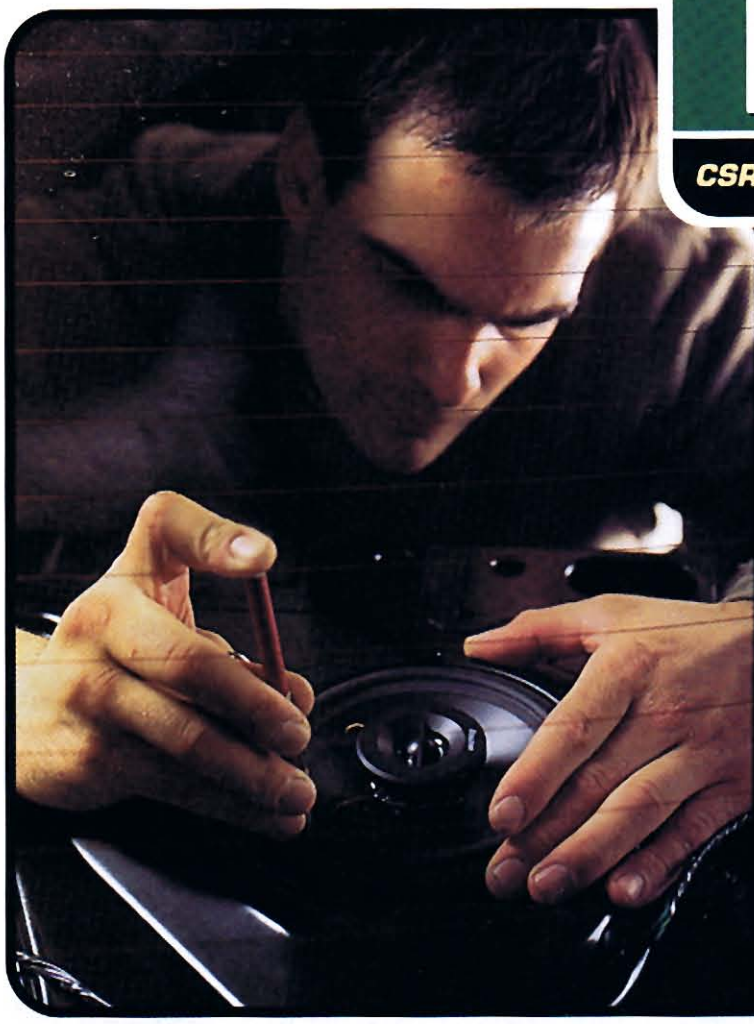
BASIC DIY

CSR'S DO-IT-YOURSELF INSTALL SERIES

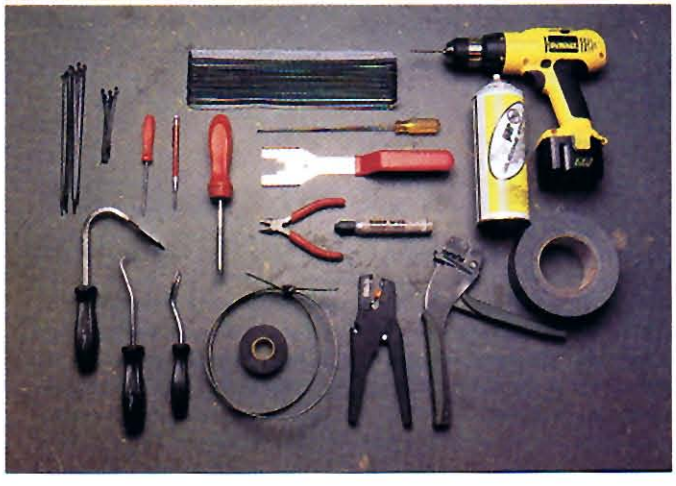


PART THREE OF FOUR: SPEAKERS IN THE HOUSE

HOW TO PROPERLY INSTALL FRONT AND REAR SPEAKERS IN YOUR VEHICLE.

BY MICAH SHEVELOFF

TOOL PARTY: For part three of this DIY project, you'll need (clockwise from top left) 4- and 8-inch wire ties, an assortment of Philips-head and flat-blade screwdrivers, a spring-loaded center punch, 3M strip caulk, a Snap-On door-handle tool, flush cuts, silicone spray, a cordless drill with a ⅛-inch drill bit, duct tape, a wire crimper, a wire stripper, a 4-foot wire tie, electrical tape, a hose-clamp tool, and a General Motors and a universal panel tool.

