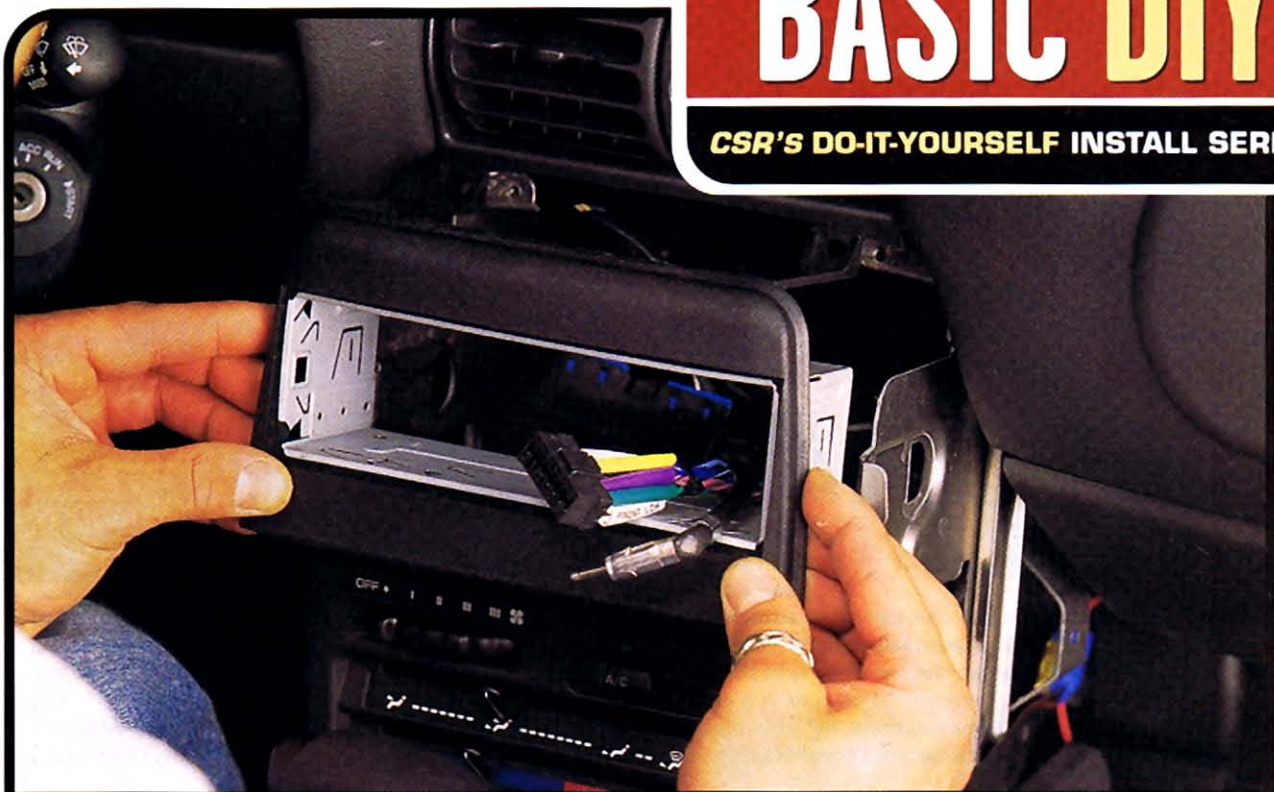


BASIC DIY

CSR'S DO-IT-YOURSELF INSTALL SERIES



PART ONE OF FOUR: HEAD START

HOW TO PROPERLY INSTALL A HEAD UNIT. BY MICAH SHEVELOFF

LET ME TELL YOU, I've sure seen some pretty crazy do-it-yourself (DIY) car-stereo installations over the years. Some have been exquisite examples of car stereo at its finest, but many DIY creations are ill-advised attempts at cramming audio gear into an automobile without much thought as to how it'll look, sound, and/or stand the test of time. In my humble opinion, the common thread found in every good car-stereo install is that the installer—whether he or she is a greenhorn DIYer or a hardened professional installation specialist—has taken the time to formulate an intelligent installation strategy and has followed sound installation techniques throughout the entire process.

