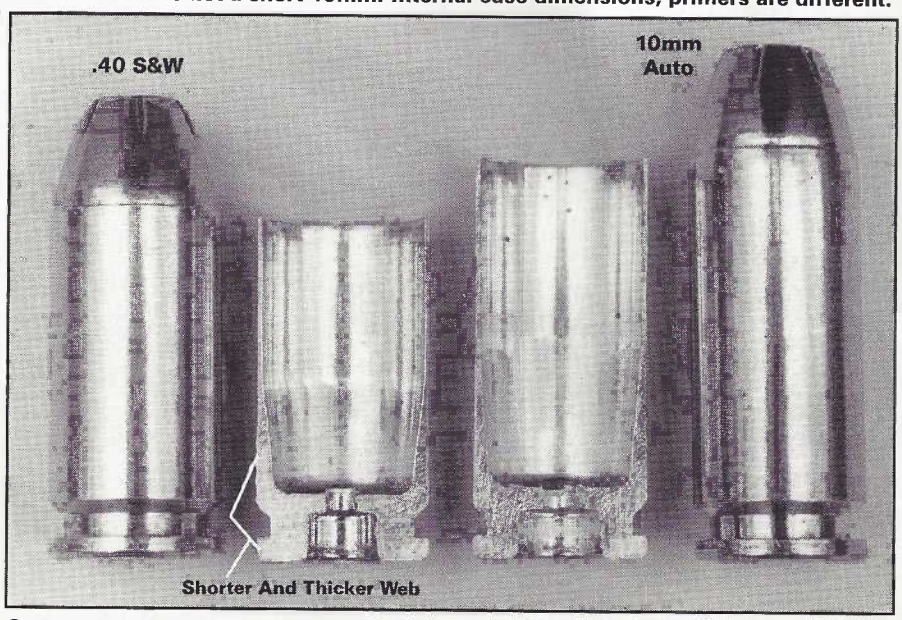
In the mid-1950s, law-enforcement revolver authorities such as Bill Jordan, Elmer Keith, and Skeeter Skelton began trying to convince ammunition and handgun manufacturers that an ideal all-around police-service and personal defense cartridge would be about .40-caliber diameter and push a bullet weighing 180 to 200 grains at close to 1000 fps. Such a load, they believed, would combine the benefits of the "fast, expanding bullet" school of thought (typified by proponents of the .357 Magnum) with the benefits of the "heavy, solid bullet" school of thought (typified by proponents of the .44 Special, .45 Colt, or .44 Magnum). The ideal load, they believed, would sit just about halfway between the .357 Magnum and the .44 Magnum in terms of energy and power.

The ammunition and handgun manufacturers listened, but not closely enough. The result was the .41 Magnum cartridge, which was introduced by Remington and Smith & Wesson in 1961. This was not what Jordan, Keith, and Skelton had in mind. It was actually *two* cartridges. Worrying that .44 Magnum fans would think a load that actually met the proposed standards was underpowered and that .357 Magnum fans would think it was too strong, Remington brought out two distinctly different versions of the load. The "full-power" version of the .41 Magnum (with a 210-grain JSP bullet) carried a muzzle energy about 50 ft-lbs *greater* than an industry-standard 240-grain .44 Magnum; the energy of the 210-grain SWC .41 Magnum (so-called "police load") is about 100 ft-lbs *less* than an industry-standard 158-grain .357 Magnum. Because of the compromising nature of the cartridge, the .41 Magnum has languished since its birth.

But the mid-power .40-caliber concept didn't go away and, in the 1970s and early 1980s, was taken up by autoloader advocates, who were beginning to ride the crest of a wave of increasing auto pistol popularity among police departments and handgun shooters. A leader in this movement was defense handgun expert and writer Jeff Cooper, who ceaselessly argued for the production of a .40/10mm-caliber auto pistol load that would be powered about halfway between the .357 and .44 Magnums. This time around, the result was the 10mm Auto cartridge, developed by Norma FFV of Sweden, and the Bren Ten pistol, designed by Dornhaus & Dixon of California. Both products were introduced for commercial American sale in 1984.

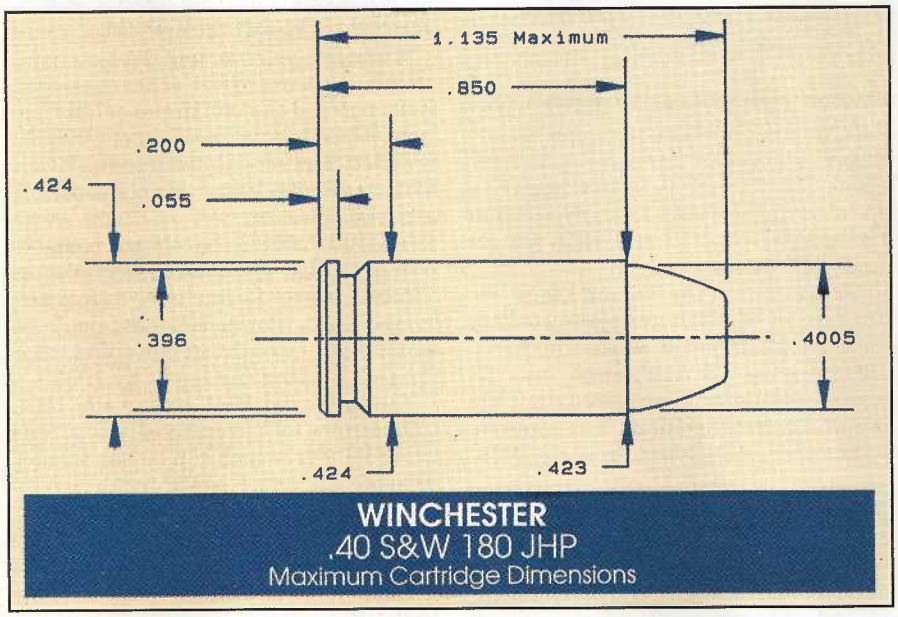
The factory-standard, original-issue Norma 200-grain 10mm JTC (Jacketed Truncated Cone) propelled its bullet at 1200 fps velocity from a five-inch barrel for a muzzle energy of 638 ft-lbs, which is exactly halfway between the industry-standard energy ratings for commercial .357 Magnum 158-grain JHP ammunition (535 ft-lbs) and commercial .44 Magnum 240-grain JHP ammunition (741 ft-lbs). This autoloader cartridge, introduced nearly 25 years late, finally met the original performance criteria.

New .40 S&W is not a short 10mm. Internal case dimensions, primers are different.



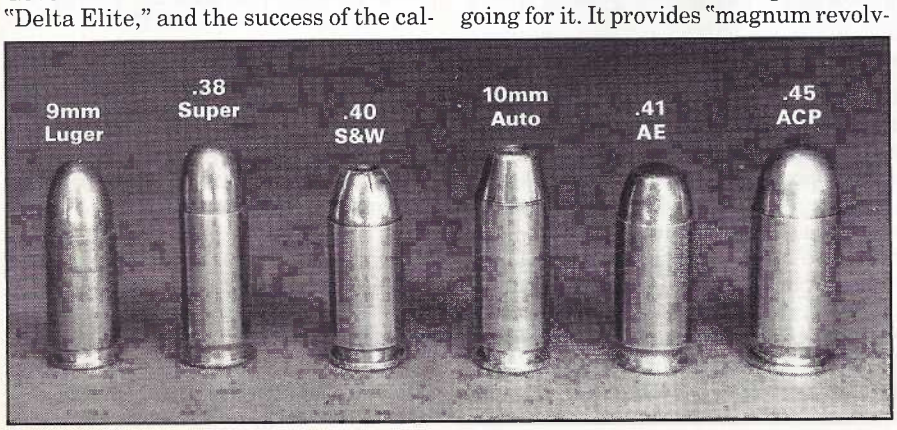
Cross section of cases reveals differences in case head web thickness, case angle.