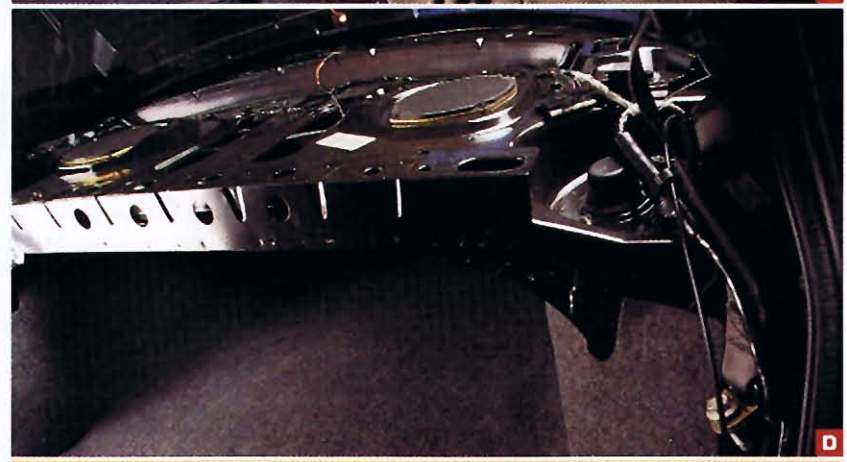


PHOTOS BY JIM RAYCROFT

WELCOME BACK, my friends, to another absolutely fabulous installment in CAR STEREO REVIEW's basic do-it-yourself install series. In episodes one and two of "Basic DIY," I showed you how to properly install a head unit ("Head Start," August 1999) and a multichannel amplifier and power and signal wiring ("Amplify Your Life," September 1999), respectively, based on the techniques that my staff and I use at Audio Coupe, my shop in Fairfield, Connecticut. In part three of this captivating DIY tale, phantom-menacing installer James Samudosky and I will be outfitting our project vehicle, the same trusty '99 Saturn SL2 seen in the first two parts of this series, with front and rear speakers manufactured by Peabody, Massachusetts-based Boston Acoustics. So let's put our ears to the grindstone and get down to it.

FREEDOM OF CHOICE

Choosing speakers is one of the most important decisions you'll make when buying a car-stereo system. Many, in fact, say that it's *the* most important decision. How come? Because the tonal qualities inherent to the design of the speakers you choose will shape the overall sonic character of the entire audio package. That is, the speakers you choose will ultimately determine what your vehicle's stereo



BARING IT ALL: When replacing rear-fill speakers, the first step is to "gain access" to the stock-speaker locations. Gaining access to the Saturn's stock rear-shelf speaker mounts required the removal of several trim panels (A). To remove these trim pieces, installer Samudosky used a Snap-On panel tool that allowed him to apply even pressure on the trim while pulling up on the plastic clips that secure the panel in place (B). Once the trim pieces and clips were removed, the rear-shelf cover was lifted out and set aside (C), exposing the "not-so-hot" factory 6½-inch speakers (D).

sounds like more than any other component in your system. Period!

Since sound quality is a subjective measure, speaker preference is also a very personal choice. Everyone's sonic likes and dislikes are somewhat different. Some people like speakers that play loud and low, others want a more subtle mix across the audio spectrum. Me, I like mine to be tonally balanced and front-dominant, and prefer only a vague sense of rear fill. You may like something totally different from all of the options I've listed so far. Nevertheless, regardless of the sonic characteristics that each music aficionado may hold dear to his or her heart, there's a speaker out there to satisfy every type of musical taste.

The trick to getting the sound you want is to choose wisely during the reconnaissance phase of the purchasing process. Research companies and products by reading *CSR* and/or scoping out the Internet. Go to a number of install shops and take the time to listen to (or, in *CSR* parlance, SoundCheck) your favorite music through a variety of speakers to attune yourself to the standard of sound reproduction you like. That's right: Bring your favorite music with you when you hit the shops. Since you already enjoy and are familiar with this music, it'll be easier to notice any sonic flaws that the speakers may possess. If possible, you should audition the speakers in demo vehicles rather than just in an acoustically treated sound room or on a sound board. The speakers are going to be installed in a car, after all, so why not listen to them in one?

Finally, trust *your* ears above all else. Buy what sounds best to *you*, not what sounds best to the salesman or a so-called "audiophile friend." Remember, you have to live with this decision; they don't!

Another very important criteria to consider when purchasing car-stereo speakers is size. Although size is an important determinant when choosing a speaker for your home, it's even more of a factor when choosing a driver for your car. Not every 6½-inch speaker will fit into every car with a factory-cut 6½-inch mounting location in either the door or dash. (As you'll soon see, in one instance, we chose to go with 6-inchers rather than 6½-inchers.) Before making a purchase, you must determine what size speaker will fit in your automobile's stock-speaker mounting locations. You'll need to measure the diameter of the mounting hole and its maximum depth. If you're going the door route, you'll have to make sure there isn't anything inside it that the speaker may in-

terfere with, such as the window or door-lock mechanism. In addition, you may also have to find a mounting place for passive crossovers if they come with the speaker set you've bought.

It'd be a good idea to find a shop that's already done installs in cars like yours; i.e., the same make and model. The shop's installers may be able to offer valuable suggestions as to fit, interior acoustics, and installation obstacles that they encountered along the way. (Note: Automotive speaker installations vary in difficulty from car to car. Door speakers, dash speakers, and rear package-shelf speakers are all accessed differently. The installation techniques you'll find here in part three are generalized, and may differ from vehicle to vehicle.)