And that's where this series comes in. Over the next four issues, I'll be chronicling the steps my installers and I use at my shop, Audio Coupe in Fairfield, Connecticut, to install a basic car-stereo system for \$2,500 (not including tools). The four installments will cover how to install a head unit, power amplifier and power and speaker wiring, front and rear speakers, and a subwoofer system. [We'll

also be giving away all of the gear used in this series; see page 34 for details on how to win it all—Ed.] Each step of the install process will be discussed in detail and clearly illustrated with gobs of photos. Our project vehicle for this DIY series

is a 1999 Saturn SL 2. We chose it for two reasons: 1) it's a perfect example of a typical 4-door, the type of vehicle many people drive today; and 2) it's an easy vehicle to work with.

This how-to series is designed to func-



MEET THE PIECES: After tidying up your workspace, lay out all of the components you'll need to complete the install (A; clockwise from top right): an installation kit, antenna adaptor, main wiring-harness adaptor, aftermarket wiring harness supplied with the radio, the head unit's faceplate and chassis, hose-clamp tool, ratchet, panel-removal tool, crimper, flush cuts, screwdriver, and wire strippers. **STOCK HOUSE:** The '99 Saturn SL 2 comes from the factory with a rather pedestrian AM/FM radio (B).



FIRST STRIKE: Before you can install an aftermarket head unit in your vehicle's stock-radio hole, you must, of course, remove the factory-installed radio. First, remove any dash or trim panels that may be in the way. Using a hose-clamp tool, depress the locking pin in the center of the plastic two-piece plunger-style clip that holds the trim panel in place (C). Remove the clips with a panel tool (D) and gently slide the shroud forward just a little bit, allowing access to the connections for the rear-defogger switch (E). After disconnecting the rear-defogger switch (F), carefully disengage the shroud so that it won't be scratched. (Process varies from vehicle to vehicle.)

tion as a loose set of guidelines, not as an exact installation blueprint. Car manufacturers change electrical system and interior designs all the time without warning, so how you approach each step may vary depending on the year, make, and model of vehicle you own. Before you start *any* mobile-electronics installation project, know your vehicle inside out.

THE GAME PLAN

To devise a proper installation strategy, you must first know your vehicle and what you want to accomplish with the sound system; i.e., if you want it to sound good and play loud, or you want it to hit mind-numbing sound-pressure levels (SPLs), or... I could go on forever. Every strategy will be different, so you have to think things through carefully and thoroughly before you make any equipment purchases and start removing things like trim panels and door panels. [For more on how to choose components and formulate a formidable installation scheme, see "Grand Designs," page 37—Ed.]

While the conceptualization stage is a critical first step in any car-stereo installation, the procedures (i.e., the install techniques) that you use to turn your sound-system dreams into reality is equally crucial. Generally speaking, I'd suggest looking for a qualified installation specialist to perform any mobile-electronics