Winchester/Olin will package the new .40 S&W cartridge in 20-round boxes.



The 10mm Auto, though controversial among rival proponents of other autoloader cartridges (most notably the 9mm and .45 ACP), has grown rapidly in popularity since its introduction. The Bren Ten pistol failed due to the financial inadequacies of its manufacturing company. But in 1987, Colt Firearms introduced a 10mm version of the classic Government Model 1911 auto called the "Delta Elite," and the success of the caliber was guaranteed. Every major commercial ammunition manufacturer has at least one 10mm Auto load in its line, and 10mm handloading components are everywhere. Every maker of auto pistols either already has a 10mm in its catalog or is rushing to add one. (The most notable recent introductions are the S&W Model 1006 and the Glock Model 20.)

The full-size 10mm cartridge has a lot going for it. It provides "magnum revolver" power in a conventional autoloader. Because it is factory loaded at the top end of its performance range, it also has a wide range of downloaded possibilities for competition shooting and applications where ".41 Magnum" power is not necessary. But there are also drawbacks. One of the major reasons U.S. police departments and civilian handgunners have abandoned their revolvers in favor of autoloaders is the emergence of the so-called "WonderNine" (9mm) generation of high-capacity, double-action 9mm pistols.



Shown is auto cartridge family of competition/defense/law-enforcement loads.

Available from dozens of domestic and foreign manufacturers, all these 9mm guns have the same basic set of appealing features: 14- or 15-round magazine capacity, low recoil, medium-size frames, and comfortable carry. By contrast, the size of the 10mm Auto cartridge and its heavy recoil energy requires a larger and heavier gun (the S&W Model 1006, for example, is based on the same platform as the company's Model 4506 .45 ACP pistol), and the magazine capacity of most 10mm pistols so far has been about two-thirds of a 9mm's capacity (the Glock Model 20, with 15 rounds, is a notable exception). The 10mm cartridge is a respectable introduction, but 10mm pistols carry fewer rounds, have more recoil, and are heavier and bigger than 9mm pistols.

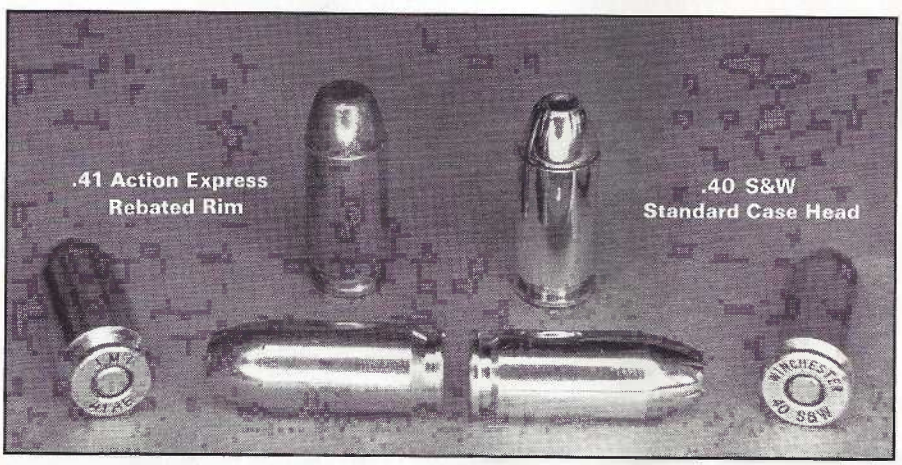
Shooters looked at the 10mm and wondered if there was any way to squeeze the .40/10mm-caliber concept into the WonderNine format. The first significant effort to combine the best of the 9mm and the 10mm in one package was the .41 Action Express, which was conceived by Evan Whildin of Action Arms. Whildin took a .41 Magnum case, trimmed it down to .866-inch overall length (a 9mm case is .754 inch; a 10mm, .992 inch), and lathe-turned the head to the dimensions of a 9mm. The result was a .41-caliber cartridge with a rebated rim designed to 9mm case head dimensions that could be used with the existing breechface, slide, and extractor/ejector specifications of a 9mm pistol. The only real changes necessary to the gun would be a larger bored barrel, an appropriate magazine, and (perhaps) a different recoil spring. Loaded with a 200-grain bullet, the cartridge can generate about 990 fps.

Whildin turned the notion over to Israel Military Industries (IMI), whose Samson line of ammunition Action Arms imports. Samson produced 200-grain FMJ FN and 170-grain JHP commercial versions, which have been available for sale in the U.S. since 1987. Guns, however, have been hard to obtain. Action Arms has not been able to get its Swiss-

made ITM "AT"-type .41 AE pistol on the market, and the only .41 AE pistols presently available are the Taurus Model PT-91 (a clone of the Beretta Model 92), and the FIE-import .41 AE Tanfoglio version of CZ-75. No American ammunition or handgun manufacturer has shown any indication of pursuing the cartridge, in spite of the acknowledged benefits of .40/.41/10mm power in a 9mm-sized package.

As of mid-1988, that was the .40/10mm-caliber autoloader situation. Then the Federal Bureau of Investigation (FBI) entered the picture. For two years, the FBI had been conducting an intense investigation of available autoloading handguns and auto pistol cartridges, intending to select a new standard-duty sidearm for all its agents. In the process, it had developed a controversial new test criteria for law-enforcement ammunition and had conducted a number of penetration and effectiveness tests with a variety of loads. (For a detailed report on the FBI's search for a new duty cartridge, see the July 1989 issue of *Shooting Times*.)

First, the FBI determined that the minimum acceptable penetration for a load would be 12 inches in 10 percent ballistic gelatin, a choice based on the range of torso diameters in adult human targets. Then it determined that this minimum penetration must be reached under a wide range of actual field conditions, so a series of tests was established where-



IMI's .41 Action Express will be seriously challenged by the Winchester .40 S&W.

in blocks of gelatin were wrapped in varying layers of clothing and placed behind layers of simulated wallboard, angled auto windshield glass, and autobody sheet metal. Only loads that achieved minimum 12-inch penetration of the target under all conditions would be considered for adoption.

By fall 1988, the FBI Firearms Training Unit (FTU) staff was fairly certain the cartridge it would select was going to be the 10mm Auto—but not the full-power 10mm Auto round as commercially loaded. The FTU wanted a "light" 10mm, one featuring a 180-grain JHP bullet driven at about 975 to 1000 fps from a four- or five-inch barrel. In short, it wanted a cartridge that would perform almost exactly as Bill Jordan, Elmer Keith, and Skeeter Skelton had advocated 40 years earlier. Federal Cartridge was commissioned to provide test sample ammunition loaded to those specifications, and S&W was approached to develop a 10mm pistol based on its .45 ACP Model 645/4506—which had been the top-rated pistol in the FBI's evaluation of available .45 ACP and 9mm pistols during the previous year.

"It [the FBI] wanted a cartridge that would perform almost exactly as Bill Jordan, Elmer Keith, and Skeeter Skelton had advocated 40 years earlier."

Comparisons of the "10mm Light" (or the "10mm FBI," as it's also being called) provided by Federal with the FBI's already-in-use .45 ACP, 9mm, and .38 Special ammunition convinced the FTU specialists that the 10mm was superior to the other contenders. In June 1989, the Bureau issued a detailed "Solicitation, Offer, and Award" to the industry, requesting interested manufacturers submit proposals and samples of 10mm pistols by August 15, 1989, for consideration of a contract calling for immediate purchase of 9500 guns, and additional orders over the next four years. A solicitation for 10mm ammunition loaded to FBI specs followed soon after. FBI director William Sessions made official the Bureau's choice of the 10mm cartridge in an announcement at last November's annual meeting of the International Association of Chiefs of Police (IACP).

Though there was no official announcement of how many companies responded, it is known that Smith & Wesson submitted its Model 1006 and Colt supplied a 10mm version of its new stainless-steel Double Eagle DA autoloader. Furthermore, Glock has produced a 10mm pistol which it displayed at the IACP meeting, and Ruger has been considering a 10mm version of its P-85. Winchester and Federal are known to be vying for the ammunition contract.