Now I know what some of you are thinking: "Who cares about stock locations—I wanna build kickpanel enclosures for my front speakers! They image better, anyway." True, that's a worthy installation strategy. However, it involves a lot of custom craftsmanship and may require that you permanently modify your car's dashboard or kickpanels or A-pillars to accommodate the speaker system. In my opinion, this kind of intricate work should be done by a skilled professional, not a greenhorn DIYer. But if doing this

SONIC RENEWAL: Squishing himself into the Saturn's rear-seat area, Samudosky unplugs the stock speakers and removes them (E). Although each Boston Acoustics RX67 fits nicely in the stock mounting holes, their screw holes don't line up with those drilled for the stock speakers, so Samudosky must drill new ones. Using a spring-loaded center punch, he marks and dimples the metal where the new screw holes will be (F). He then grabs an angle drill and goes to town (G). Once the holes are drilled, Samudosky prepares the surface of the rear shelf around the speaker hole with a narrow bead of 3M strip caulk (H), and sets each RX67 in place and secures them with sheet metal screws (I).

type of custom install is your desire, I'd suggest carefully selecting a local specialty car-stereo retailer for help and guidance. You can also reference "Kick It," September 1998, a feature I wrote that details how to build your own kickpanels. But for our basic lil' DIY project at hand, however, simple is simply better, so we're going to use the vehicle's stock-speaker locations.

BABY GOT BACK SPEAKERS

While I don't wish to sound like a trained parrot, I must point out (as I have in the other two installments in this series) that Samudosky first starts the project by cleaning the car and tidying up his work area. There are numerous small pieces to be removed from the vehicle during this stage of the install, and we wouldn't want to lose them amidst unnecessary clutter, now would we?

Generally speaking, it doesn't really matter which pair of speakers, front or rear, that you start with. Samudosky and I began this part of the install by mounting the rear-fill speakers first because they're easier to install in the Saturn. But whichever way you go, you have to formulate a solid installation strategy.

Professional installers feel best and most confident about their work when they've got a clear install plan in mind before removing tired old speakers and putting in a new set. It's almost a universal rule that the first step in the planning process is to "gain access" to the speaker's stock hiding places and decide how the new speakers might best be mounted and wired. It's also wise at this stage to double-check that the speaker actually fits in the stock mounting locations.

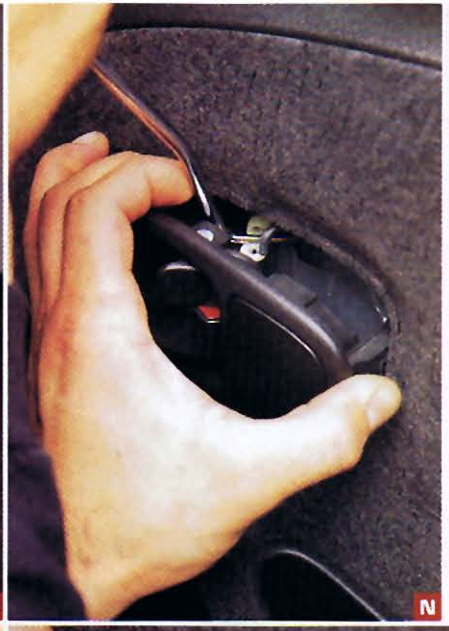
"Gaining access" to the Saturn's stock rear-shelf speaker mounts required the removal of several trim panels and the rear deck itself. To remove these trim pieces, Samudosky used a panel tool that allows him to apply even pressure on the panel as he pulls upward on the plastic clips that secure the panel in place. It's important to use a tool like this so that the clips and panels don't break or get scratched while you're working on them. Once the trim pieces were removed and set aside, the rear shelf was lifted out, exposing the not-so-hot factory 6½-inch speakers. Samudosky then squished himself into the rear-seat area, unplugged the stock speakers, and removed them. You really have to be very careful when removing stock speakers. Speaker magnets are very heavy and can very easily affix themselves to anything made of steel. Do not suddenly jerk the speakers from their mounts; you could lose control of them and the basket or the magnet of the speaker could crash into and damage the rear window. That could quite literally be a shattering experience—and a very costly one at that.

Now that the rear speakers have been removed, it's time to mount the replacement speakers. (This process may differ from vehicle to vehicle, so the following should be used as a basic guideline, not a set-in-stone procedure.) Samudosky placed a pair of Boston Acoustics Rally Series RX67 6-inch coaxials ($150 a pair) in their new homes. Although each Rally 6-incher fit in the stock 6½-inch mounting holes, the screw holes drilled into the speaker basket didn't line up with those used by the stock speakers. As a result, Samudosky had to drill new screw-mounting holes. (It's common for these holes to be mismatched, so prepare

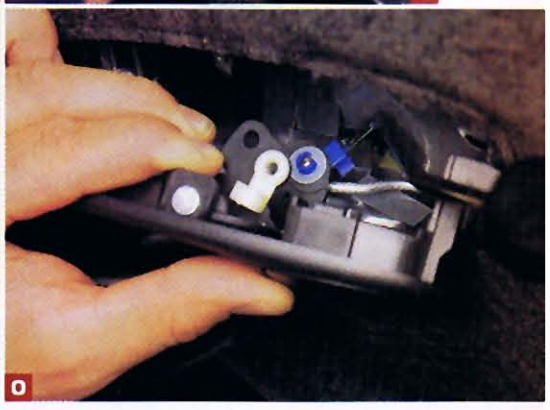
WIRE POWER: Once the speakers are mounted, Samudosky locates the rear-fill speaker wire that he tucked away during the last installment in this series and cuts the cables so they're just long enough to be able to plug into the speaker, leaving no extra wire dangling about (J). After crimping the proper connectors onto the ends of the speaker wire and attaching them to the speaker terminals, the Saturn's rear-fill speakers are now ready to rock'n'roll (K).