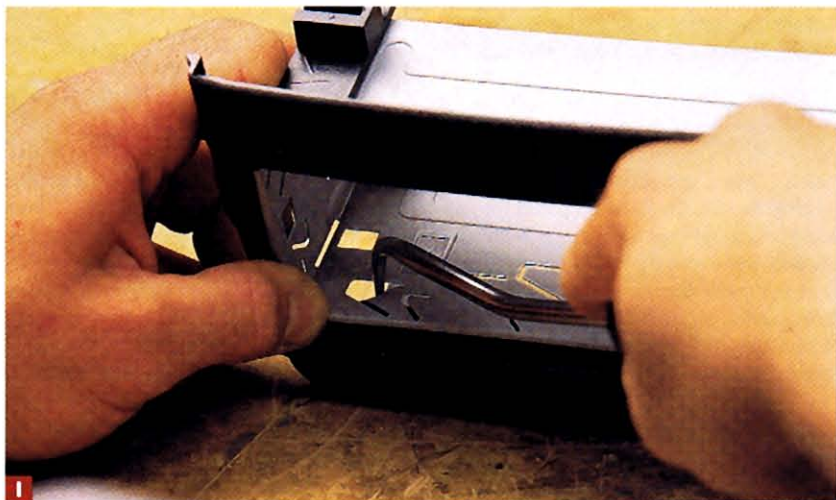


RADIO-FREE SATURN: Once the trim and/or dash panels are removed, it's time to remove the actual radio. (This process will vary from vehicle to vehicle.) With the shroud removed, use a 7-millimeter socket on a 1/4-inch ratchet with extension (G) to take out the bolts that hold the stock head in place and then carefully free the radio from its mount (H).

install. But for those of you with an itch to tackle a challenging DIY project, this series will provide all of the basics you'll need to properly install almost any simple car-stereo system.

PREP SCHOOL

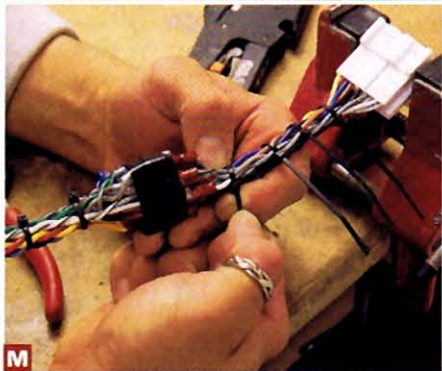
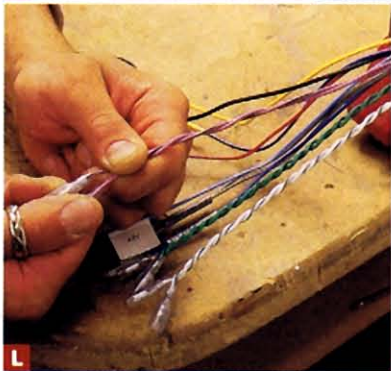
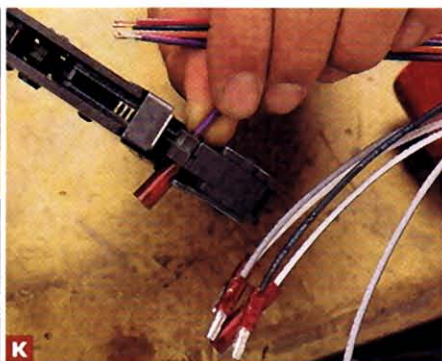
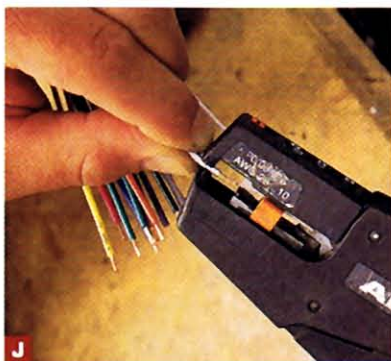
Before starting the actual installation process, there are several things you should do to make the whole process run smoother. First, start with a clean work



SOMETHING UP MY SLEEVE: To maintain the factory cosmetics as well as supply a sturdy mounting platform for the new head unit, you need to use a prefabricated installation kit. A hose-clamp tool mates the head unit's DIN-sized mounting sleeve to the installation kit by bending the locking tabs cut into the aftermarket mounting sleeve (I).

area. Make sure your workbench is clear, the floor is swept, and the vehicle has been attacked with a vacuum cleaner and is clear of debris. Second, use the proper tools so that the bits and pieces of the device(s) you're installing don't break or get scratched. Third, examine and familiarize yourself with all of the bits and pieces of the gear you're going to install. And last, but certainly not least, study the gear's installation instructions. This final step is key, and it shouldn't be overlooked. Be sure you clearly understand each step before you enter the vehicle. If you're fuzzy on anything, call the manufacturer's tech-support hotline (or, if they have one, their 800 number) and have them clarify any confusing points. If you need to call them more than once during the process, don't hesitate to do so.