The FBI announced on January 5 that S&W had been awarded a contract to supply 9500 of its new 10mm pistols to the FBI. The Model 1076, which is a Model 1006 with a decocking lever and no magazine interlock safety, will be shipped to the FBI the next three years.

While law-enforcement developments were being worked out, other considerations entered the .40/10mm-caliber picture, especially in the field of USPSA/IPSC-style practical pistol competition, where cartridge power formulations are a critical element.

In USPSA/IPSC shooting, a competitive cartridge must make a minimum 175.000 "power factor" to be scored as a "major" load. (Power factor is calculated by multiplying bullet weight times velocity and dividing the result by 1000.)

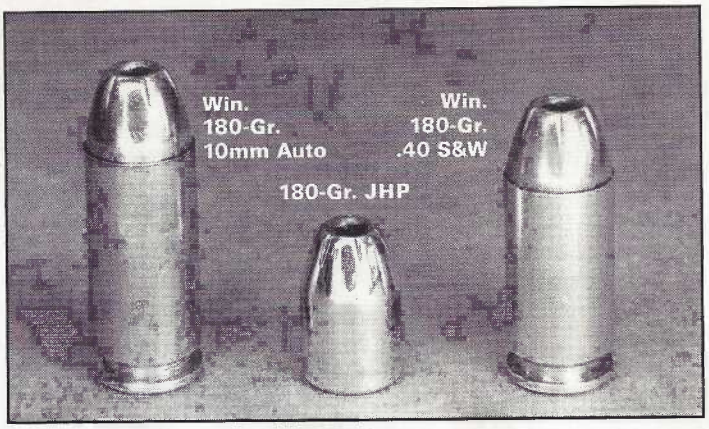
The preferred load among top IPSC competitors for several years has been the .38 Super, which can be handloaded to make the major power-factor level if you want to risk exceeding SAAMI-recommended safe pressure levels. Shooters are willing to take this risk because the .38 Super has a quicker recovery time than the .45 ACP, guns chambered for it weigh more, and therefore it has less subjective recoil. In a Government Model 1911-type gun, it also has two rounds more magazine capacity than the .45 ACP. A 9mm load would be even better, but the 9mm cannot be safely loaded to make the major power minimum unless its gun's chamber dimensions are substantially altered.

When Colt introduced the 10mm version of the Government Model, many IPSC competitors, myself included, hailed it as a welcome alternative to the .38 Super. A low-major 10mm is a low-pressure load, and with light-bullet handloads, a full-dress 10mm competition gun provides nearly all the benefits of a major .38 Super without the worry about blowing your gun. The one exception is that Model 1911 10mm magazines hold one less round than the .38 Super magazines. In a sport where an extra round can make the difference between the match-losing time it takes to make an extra reload or not, an extra round is viewed as critical.

At Smith & Wesson, Master Class

shooter and research-and-development veteran Tom Campbell looked close and hard at the 10mm cartridge when Colt brought out the Delta Elite Model 1911 and concluded that his company should not try to put the cartridge into its 9mm-format pistols. The battering effect of full-power loads would simply be too destructive. And from a competitor's point of view, a larger frame 10mm with a non-competitive magazine capacity compared to a Model 1911 .38 Super would have little use. Instead, Campbell argued for the development of a short-form 10mm that would be loaded to major power level, have a chamber pressure and slide velocity similar to the 9mm, and be adaptable to S&W's 9mm pistol platform.

The wildcat "Centimeter" cartridge, which was being promoted by pistolsmith Paul Liebenberg, Campbell's friend, was very close to what Tom had in mind. The Centimeter is simply a 10mm Auto case cut down from .975 inch to .865 inch. Its shorter length is more forgiving in feeding and extraction, and as Campbell has pointed out to me more than once, if all you want from a 10mm is to barely get above the 175.00 major power floor, you don't need all that empty case space. The Centimeter has been successfully used in major USPSA/IPSC matches by a number of well-known shooters, but Campbell hadn't made a lot of progress trying to persuade S&W's top management to produce a gun that would chamber a cartridge of this type—that is, until the FBI came out with its new "Light 10mm" specification. Campbell looked at the commercial 10mm load that pushed a 180-grain bullet at 975 fps

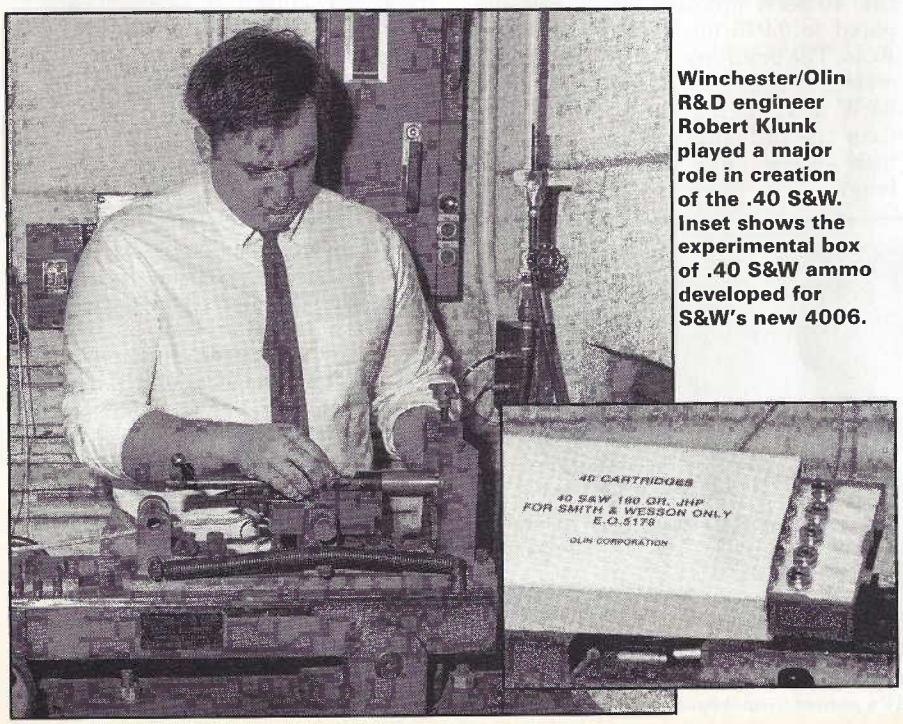


Special 180-grain JHP bullet used in .40 S&W was designed for the "light" FBI-spec 10mm load.

and realized it would have a power factor of 175.50. Why not just make it shorter?

The scene was finally set. All the forces that had combined to move the .40/10mm-caliber issue to center stage were poised for the crowning touch. Here was a cartridge that in one simple package would have *all* the features sought by all these diverse sets of needs. It would have the ballistic configuration deemed ideal by the nation's top law-enforcement agency. It would have controllable recoil. It would have the higher magazine capacity and medium-size practicality of the WonderNines. It would make USPSA/IPSC major power without pressure problems. It would be produced by two of the most prominent manufacturers in the U.S., and it would be readily available everywhere.

The final act opened in June 1989, when Winchester/Olin hosted the annual meeting of the Sporting Arms and Ammunition Manufacturer's Institute (SAAMI) at its headquarters in East Alton, Illinois. At the meeting, S&W president Steve Melvin approached Winchester/Olin's ammunition division chief, Jerry Bersett, with a simple question. Could Winchester build a .40-caliber autoloader cartridge that would duplicate the FBI performance specifications for the 10mm but still be made short enough to fit operationally within the engineering platform of S&W's Third Generation 9mm pistols? Bersett turned the question over to his research-and-development department. The actual task of working the ballistic engineering considerations was assigned to Robert Klunk, under the direction of Duane Kruse, Winchester's Ammunition Technology R&D manager. These two men, especially Klunk, are the actual "fathers" of the .40 S&W cartridge.