SIGNAL-SPLITSVILLE: Samudosky found a cozy spot for the Boston Acoustics Pro-Series 6.5 set's crossovers: on the center console's framework underneath the Sony CDX-C6750 CD receiver (L).

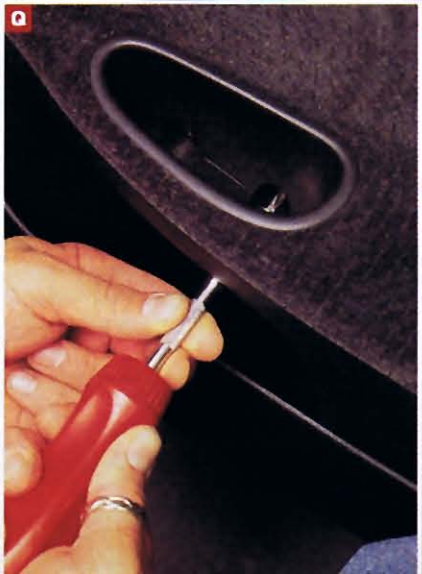

M


N

DOOR MONGER: To mount the ProSeries 6.5s, Samudosky must remove the Saturn's interior door panel (M). He does so by first sliding the door handle off of its track (N), providing easy access to the nylon catch that holds the metal rod that runs from the latch mechanism to the handle assembly in place. Using a hose-clamp tool, he unsnaps this nylon catch from the rod (O), allowing the rod to be removed from the handle completely. He then removes the triangular trim piece at the inside top corner of the door using a universal panel tool (P), unscrews the two mounting screws hidden under the inner door-pull (Q), and removes the window crank with a Snap-On door-handle tool (R).


O


P

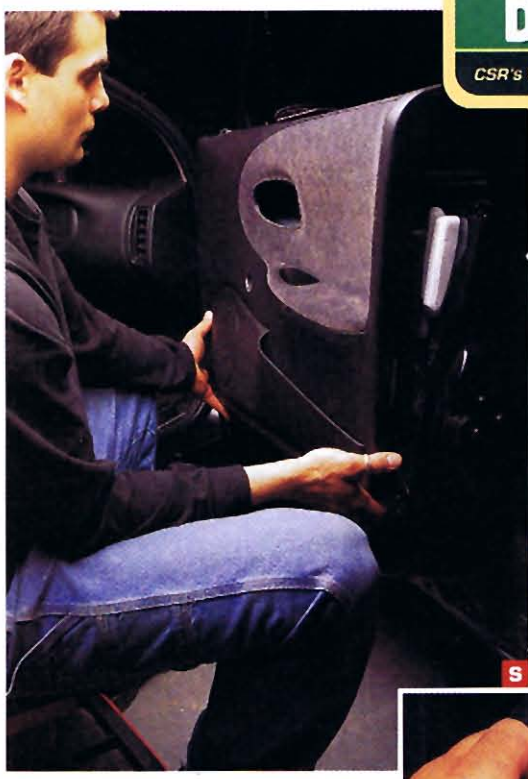

Q

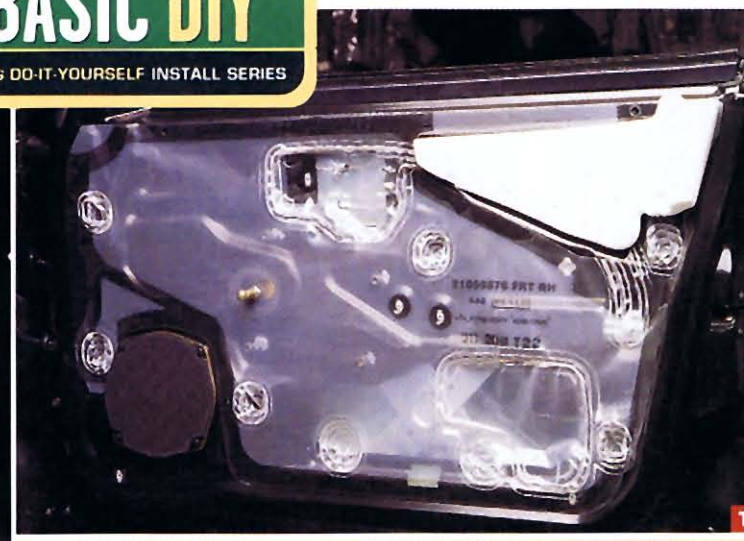

R

to do the same.) Samudosky used a spring-loaded center punch to mark and dimple the metal where he needed to drill. The inward dimple created by the punch prevents the drill bit from skating around on the smooth sheet-metal surface. Samudosky then grabbed a drill and went to town.

Please notice two things about the photo of Samudosky with his trusty angle drill on page 35. (Besides his tough-but-sensitive look, that is.) First, since the drill spits out tiny bits of metal when in use, protective eyewear is a must. Second, notice that he places his hand on the top of the drill as he's working. If for any reason the drill should buck or slip, his hand will prevent the power tool's chassis from shattering the rear window or causing other damage.