The primary installer for this project is



WIRE WORLD: Now it's time to interface the aftermarket head with the factory wiring harness via an aftermarket adaptor harness. It's important to prepare the aftermarket and adaptor wiring harnesses so that they're neat and won't become entangled with the vehicle-specific wiring harnesses behind the dash. To prepare the two harnesses, strip an equal amount of insulation away from each wire (approximately $\frac{1}{4}$ inch) in both the radio and the adaptor harnesses (J). Crimp high-quality male/female bullet connectors onto the ends of the wires; male on the adaptor, female on the aftermarket harness, or vice versa (K). Once the bullets are in place, group the wires on each harness together and twist them into a loose braid so that they're organized and neat (L). Once the braiding is completed and the bullet connectors on the aftermarket harness are mated to those on the adaptor plug's harness, you should wrap the braids together using 4-inch wire ties (M). The final touch is a "once around" with electrical tape on the bundle of bullet connectors in the center of the newly braided interface harness (N).

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technician extraordinaire James Samudsky, the gentleman whose appendages (and other relevant body parts) can be seen pictured throughout this and subsequent installments (no pun intended). Here in Part One, you'll see Samudsky mount a Sony CDX-C6750 in-dash CD receiver head unit in the Saturn's factory radio hole. But first, he'll have to remove the factory (or OEM) head.

OFF WITH ITS HEAD

The Saturn came from the factory with a rather basic AM/FM radio with no cassette or CD player. It's being replaced by the high-power (i.e., 40 watts x 4) Sony CDX-C6750 CD receiver (\$280) with CD-changer control (though we won't be adding a CD changer into the Saturn's signal chain at this time; that'd be a future upgrade option).

Before you can install an aftermarket head unit in your vehicle's stock-radio slot, you (of course) must remove the factory-installed radio. The first step in this process is to remove any trim and/or dash panels that may shroud the original radio. As I said before—and it's worth repeating—every car is unique, so this process will be slightly different for every make and model automobile. Know the particular attributes of your vehicle's dash before proceeding any further.

In our project Saturn, a plastic shroud that matches the dashboard cosmetically covers the radio and the climate controls. Making things a bit more difficult, the shroud has a place for up to three pushbuttons flushed into its top. The function of those three buttons depends on the manufacturer-installed options package that's chosen by the vehicle's owner. With this particular Saturn SL 2, only the rear-defogger button is utilized; the other two buttons are non-operative.

The shroud is held in place by a pair of two-piece plunger-style clips; one on the passenger's side and one on the driver's side of the shroud. Using a hose-clamp tool, Samudsky depressed the locking pin in the center of the plastic clip, which caused the clip to release. He then removed the clips with a Snap-On panel tool and gently slid the shroud forward just a little, allowing access to the Saturn's rear-defogger switch connections. The defogger-switch connection must be disconnected because it's attached directly to the shroud. With the rear-defogger switch disconnected, Samudsky carefully removed the shroud to avoid scratching it.

Once the trim and/or dash panels are removed, it's time to remove the actual radio. (Again, this process will vary from vehicle to vehicle, so be prepared for any kind of mounting scheme.) With the shroud removed, Samudsky could see that the radio was held in place via two bolts and a metal bracket. He used a 7-millimeter socket on a 1/4-inch ratchet to remove them and set the radio free.



RECEPTIVE BEHAVIOR: Since the Saturn's stock radio was outfitted with a GM-style antenna plug, a Motorola-style adaptor plug was used to mate the Saturn's antenna with the aftermarket head. The antenna cable was simply plugged into the adaptor and given a "once around" with electrical tape to secure it (O).