Winchester/Olin R&D engineer Robert Klunk played a major role in creation of the .40 S&W. Inset shows the experimental box of .40 S&W ammo developed for S&W's new 4006.

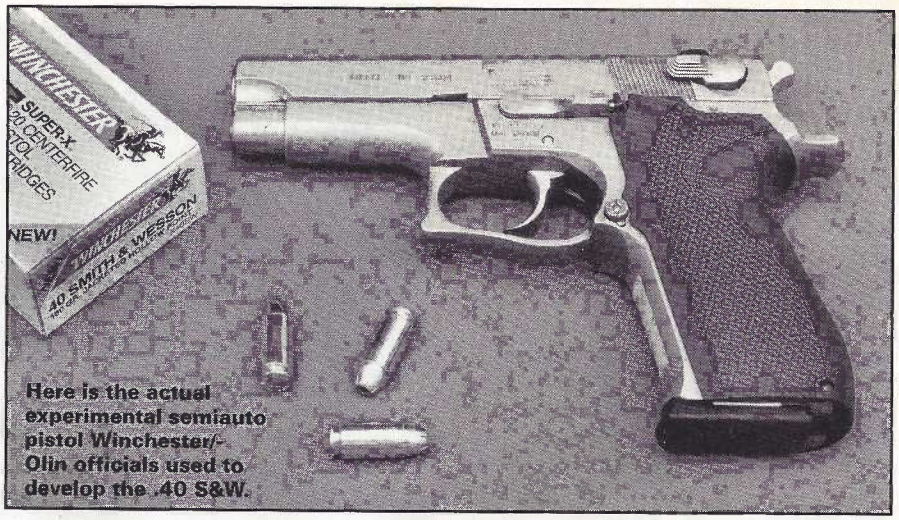
Klunk began by setting up the external geometry and internal pressure requirements of the proposed cartridge within 9mm pistol dimensions to see if the basic concept was feasible. The answer that went back up the line and over to Smith & Wesson was, in essence, "Yes, we can do it." Then the project moved into high gear, and the R&D divisions of both firms began a close cooperative relationship under the terms of a mutual secrecy agreement. The basic parameters provided by Smith & Wesson provided that the cartridge should be a performance duplicate of the FBI's 10mm, with the one difference being the use of a small primer instead of the large primer employed by the full-size 10mm Auto case. It would be given an English-form ".40"-caliber designation instead of the metric "10mm" to underscore its U.S. origin and to emphasize its distinction from the full-length 10mm Auto.

Development proceeded rapidly, with personnel from both companies traveling back and forth between their two respective labs. At one point, Klunk spent 37 consecutive hours at his engineering bench while working on the critical questions of overall length, bullet nose configuration, and feedramp angles. The Winchester technical people I spoke with following the formal unveiling of the new

gun/cartridge package said the actual engineering task was relatively straightforward since there were no real pressure or dimensional constraints affecting the boundaries within which they were working. They thought the most interesting part of the project was the design of the new 180-grain JHP bullet.

The bullet loaded in the .40 S&W was actually developed for the full-length "Light" 10mm Auto load that Winchester submitted for contract consideration by the FBI. It has a "conventional" copper jacket (not the Winchester Silvertip style) that comes completely up to the rim of the hollowpoint and is notched at six evenly spaced intervals. Chuck Corbin, the director of Ammunition Research and Development for Olin Defense Systems, said, "The FBI series of tests is a big advancement in law enforcement." He explained that the new FBI system of evaluating penetration and expansion with test specifications that precisely define the performance sought allows the ammunition manufacturer to design the load to accomplish the specific task. As Klunk put it, "We can build you a bullet that will do just about anything—but we can't build one that will do everything."

Because of the FBI requirement that the bullet in an acceptable load must be able to penetrate a specified distance in a gelatin target after first having penetrated wallboard, glass, or steel, the new 180-grain JHP was designed "toward" penetration. In simple terms, it needed to be able to punch through the barrier material while holding its hollowpoint ogive sufficiently intact to still expand satisfactorily when it reached the target tissue. The key was to find the right combination of jacket thickness, taper, and core bonding to accomplish the task. The most tedious part was finding the right balance where the open tip was tough enough not to "close up" and become a "solid point" when it struck the barrier material yet still be soft enough to open up when it hit the tissue-simulation medium.



Here is the actual experimental semiauto pistol Winchester/-Olin officials used to develop the .40 S&W.

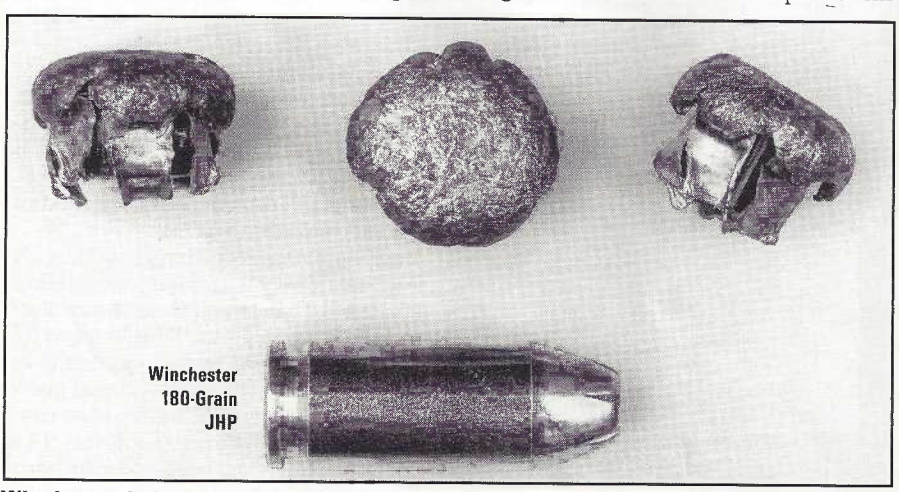
If the recovered test bullets I saw were any indication, the goal has been met admirably. The actual caliber diameter to which the new design is geared to expand is slightly less than the specification for the rapidly expanding Winchester Silvertip line but is still impressive. Winchester hopes the FBI's standards will herald a new era in law-enforcement ammunition development, one in which police agencies will establish specific performance criteria appropriate for their working environment (urban density, rural, etc.) and contract with manufacturers to deliver specific loads for those purposes instead of expecting the ammunition companies to magically produce loads that will do everything for everybody.

The basic specifications of the .40 S&W cartridge are as follows. For case length, the .40 S&W mikes at 0.850 inch compared to 0.975 for the full-size 10mm Auto. The 9mm case is 0.750. As earlier stated, overall loaded length for the .40 S&W is 1.125 inches—⅛ inch shorter than the full-length 10mm and 0.025 inch shorter than the overall loaded length of a standard milspec 9mm NATO. Klunk observed that the .40 S&W and the 9mm are exactly the same length, if you factor in the .40's "invisible ogive"; that is, if you continue the line of the curve of the .40's JHP bullet on past the point where the hollowpoint breaks off, it would be the same length as the roundnose FMC 9mm. The distinction is essential to allowing the .40 S&W to have the same feedramp performance as the 9mm within the same gun dimensions. Maximum product average chamber pressure for the .40 S&W is set at 35,000 psi, the same as the 9mm.

Competitive shooters who have been using or promoting the 10mm Centimeter wildcat will be interested in how the .40 S&W compares. For one thing, the case length of the Centimeter is slightly longer, 0.865 compared to the .40's 0.850. This little bit extra length is significant. Winchester engineers are emphatic in pointing out that the .40 S&W is *not* just a short 10mm Auto—which the Centimeter is. In addition to the fact the .40 S&W utilizes a small primer (making for a stronger case head), there is at least one other significant internal dimensional difference.