Once the holes are drilled, Samudosky prepares the surface of the rear shelf with a narrow bead of 3M strip caulk. This malleable automotive gunk does a great job of sealing the speaker to its mount in order to prevent any unwanted vibrations from spoiling the music. The acoustically dead coupling process also enhances accuracy at low frequencies. I consider it a must for almost every speaker installa-


S


T

MAXIMUM EXPOSURE: Now that the Saturn's door panel is free, Samudosky lifts it off of the door in order to store it safely out of the way (S), leaving the stock speaker exposed (T). Before moving on to the next phase, he removes the factory speakers (U).


U

tion. Now Samudosky can set each RX67 in place and secure them with sheet-metal screws. You should be careful to tighten each of the screws a little bit at a time to prevent the unbalanced tension from warping the entire speaker assembly. Even a slight bend in the speaker's frame will cause it to malfunction and sound funny. This, of course, means that you *never* secure any speaker with a motorized screwdriver. In some situations, it's advisable to enter the luggage area and cut off the extra length of the speaker's mounting screws if there's any risk that they could do damage to the contents of the trunk.

Once the speakers were completely mounted, Samudosky located the rear-fill speaker wire that he tucked away during part two of the series and cut the cables so they'd be just long enough to plug into the speaker and leave no sloppy slack or extra wire dangling about. Carefully check the positive and negative markings on the cables to be sure that you don't accidentally wire the rear system backwards (i.e., out of phase), which would cause the speakers to sound nasally and muddy. Then all you have to do is strip back approximately ¼ inch of insulation from the cable, crimp the correct-size tab connectors to the wires, and plug them into the terminals on the speakers. Finally, your rear-fill speakers are ready to rock'n'roll.

To finish up the job, Samudosky reinstalled the Saturn's trim pieces, checking to make sure that the new speakers fit comfortably and aren't rubbing against any part of the car. That's one pair down, one to go! Now let's get front-loaded.

MUST BE IN THE FRONT ROW

When installing front-door speakers, there are several things to be considered. First, how are you going to access the stock speakers? Some vehicles have convenient speaker grilles that pop off, allowing access to the speaker with minimal effort. Other cars, like our Saturn here, require that the entire door panel be removed to access the speaker. (This process will differ somewhat from vehicle to vehicle.) Second is whether or not the speaker will fit in the door. As we said earlier, speaker diameter isn't the only measurement you need to be concerned with when purchasing speakers for your car. The speaker's depth must be checked to be sure that its magnet doesn't impede the movement of the window or the front of the speaker isn't pressed against the grille, impeding cone movement. And lastly, how are you going to run wire into the doors? On some cars, it's extremely tough to run cables from the passenger compartment, through the door jamb, and into the door. All of these things must be addressed before proceeding any further.

In the previous installment in this series, I detailed how the wire for the front speakers was run to each kickpanel, where it would stay until we mounted a speaker in each door. Our selection: Boston Acoustics ProSeries 6.5 6-inch component speakers ($450 a pair). Thing is, BA's 6.5 package includes two fairly large passive crossover networks (one for each speaker set) that separate the high and low frequencies and send them to the system's tweeters and woofers, respectively. These boxes, which are roughly about the size of an adult's hand, must also be given a place to stay.

Samudosky soon found the crossovers a cozy spot to call home: within the center console underneath the Sony CDX-C6750 CD receiver (which was installed

back in part one). He then rerouted the speaker wire from the kicks to the crossovers under the console and secured them with Velcro to a support member. The BA crossovers use bare-wire clamp-type terminations—just like the 6-channel Nakamichi PA-506 power amplifier installed in part two, only smaller. After securing all of the wires, Samudosky then ran low- and high-pass outputs from the crossover to each door. Samudosky secured the speaker wire to the floor of the vehicle with duct tape for added safety. It's also wise to harness these wires together with wire ties—but remember to cut off the ends of the wire ties with flush cuts.

The next step is to access and remove the stock speakers mounted in the front doors. (Note: In systems with dash-mount speakers, the following procedures can also apply. However, the panels you'll be removing are much different, as are the mounting locations. You may even have to remove the entire dash. In either setup, you should be very careful.) In order to remove an interior door panel, most of the handles and cranks must come off first. Cars with power windows and door locks will have multiple electrical switches that'll have to be unplugged as well. To enhance cosmetics, many automakers hide the screws that secure these panels under blanks or covers. Although they may make the door look nice, they make taking the door apart a big hassle. Patience is key here if you want your door panel to get through this operation unscathed. (Remember, the following steps will be slightly different for each vehicle. However, these procedures will give you an idea of what to expect.)

Samudosky began by sliding the door handle off of its track, providing easy access to the nylon catch that holds the metal rod that runs from the latch mechanism to the handle assembly in place. Using a hose-clamp tool, Samudosky unsnapped this nylon catch from the rod, allowing the rod to be removed from the handle completely. This is a fairly common assembly. It's used in many vehicle brands. Now the handle can be set aside for reassembly.