Now that the stock radio is detached from its mount, all you have to do is disconnect the power- and antenna-wiring harness from the back of the radio and slide the device all the way out. Save it, because the beauty of this installation is that the original radio can go back in place if you return the vehicle to stock or if you're planning to trade it in or sell it.

WIRING SCHEME

The next part of the install is preparing the aftermarket Sony CDX-C6750 head and the associated wiring harness to fit into the factory dash locale and interface

with the stock wiring. (So that you have more room to move about, this procedure can be done on the workbench.)

Because the Saturn's stock radio is an odd shape and there's an accessory pocket mounted directly underneath it secured by the stock radio's mounting bracket, we needed to use some type of installation kit that'll allow the receiver to look appealing in its new home as well as supply a sturdy mounting platform. The need to use such a kit is typical of most aftermarket head-unit installations. Prefabricated installation kits are available from companies such as Best Kits, Metra,

and Scosche, and they can be purchased from any quality installation shop for about \$20 to \$40. They're custom-designed by the manufacturer to fit specific make and model vehicles, so be sure to choose the right kit for your car. For this install, we used a Metra General Motors installation kit (model number 99-3100, \$20).

The CDX-C6750 comes with the typical rectangular-shaped mounting sleeve that's supplied with most aftermarket heads. This sheet-metal sleeve secures the head into the dash kit and has sharp edges, so be cautious when handling it. Simply slide the sleeve into the install kit's radio opening and secure it to the kit by bending the locking tabs that are cut into the sleeve. The tabs are specifically designed to lock or secure the sleeve in place. Again, Samudsky used his hose-clamp tool to complete this operation, since it works well because of its angled design. The finished kit/sleeve assembly can then be set aside until later.

ENERGIZING HARNESSES

Now it's time to interface the aftermarket head with the factory wiring harness. Since the Saturn's factory power and speaker wiring are contained in one master plug (as is the case with most vehicles), we decided to use an aftermarket adaptor harness from Best Kit, the BHA-1858 (\$15). This type of adaptor will allow you to mate the aftermarket wiring harness with the factory harness without having to cut a single wire on the original factory-installed harness. Nice and clean! Another advantage is that using such an adaptor makes the job of re-installing the original radio much easier if the car is traded in or sold and you want to keep the aftermarket head unit, or if



HOME STRETCH: Mount the sleeve/kit assembly (P) and secure it using the supplied screws or via the factory screws whenever possible (Q). When all is snug, plug the wire harness and antenna adaptor into the back of the aftermarket receiver and carefully insert the head into the sleeve/kit assembly (R).



HEAD END: Snap the supplied plastic radio trim ring on the front of the head unit (S), reinstall all of the trim or dash panels (T), and pop on the receiver's faceplate (U). Voilà! You're done (V, below). Nice job!

you want to install an upgraded model. Such interface devices are also available from companies like Metra, PIE, and Scosche for \$15 to \$40.

You should prepare the aftermarket and adaptor wiring harnesses so that they're neat and won't become entangled with the vehicle-specific wiring harnesses that are also run behind the dash, such as the climate-control mechanism that's beneath this particular radio. This attention to detail also ensures that a mechanic who might be working on the vehicle at a later date won't have to struggle with and possibly damage the radio's wiring while trying to diagnose an electrical problem.

To prepare the two harnesses, strip an equal amount of insulation away from each wire (approximately 1/4 inch) in both the radio and the adaptor harnesses. This is in preparation for using high-quality male/female crimp-style connectors, commonly referred to as bullet connectors. These have essentially become an industry standard because they're reliable and can be disconnected easily



for future upgrades. Use only premium-grade bullet connectors. You can tell a quality connector by carefully inspecting the inside of the barrel. If it's copper all the way to the end, it's a winner. This is notable because the cheap connectors only have copper in half of the barrel and can easily come loose. Attach the bullet

connectors onto the ends of the wires using a top-notch crimping device. We use an Amp crimp tool that compresses each connector twice, once on the wire and once on the insulation as a strain relief. [See the "Required Tools" box on page 34 for a list of all of the tools used in Part One—Ed.] This two-stage method is critical for automotive use because it prevents the connection from failing from years of vibration.