If you cut a 10mm Auto case to .40 S&W length and try to load a 180-grain bullet, the base of the bullet will encounter the upper edge of the thickening web of the case before it reaches its full seating depth. When forced on down, it will push the thickening case wall outward, expanding its outer dimension and preventing the loaded round from fitting into the chamber. The small difference in case length between the Centimeter and the .40 S&W is enough to have this effect, so the internal dimensions of the .40 S&W case have been made with a shorter web at a different angle than the 10mm case to allow for nondeforming seat of the heavier bullets and to provide maximum internal volume (helping to keep pressures lower). Shooters using the Centimeter in competition usually em-

(Continued on Page 85)



Winchester bullet for the .40 S&W meets FBI's penetration/expansion requirements.

S&W's New Semiauto Pistol

The Model 4006

Built to house the new .40 S&W cartridge, this stainless DA semiauto pistol will bring out the best in the latest .40-caliber round.

By Dick Metcalf

THE LAST TIME the letters "S&W" were stamped on the case head of a new cartridge was 1935, when the .357 S&W Magnum changed handgunning forever. Like the new .40 S&W, that cartridge was a cooperative venture of Smith & Wesson and Winchester. It is far too soon to determine whether this latest S&W cartridge will have anything even close to the profound effect of its fraternal predecessor, but this much is certain: The success of any cartridge depends in equal measure on its inherent ballistic capabilities *and* on the performance of the guns made to shoot it. Without a good gun, even the best cartridge will ultimately be judged a failure.

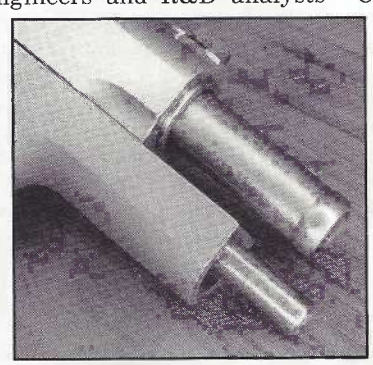
The gun that will serve as the introductory home for the .40 S&W cartridge is designated the Model 4006. In the current S&W lexicon of labels, that signifies a standard .40-caliber, stainless-steel Third Generation double-action autoloader. (The "40" is the caliber, the "0" means there are no special configuration features, and the "6" indicates stainless steel.) When anyone familiar with S&W's existing autoloader line sees the Model 4006, the first thought will be that it looks exactly like a 9mm Model 5906 except with a bigger bore diameter. In most respects, this conclusion is correct.

The primary logic behind S&W's approach to the .40 S&W gun/cartridge project was to incorporate a .40/10mm-caliber cartridge with established law-enforcement credentials and high competition-use potential into a 9mm-format pistol. In a sense, the cartridge specifications were handed to S&W on a silver platter by the FBI. The Bureau decreed that its next standard-duty load would be a 10mm Auto loaded with a 180-grain JHP bullet powered to approximately 950 fps velocity in a four-inch auto pistol, obviously thinking about a downloaded full-size 10mm cartridge. But S&W's engineers and R&D analysts were well aware that a 10mm Auto loaded to those specs would waste a lot of case length. They knew a .40/10mm-caliber cartridge could easily be developed that would be a lot shorter in overall length. The question was how much shorter?

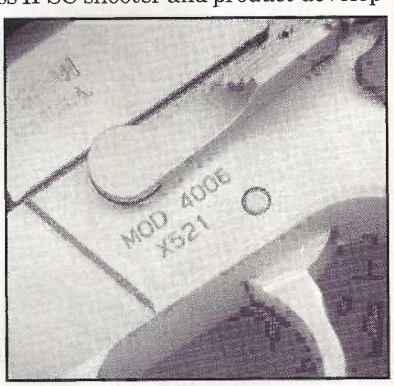
A full-length 10mm Auto cartridge needs to be contained by a large-frame gun that can deal with its physical size and the recoil energy of full-power, near-magnum, commercial 10mm ammo—like the soon-to-be-seen S&W Model 1006 10mm pistol, which is based on the Model 4506 .45 ACP frame and slide dimensions. The S&W technical crew hoped a shorter .40/10mm cartridge meeting the FBI standard could fit within the framework of the company's 9mm auto line. If it could, the benefits would be enormous. They'd have the top "officially approved" law-enforcement 10mm ballistics in the easy-to-carry format of a high-capacity, medium-size 9mm. Moreover, there would be a direct carryover into the rapidly growing handgun sport of action shooting, where the need for safe-pressure, high-performance autoloader cartridges is acute.

A key influence within the S&W circle that conceived the .40 S&W was Master Class IPSC shooter and product-develop-

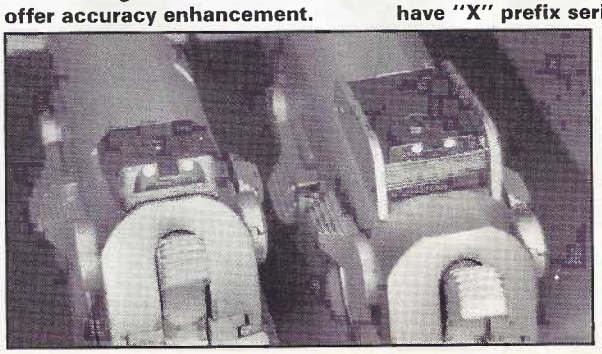
Fixed-(T) and adjustable-sight 4006s will be offered.



Full-length guide rod and balloon ring at end of barrel offer accuracy enhancement.



Pilot production Model 4006s have "X" prefix serial numbers.



Two-dot adjustable rear sight extends higher than fixed sight.

ment specialist Tom Campbell. Campbell had been closely tracking the 10mm Auto cartridge since its early appearance in the short-lived Bren Ten. He determined early on that the high recoil energy and slide velocity generated by the full-power 10mm cartridge barred it from being used in any S&W 9mm-format autoloader, and he had doubts about the long-term effects of sustained full-power 10mm use even in a large-frame pistol such as Colt's 10mm Model 1911 Delta Elite. At the same time, he was fully informed as to the competition potential of the 10mm-derived Centimeter load that was being developed proprietarily by independent ballistician Whit Collins and pistolsmith Paul Liebenberg. This short-form 10mm cartridge was an ideal IPSC load, with relatively mild recoil and quick recovery capability, and it easily made the major power scoring level without excessive pressure.

In the early months of 1989, when the FBI declared that a 950 fps 180-grain JHP 10mm was the optimum law-enforcement load, the opportunities were just too rich to ignore. In June, S&W's top management approached Winchester's top management with the proposed cartridge concept, Winchester responded favorably, and six months later, the .40 S&W cartridge and the Model 4006 pistol were realities.

If you think the Model 4006 .40 S&W autoloader is just a bigger caliber S&W Model 5906 9mm, you're right and wrong. In terms of the basic mechanical characteristics and dimensions of the physical gun, you're right. (In fact, the engineering of the .40 S&W cartridge was geared so closely to 9mm dimensions that its overall loaded length even takes account of the tiny variance between a .40-caliber JHP ogive and a 9mm FMJ ogive.) But in terms of the capabilities and applications for the two cartridges . . . well, they're worlds apart. (For the ammo side of the story, see the accompanying article.) And there are also some significant ways in which the .40 S&W Model 4006 was changed from the basic Model 9mm 5906 in order to accommodate the requirements of the larger caliber, more powerful cartridge.

One significant change is that the Model 4006 slide is about one ounce heavier, with about 0.020 inch thickness added to each side. This added weight slows slide acceleration and lessens slide impact velocity against the frame. The slide rails have been beefed up, adding material to the frame in the otherwise thin area of the housing for the recoil spring guide system (an alteration added to the .45 ACP Model 4516-1 and the 10mm Model 1006). This increases the bearing area where the slide strikes against the frame at the end of its rearward stroke, which lessens impact stress and reduces the propensity for frame cracking. The Model 4006 frame is heat treated; S&W 9mm frames are not, although company engineers indicate heat-treated frames are likely to be a standard aspect of all auto models in the not-too-distant future.