Many side-view mirrors are held to the outside of the car with a bolt that's concealed behind a triangular trim piece at the inside top corner of the door. In the Saturn, this trim piece must be removed before the door panel can come off. Samudosky used a panel tool to unclip the piece. Now that the handle and the mirror-bolt cover are off, Samudosky took a screwdriver to the trim screws hidden under the inner door-pull. All that remains to be removed is the manual window crank, which is held to the window regulator with a nasty little thing that we call the "Cripes" clip. Yeah, you guessed right—this clip was named for the exclamation of frustration it inevitably causes, as it's prone to shoot across the room and disappear when you're trying to remove it. It's a tiny, horseshoe-shaped metal clamp that's very springy. Samudosky inserted a Snap-On door-handle tool between the crank handle and the door panel, and slowly rotated the crank until the clip came off. When using this tool, try to keep the palms of your hands near the base of the crank to catch the clip should it decide to try anything funny.

Once the clip has been coaxed from its nest, the crank handle slides off easily. On some older cars, I've seen the plastic handle become nearly fused to the steel shaft, making it difficult or nearly impossible to extract. On more than one occasion, I've been forced to chisel off a handle and purchase a new one from a dealer.


V


W

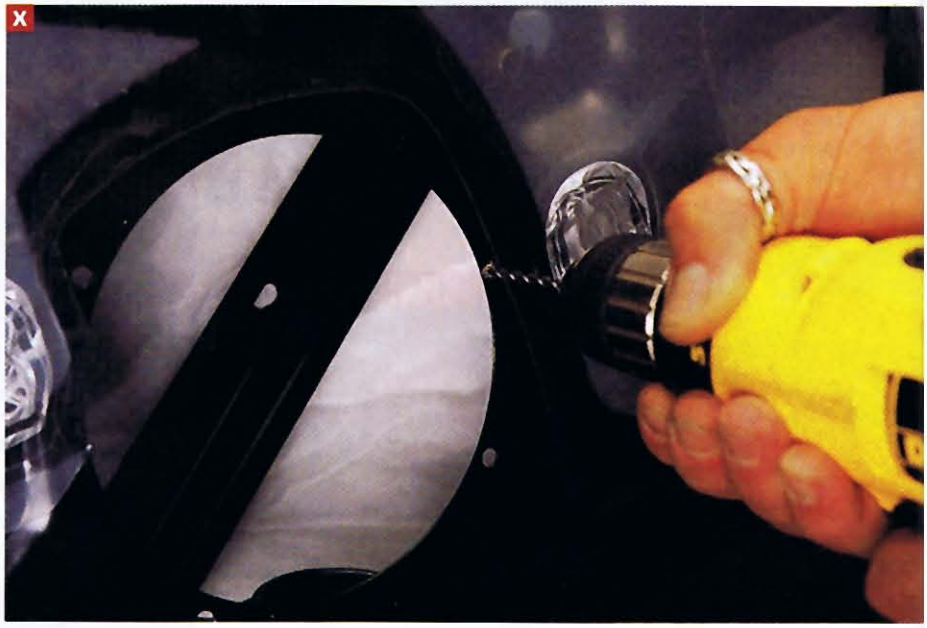
WIRED FOR SOUND: To run speaker wires into the Saturn's front doors, Samudosky used a 4-foot wire tie as a snake (V). Concerned that the stiff wire tie might puncture the rubber boot as he worked it through, Samudosky loosened the boot at each end so that he could gently insert his fingers into the tube and pull the snake through without causing any harm to the tubing (W).

WIRED-DOOR POLICY

Now that all of the items have been removed from the outside of the door panel, you can lift the panel off of its mounts