Once the bullets are in place, group the wires on each harness together and twist them into a loose braid so that they're organized and neat. Each pair of speaker wires (positive and negative) should be grouped together, as should the 12-volt supply wires (constant power, accessory power, and ground). Be careful so that the braid isn't so tight as to put stress on the wires where they enter the main plug.

The next step is to mate the aftermarket wiring harness with the adaptor harness. It's very important that you read the head unit's wiring instructions as well as those

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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.

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that come with the wire adaptor. Be sure to mate the correct wires. Just because they're the same color doesn't ensure that they're supposed to be mated together. Follow the directions carefully.

Once the braiding is completed and the bullet connectors on the aftermarket harness are mated to those on the adaptor plug's harness, you should wrap the braids together using 4-inch wire ties. The excess of each wire tie should be cut off using flush cuts. The final touch is a "once around" with electrical tape on the bundle of bullet connectors to keep the connectors securely fastened.

THE FINISH LINE

The wiring-harness assembly is now complete and ready to be installed in the Saturn. However, there's still one problem. Remember, I said every car is different, and here's a good example: The Saturn stock radio uses a General Motors-style antenna connector that isn't standard fare on aftermarket heads. To remedy this, Samudosky used a Best Kit GM antenna adaptor (model number AADP-4B; \$10) to convert the GM antenna cable to a standardized Motorola-type connector, which will fit directly into the input on the Sony receiver. I have found that it's very important to use the best-quality antenna adaptor to prevent a serious decrease in tuner performance. Once the adaptor was plugged into the antenna cable, Samudosky secured the connection with electrical tape in order to prevent the adaptor from coming loose over time.

From here, you simply mount the sleeve/kit assembly and secure it with the supplied screws or via the factory screws whenever possible. When everything is snug, it's time to plug the wiring harness and antenna adaptor into the back of the new receiver and carefully insert the head unit into the sleeve/kit assembly. The wiring will rest behind the head as it's installed, and the receiver will lock itself into the sleeve automatically via metal catches on each side of its chassis.

Then all you have to do is snap the supplied plastic radio trim ring on the front of the receiver, reinstall all of the trim and/or dash panels, and you're done. Here, Samudosky also had to remember to plug in the rear-defogger switch before reattaching the radio shroud. But once the shroud was in place and secured, Samudosky popped the receiver's faceplate on and fired up the new unit. He

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left the receiver's faceplate off so as not to scratch it during the install. When all was said and done, the CDX-C6750 head worked like a charm.

CONCLUSIONS

It's important to note that anyone with a little knowledge of his or her vehicle's electrical system can try to install a head unit (or any mobile-electronics gear, for that matter). The question is whether they'll install it properly. There's certainly no shame in enlisting the services of a skilled professional installation specialist; if that's your bag, then this article should serve as a way to judge your installer's competence. But if you're a tried-and-true DIYer, this series should serve as an aid to help you through the process of installing a system. The simple message within all of these semi-complex instructions is to work slowly and carefully and do a neat job that you'd be proud of. Coming next issue: How to install a power amplifier and power and speaker wiring. See you then. ■

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

REQUIRED TOOLS

- Amp Tetra-crimper
- Amp wire stripper
- Snap-On flush cuts
- Snap-On door panel tool
- Snap-On hose clamp tool
- Screwdriver
- 7-mm socket
- 1/4-inch ratchet w/extension

PARTS & COST FOR DIY PART ONE

Sony CDX-C6750 CD receiver	\$280
Metra 99-3100 GM installation kit	\$20
Best Kit BHA-1858 GM	
wiring-harness adaptor	\$15
Best Kit AADP-4B GM	
antenna adaptor	\$10
Other parts	
(connectors, wire ties, etc.)	\$15
TOTAL	\$340