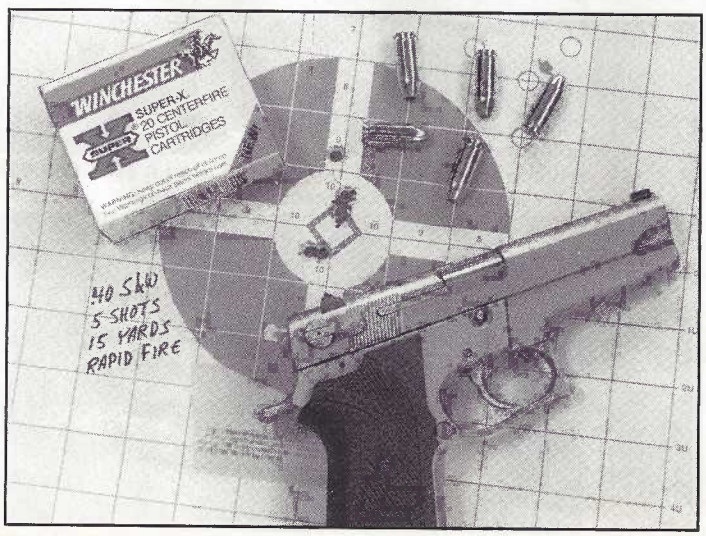
Another difference between the 9mm and .40 S&W forms of the basic pistol is in the magazine and magazine well configuration. Beginning with the introduction of the Model 1006 10mm and the Model 4006 .40 S&W, all S&W autos are being designed to prevent interchanging magazines of improper caliber, i.e. 9mm magazines will not go into .40 S&W pistols, or .45 magazines into 10mm pistols, and vice versa. This involves subtle changes to the corner dimensions and radii of the different caliber magazines and wells. The magazine release button will be interchangeable from either side—to accommodate right- or left-handed use.

A more specific change involves the magazine design of the Model 4006. The standard-issue pistol will have an 11-round capacity, plus one in the chamber. This requires a staggered-column magazine, but due to the larger diameter of the .40-caliber cartridge, the angular relationship of the cartridges in the stack is considerably greater than the 45-degree stagger of the 9mm. This results in considerable outward pressure of the cartridges in the stack against the walls of the magazine, which resists the upward push of the magazine spring and hinders reliable feeding. To overcome the problem, a riblike "track" has been run all the way down both sides of the Model 4006 magazine (also the 10mm pistols) to reduce the amount of contact surface between the cartridges and the magazine sidewall and allow ease of upward cartridge movement toward the feeding position. Further feeding reliability is achieved by soon-to-be-patented "indents" at the upper rear of the magazine wall, which engage the extractor groove in the cartridge case and hold it fully to the rear in the magazine as it moves into position to be picked up by the forward-moving slide.

The 11 + 1 capacity of the Model 4006 is less than a 9mm but more than most anything else (except Glock's 15-round 10mm). For law-enforcement use, that's a respectable quantity. For competition use, either in stock category or in custom pistol form, that's one more than an enhanced-capacity .38 Super in a Government Model 1911 format. Custom magazines for the Model 4006 will be able to hold as many as 13 rounds.

SPECIFICATIONS
Smith & Wesson
Model 4006
.40 S&W
Semiauto Pistol

Manufacturer	Smith & Wesson 2100 Roosevelt Ave. Springfield, MA 01102-2208
Model	4006
Type	Semiauto
Operation	Recoil operated
Caliber	.40 S&W
Barrel length	4 inches
Overall length	7½ inches
Weight, empty	36 ounces
Safety	Manual ambidextrous safety; self-engaging internal firing pin lock; self-engaging magazine disconnect safety
Sights	Micrometer click adjustable; two dot
Rifling	6 grooves, 1:16 LH twist (RH twist optional)
Stocks	Delrin wraparound, straight backstrap
Cartridge capacity	11
Finish	Nonreflective stainless steel
Variations	Fixed-sight version (Novak LoMount Carry)
Distributor	Smith & Wesson
Price	$701 (adjustable sight); $674 (fixed sight)



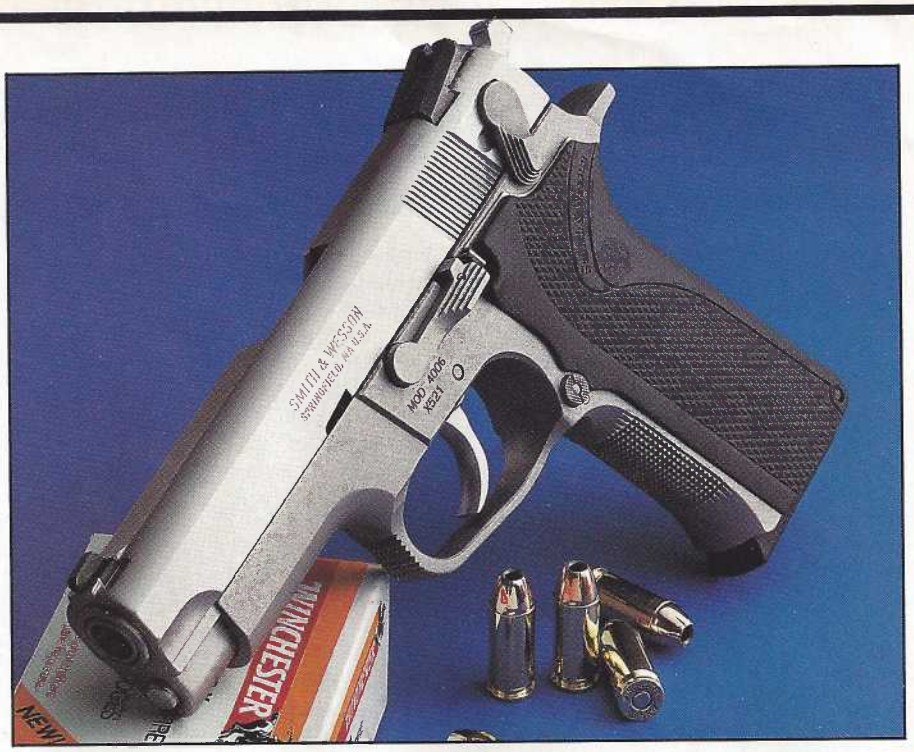
Author fired experimental M4006 and was pleased with its accuracy and handling.

In USPSA/IPSC competition applications, that would provide a considerable edge over anything else going. (Refer to the sidebar on the new S&W Performance Center and the custom competition pistols it will produce for the members of its new S&W Professional Shooting Team.)

As a Third Generation S&W autoloader, the Model 4006 shares in some of the most advanced handgun technology in the world. The basic design format was introduced in 1988 as part of a comprehensive reengineering of the S&W autoloader model series. At the time, there were only two calibers involved: the 9mm and the .45 ACP. Today, S&W lists four centerfire auto calibers: the .45 ACP and the full-size 10mm Auto in a large-frame format and the 9mm and the .40 S&W in a medium-frame format. The engineering refinements that went into the Third Generation guns are significant and still worth a review.

When Smith & Wesson first decided to significantly overhaul its autoloader line, it went into the field to determine the qualities of its existing pistols that were most disliked by people actually using the guns and by those law-enforcement agencies and other volume-purchase groups that had tested and reviewed S&W autos and found them lacking in comparison to other comparable makes and models. Critical comment centered in two subjective areas: the "feel" of the guns in the hand and the quality of the double-action trigger pull. Also addressed were objective criteria like accuracy and reliability.

As a consequence of this survey, a primary focus of the Third Generation project centered around ergonometric design—in today's parlance, to make the guns more "user friendly," more comfortable and natural in the hand, and easier to use and operate. Here's where the current generation of S&W autoloaders catch the user's attention. The most immediately apparent feature is the grips and grip frame styling. Particularly on the fat, double-column magazine guns like the Model 4006, the grip frame and grips have been slimmed and trimmed. Instead of individual grip panels, all models feature a textured, one-piece Delrin synthetic wraparound grip that's designed for compatibility with the gripping surface of the human hand. In determining the exact contour of the new grip, S&W designers found there was a nearly perfect 50/50 split between users who preferred an arched backstrap (like the original Model 39 style) and those who preferred a flat backstrap (like the original Model 59 style), so all models are available with a choice of curved (arched) or flat backstrap grip. However, the new Model 4006 will be offered initially only with a flat backstrap.