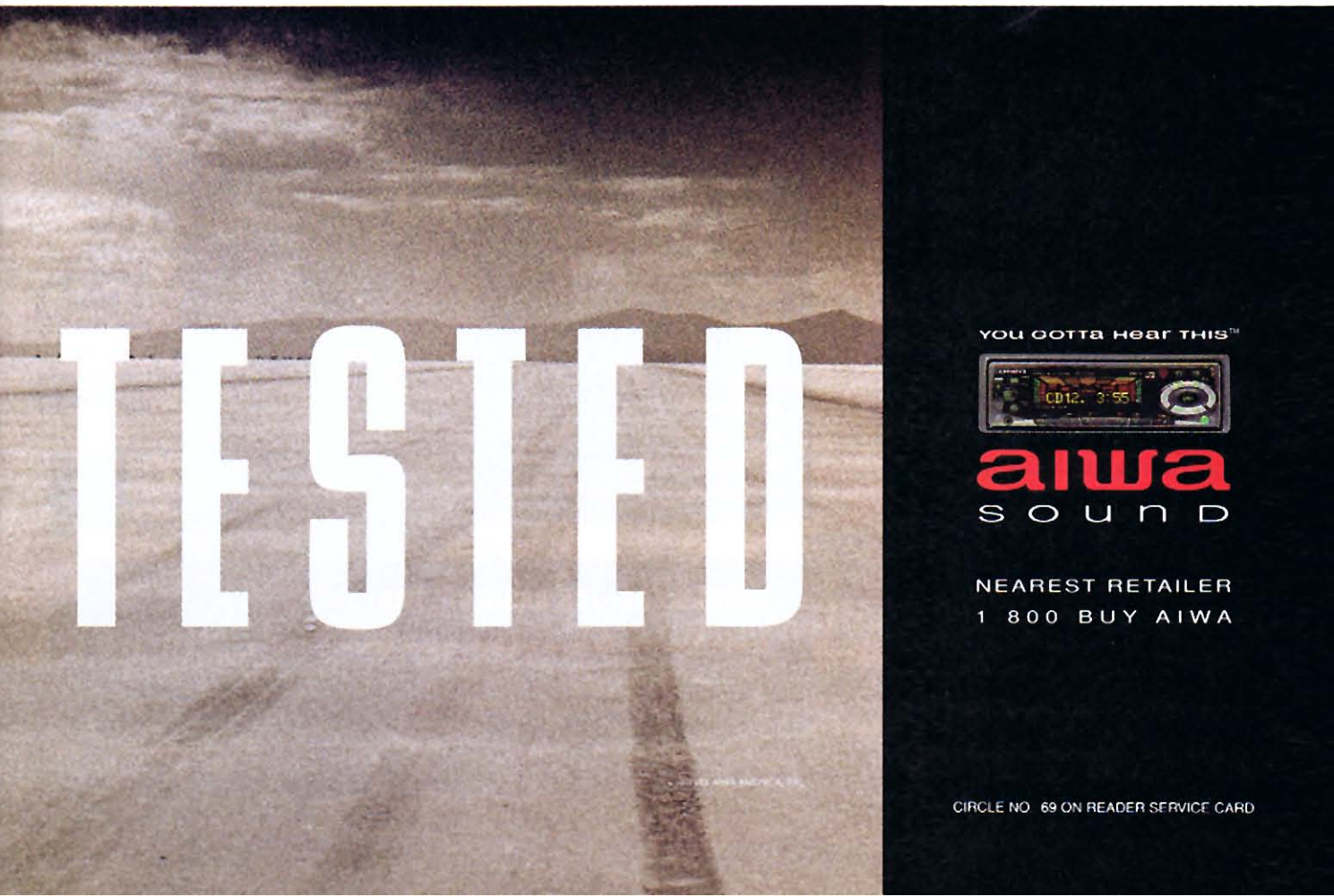
and store it out of the way. Then it's time to remove the factory speakers and mount the front speakers in the same manner as the rears. After checking around the inside of the speaker hole for wiring or brackets that could be damaged by a drill and determining that all was clear, Samudosky marked and drilled the mounting holes for the BA 6.5s. Once again, the mounting holes on the new drivers didn't match up with the stock mounting holes. Before the speakers can be mounted, however, the low- and high-pass speaker wires must be run into the doors.

A DIYer is going to encounter one of several possible situations when attempting to get speaker wires into doors. Automakers primarily use two methods of wiring doors. One, the factory wires could be run into the door inside protective rubber tubing. If this is the case, you have relatively no worries. Two, the factory wiring could be run through the door via a quick-disconnect Molex-type plug. If your vehicle falls in line with option two, you've got problems. In this configuration, there's a plastic female receptacle mounted in the door that mates to a male connector on the stock wire harness. This configuration is very useful if you ever have to replace the door because of an accident. Your body shop can simply unplug the connection, remove the old door, mount the new one, and reconnect the plug. No extra wiring need be done. In the other configuration, the body shop would probably have to completely rewire the door. There could even be no



MOUNT UP: The Boston Acoustics 6.5s are installed in the same manner as the BA RX67s went into the rear deck. Samudosky first marks and drills new mounting screw holes (X). Then he places a layer of 3M strip caulk around the speaker's mounting surface, plugs the wires into speaker terminals, and secures the speaker in place (Y). Done! Time to kick out the jams!

wires at all going from the passenger's compartment into the doors. Each of these scenarios provides a different challenge. The rubber tube is usually the easiest way to run speaker wire into the doors, which will be illustrated below. If your car has a Molex-type plug, the speaker cable would have to pass through the plug. This process is an ugly chore. My best advice for this type of configuration is to enlist the aid of a very skilled professional. Some older cars with manual windows and locks have no wires going into the doors at all. If the automaker thoughtfully provided rubber grommets in both the door jamb and the car's body for the wires they didn't have to run for optional power accessories, the task is fairly easy. Holes must be punched in each grommet, and the speaker wires run through them. If there are no grommets and no holes in the door or door jamb, then holes must be drilled and grommets inserted. Always remember to drill one hole high, and the other low, creating an "S" curve in the door jamb. This will allow the door to open and close without pinching or straining the wires. Always cover the speaker wires with electrical tape or shrink tubing in the door jamb,



WIN
CSR's
Basic Do-It-Yourself System!

Time to roll up your sleeves and Do It Yourself! Enter the CSR DIY Sweepstakes, and you'll be eligible to win the car-stereo system featured in this series—including all components, cables, accessories, and tools (approximate minimum retail value $2,600). We supply the gear, sized to fit your vehicle, and you supply the install!