As part of the overall grip redesign, the area at the top of the frontstrap was relieved and raised to allow the gripping fingers to more nearly parallel the alignment of the barrel, making the guns more instinctively "pointable." Anyone who has handled the pre-1988 line of S&W autoloaders and not liked their "feel" should pick up one of the new semiautos.

That was the ergonometric dimension of the upgrade; there is an entire list of user-friendly improvements as well. The trigger guard was extended slightly forward to allow easier use by gloved hands in cold and adverse weather, and a slightly recurved and checkered trigger guard face was added. (There has been a series of alterations in the Third Generation trigger guard configurations in the last two years, and it's driving S&W variation collectors absolutely crazy.) To improve convenience in charging magazines and reloading the gun, numbered magazines are now standard on all models. Highly visible followers indicate at a glance whether a magazine is partially or fully charged. All magazines are equipped with combat-style thick rubber buttplates for secure seating when making rapid, under-pressure reloads and to reduce magazine damage when dropped. The magazine well on all models is chamfered and tapered all around for ease in magazine insertion. All edges and corners on the magazine/magazine well interfaces have been smoothed and rounded.

Grooved side of .40 magazine improves feeding reliability of .40-diameter round.

Several improvements were also made in the sighting systems. Initial Third Generation guns in all models, fixed and adjustable versions, featured a visible, quick-alignment three white dot system. The front sight blade is dovetail fitted instead of forged integral with the barrel, allowing it to be easily removed or replaced with different styles. On the new Model 4006, the Novak low-carry rear sight (previously available as an option on some models) will be standard. Adjustable sight versions are also available.

An ambidextrous manual safety is also a standard feature on the Model 4006 and all guns in the S&W pistol line. The offside lever is attached by a spring-loaded T-slot system instead of the previous screw, which is much less likely to loosen or fail from recoil battering. The internal self-engaging firing pin lock safety and magazine disconnect safety are retained from the previous versions. Incidentally, the magazine safety is one of the most argued pieces of equipment in autoloader design. Its function is to prevent an accidental discharge should a round be left in the chamber when the magazine is removed, an event that all too often startles novices who think removing the magazine is all it takes to unload an autoloader. On the other hand, military, law-enforcement, and self-defense users are nearly unanimous in

(Continued on Page 85)

S&W's New Performance

By Dick Metcalf

At the same time S&W announced the introduction of the Model 4006 and the .40 S&W cartridge, it made public the establishment of a custom pistolsmithing facility at its factory in Springfield, Massachusetts. Known as the S&W Performance Center, the operation will be headed by world-class pistolsmith Paul Liebenberg.

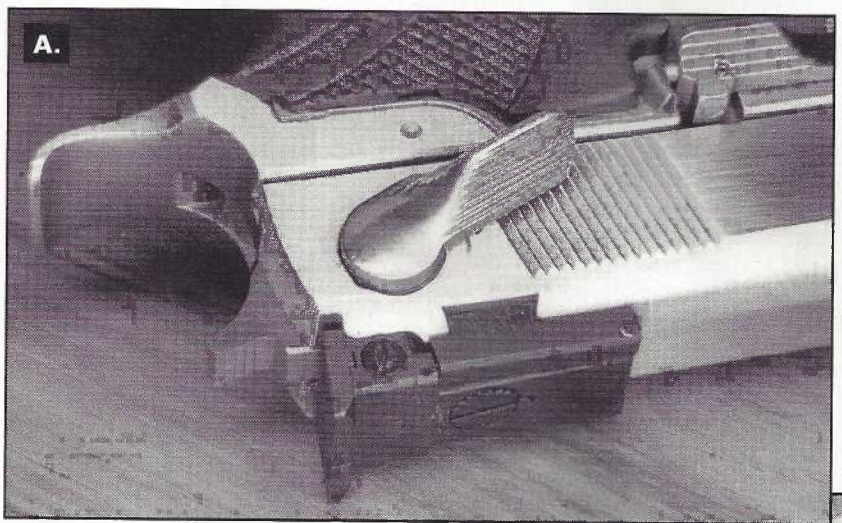
According to S&W president Steve Melvin, "For years, the automobile manufacturers have been making use of their racing divisions to develop and test new methods of improving performance. We're taking a page from their book."

In addition to developing ideas and techniques that will eventually make their way to the regular production line, said Melvin, the Performance Center will "make individually customized guns available to our customers as another way of meeting their specific needs." Initially, Melvin said, the focus "will be creating winning competition guns for Team Smith & Wesson and other competition shooters. To maintain our auto racing analogy, I guess you could call these our 'Indy cars.' We'll also be offering the equivalent of 'street-legal' machines to the shooter who may not need something quite as full race. Then there's the 'stock' category. These will be our S&W production guns specially tuned with high-performance 'packages.' We'll be offering these very soon, starting with Performance Center action jobs."

The S&W shooting team to which Melvin referred will include two-time Bianchi Cup champion and 1989 Masters champion Brian Enos, former U.S. National IPSC champion J. Michael Plaxco, longtime U.S. Gold Team member Tom Campbell, and revolver ace Jerry Miculek—who won the 1989 Masters Action Event using a stock S&W Model 27 .357 Magnum revolver.

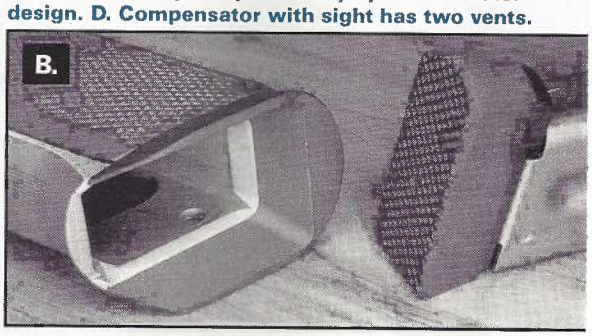
The first two Performance Center competition pistols to be shown were a pair of .40 S&W Model 4006 pistols refined by Liebenberg to be used by S&W team members Campbell and Plaxco. The Plaxco gun is a full-compensated "Indy car"; Campbell's version is a "street-legal" uncompensated version—but is highly refined nonetheless. As the first examples of what will prove to be a new generation of S&W competition autos at the top level of world-class action-shooting matches, they deserve attention.

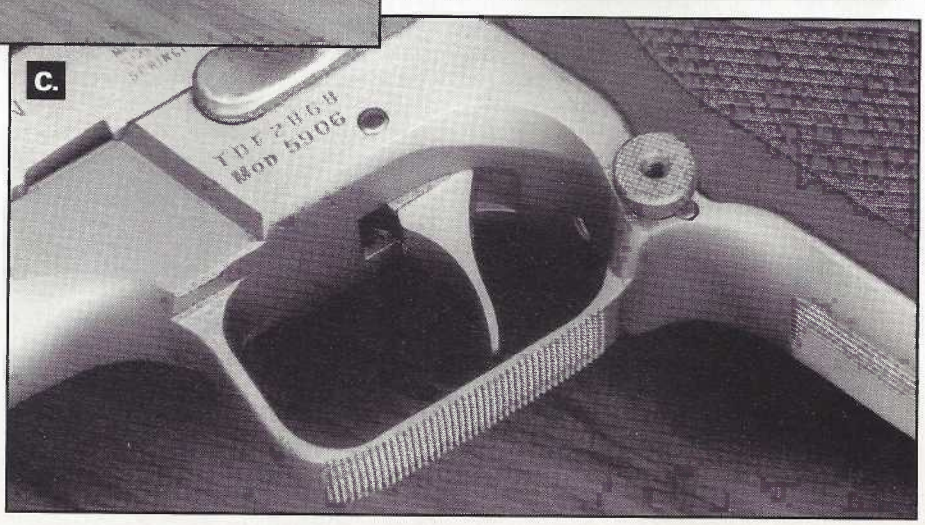
With the full-race comped version, according to Plaxco, Liebenberg's refinements to the basic S&W auto design lie in three critical areas. The first is the slide-mounted manual safety, which in the standard S&W double-action pistols operates in the reverse direction from the Colt-form Model 1911 Government Model design used by the vast majority of action shooters (up is "Off"; down is "On"). The unhandy "reach" of the DA safety design has been a drawback to shooter ac-