Just complete the Official Entry Form below and return it to CSR DIY Sweepstakes, P.O. Box 1212, Radio City Station, New York, NY, 10101-1212. **Enter today!**

NO PURCHASE NECESSARY. On an official entry form or a 3"x 5" piece of paper, print your name, address, zip code, and phone number. No mechanical reproductions of card or entry form will be accepted. Enter as often as you wish, but mail each entry separately. Mail entries to CSR DIY Sweepstakes, P.O. Box 1212, Radio City Station, New York, NY 10101-1212. To be eligible, all entries must be received by December 31, 1999. All entries become the property of Hachette Filipacchi Magazines, Inc., which reserve the right to reprint the name, address and photo of winner for publicity purposes. The winner will be selected from eligible entries in a random drawing to be held on or about January 15, 2000 under the supervision of Hachette Filipacchi Magazines, whose decision will be final. The prize, to be awarded to one winner, includes these items at the following approximate minimum retail values (final retail value contingent on winner supplying make and model year of vehicle): Sony CDX-C6750 CD receiver ($280); Nakamichi PA-506 power amplifier ($799); 1 pair each of Boston Acoustics Pro component speakers ($400), Rally coaxial speakers ($140), and Pro subwoofers ($440); Q-Logic subwoofer enclosure ($90); miscellaneous Stinger/Best Kits cables and accessories ($150); miscellaneous tools (supplied by Stinger/AAMP; $300). Hachette Filipacchi reserves the right to substitute prizes of equal or greater value. The winner will be notified by mail and required to sign an affidavit of eligibility and release of liability. If under age 18, a parent or guardian must sign. Failure to return the affidavit within 10 days will result in an alternate winner being selected. Odds of winning will depend on the number of entries received. Prizes are not transferable and there is no substitute for prizes except at the discretion of Hachette Filipacchi. The contest is open to legal residents of the continental United States. Employees of Hachette Filipacchi Magazines, Sony, Nakamichi, Boston Acoustics, Q-Logic, Stinger/AAMP, Best Kits, their families, affiliates, or advertising and promotion agencies, are not eligible. Void where prohibited or restricted by law. For the prize winner's name, send a self-addressed stamped envelope to: DIY Sweepstakes Winner, Hachette Filipacchi Magazines, Inc., 45th Floor, 1633 Broadway, New York, NY 10019.

CSR DIY SWEEPSTAKES
OFFICIAL ENTRY FORM

Name _____

Address _____

_____

City _____

State ___ Zip _____

Phone _____

where they'll be exposed to the elements.

The Saturn comes with a rubber tube covering the wires going from the passenger compartment into the doors. Samudosky used a 4-foot wire tie as a snake to get the speaker wires from the passenger compartment into the door. Concerned that the stiff wire tie might puncture the rubber boot as he worked it through, Samudosky loosened the boot at each end so he could gently insert his fingers into the tube and pull the snake through without causing any harm to the tubing. He also used a little spray silicone to make everything slide more freely. Once the snake was all the way through the boot and into the door, Samudosky used electrical tape to secure the woofer (low-pass) and the tweeter (high-pass) wires to the overgrown wire tie, and slowly pulled them into the door. Once all of the wire had been snaked into the door, Samudosky was able to crimp the proper tab connectors onto the cable ends and prepare to mount the speakers.

The BA 6.5s can be mounted as separate 2-way component speakers (i.e., a separate tweeter and woofer configuration), or bolted together using BA's axial-mount system to form a coaxial. Since the Saturn's stock-speaker locales leave no room for a separate mounting scheme, we went with the axial-mount system. Samudosky placed a layer of 3M strip caulk around the speaker's mounting surface, and then plugged the wires into the woofer and the tweeter. He examined all of the connections to be certain that they wouldn't get pinched or snagged inside the door when the speaker was mounted. He also placed the window-crank handle back on its shaft and worked the window up and down to be sure the wires wouldn't interfere with window operation. Satisfied that all was well, Samudosky set the speaker in place, rotated the angled tweeter upward toward the driver's position, and gradually tightened the mounting screws. Once completed, he was able to put the door trim pieces back on and admire a job well done (before he hooked up the other door, of course).

REQUIRED TOOLS

- GM panel tool
- Universal panel tool
- "Cripes" clip tool
- Philips & flat-blade screwdrivers
- Flush cuts
- Spring-loaded center punch
- Right-angle pick
- 4-inch & 8-inch wire ties
- Silicone spray
- 3M strip caulk .
- Duct tape
- Hose-clamp tool
- Crimpers
- Strippers
- Electrical tape
- Cordless drill w/ ⅛-inch drill bit

CONCLUSIONS

Every rear shelf and every car door require a unique approach. The steps taken here in part three illustrate some of the techniques used by professionals when installing speakers. These basic concepts may be useful for a DIYer venturing down such a path, especially for the first time. Some speaker installations are relatively simple and hassle-free, others are downright complex. The design of your car and the exact shape of the speaker will dictate the degree of difficulty for either the first-timer or the seasoned pro. But remember, it's always wise to examine the mountain before beginning the climb! Next issue, we reach the summit of our four-part "Basic DIY" series when we tackle the low end and install a subwoofer system. See you then. ■

Micah Sheveloff can be queried about security and other car-stereo matters at Popdoggie@aol.com. You can also visit his shop on the Web at audiocoupe.com.

PARTS & COST FOR BASIC DIY, PART THREE

Boston Acoustics Rally Series RX67 6-inch coaxial speakers	$150/pr
Boston Acoustics ProSeries 6.5 6-inch 2-way speaker system	$450/pr
Miscellaneous (caulking, connectors, etc.)	$35
TOTAL	$635