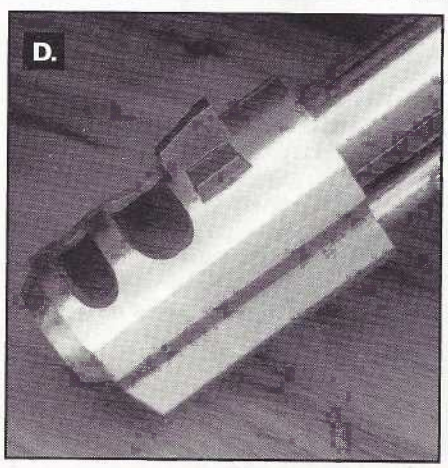


S&W Performance Center Gun Options

A. Short-throw safety lever only has 27½ degrees of movement. B. Flared magazine well and thick bumper pads promote speed loading. C. Trigger is based on the principles of Olympic Free Pistol design. D. Compensator with sight has two vents.







The .40 S&W Cartridge

(Continued from Page 52)

ploy lighter weight, shorter bullets and have not encountered the problem.

You will not be able to quickly acquire a supply of .40 S&W brass by cutting down 10mm brass. They are not the same internally. But once custom accessory makers like Irv Stone at Bar-Sto start producing .40 S&W barrels for Government Model 1911-type pistols, it's going to be ridiculously easy for competitors to adopt it. With my 10mm Delta Elite comp gun, all I'll have to do is switch barrels. Standard 10mm magazines will work fine. I can even use 10mm dies to handload the .40 S&W. If Ram-Line can hurry up and get a 10-round 10mm magazine on the market, I'd have the perfect safe alternative to a major .38 Super Model 1911. Or I could get a Para-Ordnance high-capacity Model 1911 10mm frame. Or I could jump the Model 1911 ship entirely and order a customized 13+1 round Smith & Wesson Model 4006 comp gun from the new Performance Center that Paul Liebenberg is starting at the S&W factory (see "S&W's New Performance Center").

Not surprisingly, considering their nearly identical design goals, the existing cartridge that most closely resembles the .40 S&W is the .41 Action Express. Its maximum overall loaded length is 1.152 inches (my production 200-grain FMC cartridges mike at 1.140), and its case length is 0.866, only 0.016 longer than the .40 S&W. The performance specifications and capabilities for the two loads are for all practical purposes identical, as either can be uploaded or downloaded to the same degree within the same pressure limits.

In fact, even though there is an "official" .01-caliber difference between the two, Winchester engineers were concerned during the .40 S&W's development process when they discovered that an early dimensional configuration would allow a .41 AE cartridge that met minimum allowable dimensions to fit into a .40 S&W chamber that met full maximum allowable specifications. The effect of actually firing a .41-caliber bullet into a .40-caliber bore would not be productive. Changes were made to prevent this possibility from occuring. A .40 S&W chamber is not compatible with a .41 AE cartridge; a Centimeter cartridge will not fit into a .40 S&W chamber due to the slightly longer case length.

Before the .40 S&W was announced, I was of the opinion that the .41 Action Express was the best application of the .40/10mm-caliber concept on the market, and I believed that if major-name U.S. manufacturers ever got around to offering guns and loads for it, it would probably overtake the 10mm in terms of popularity and utility—this in spite of the fact that the rebated rim design of the .41 AE would not be liked.

Well, I should have realized that whenever the time for an idea as good as this one finally comes, the big-name manufacturers will always appropriate it themselves and stamp their own name on it. The .41 Action Express will now be in a dogfight with the .40 S&W. I believe only one will survive.

The future for the .40 S&W cartridge offers opportunities for more applications than any handgun load introduction in recent memory. In fact, not since the appearance of the venerable .45 ACP at the beginning of the century has there been a pistol cartridge with such effective potential for widespread law enforcement, competition, personal defense, and even military use. Winchester spokesmen have indicated that the next load we will likely see produced for the cartridge will be a 150- or 155-grain JHP designed specifically to deliver a USPSA/IPSC power factor of 180.00 from a stock S&W Model 4006's four-inch barrel. It will be the first commercial cartridge designed specifically for the action pistol sports and will also be targeted for the urban

S&W 4006 in .40 S&W will get a close look from police departments.

police market, where rapid expansion and moderate penetration are desired qualities. A relatively inexpensive promotional-grade version of the .40 S&W will probably be forthcoming from Winchester/Olin for volume use as a practice round by police and competition shooters.

A host of police departments which have been weighing the respective benefits of a sea of WonderNine clones are going to be looking very closely at the .40 S&W. A host of other police departments that have recently made the jump to 9mm might find they jumped too soon. The FBI, surprised to see its ballistic specifications turned back in a form that will work in higher capacity 9mm-sized pistols, will probably be pardoned if it takes some time to reassess its own position. USPSA/IPSC competitors are finally hearing the death knell of the edge-riding major-power .38 Super and looking at their first opportunity to buy a factory-standard cartridge made specifically for their sport.

First, the .41 Magnum. Then the 10mm Auto. Then .41 AE. And the wildcat Centimeter. Now the .40 S&W. Call them .40 caliber, call them .41 caliber, call them 10mm, call them whatever you want. These are the cartridges that have defined the future of handgunning.

The Model 4006

(Continued from Page 55)

saying the gun should be capable of firing with the magazine removed in the event magazines are damaged, lost, or otherwise unusable. The logic is inescapable. In a life-or-death situation, a single shot is better than no gun at all.

Smith & Wesson has provided autos without the magazine safety to police departments who have specifically ordered their guns made in that fashion. Commercial-market S&W autoloaders continue to have the feature.

The premise of S&W Third Generation autoloader production is oriented toward improving the overall handling qualities of the company's autoloaders and making them easier and more convenient to use. Do they work? Yes. Although I used them extensively, I was never fond of the fit and feel of the previous generations of S&W pistols (with the exception of the Models 469/669). To my old-fashioned hands, the current S&W pistols don't feel like S&W pistols, and that's a compliment.

Soon after the .40 S&W cartridge and the Model 4006 pistol were announced at the Las Vegas SHOT Show in January, I had the opportunity to discuss the development of the cartridge with Winchester designers and engineers at the Winchester Research & Development facility in East Alton, Illinois. I was also permitted to examine and fire the prototype Model 4006 that was used as the final test bed in the development of the production version of the cartridge.

Firing the Model 4006 was a pleasure. The cartridge has a very quick response cycle, and the ergodynamic effect of the grip design is clearly apparent in the natural way the sights return to target in recovery. The subjective recoil is a bit difficult to describe to someone who hasn't fired the load since there is no other popular cartridge that has quite the same characteristics. The .41 Action Express 200-grain load comes close but has more force. Recoil is somewhat more than a 9mm, less than a full-length 10mm, and quicker than a .45 ACP. It's not quite as abrupt as a major power .38 Super handload, and I thought it felt more like the 170-grain JHP 178.00 power factor 10mm Auto loads I use in IPSC competition than anything else. Users of the wildcat-shortened 10mm Centimeter will probably find it very familiar. You'll just have to wait and shoot it yourself.

Smith & Wesson says production versions of the Model 4006 should begin shipping by April. I look forward to getting one and giving it a full workout at the test range and the competition range. I wonder how much the Performance Center will be charging for a compensated version?