SMALL DETAILS THAT COUNT
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Right up front I'll admit to an unabashed love of aftermarket detail parts. I use them liberally throughout my model building. Sometimes the parts are used as the manufacturer intended, but a lot of the time the aftermarket parts are modified or used in conjunction with a scratchbuilt part or used to enhance a kit part. I also love to scratchbuild detail parts, but due to the time this takes I will use an aftermarket part to save a little time. The bottom line is that this is my idea of model building fun.

Interspersed through this seminar are techniques that I have developed over the years or have picked up from other modelers or read about in the model magazines. I don't always point these out as I use them, as I tend to assume that other modelers already know these same techniques. We all have our own ways of getting to the same end result, so if your procedure is a little, or a lot, different than mine, don't be afraid to bring it up during the seminar. I am always guilty of modifying techniques to suit my own building style. You should not be afraid to do the same. That said, lets show you a few of the tricks I have picked up over the years.

HEADLIGHT LENSES FOR "CAST-IN" HEADLIGHTS

Materials Needed:	**Tools Needed:**
Kit grille/headlights with headlight and parking light lenses cast in place, chrome plated, of course	Toothpicks and File Cards for mixing epoxy
DEVCON 5-Minute Epoxy, or your favorite brand	

This trick works best on a chrome plated part.

This technique has its best use if you are planning on entering a model in "Box Stock" class and the kit comes with this type of headlights. As you are allowed any kind of glue in assembly, I feel this would be an allowable trick, without going beyond the spirit of "box stock". Of course, a shelf model or promo would benefit from this technique. A full blown contest entry would require the headlight lenses being drilled out, the part being replated, and clear lenses being obtained for use in the new opening.

You can also use White Glue to do this, but I feel the Epoxy helps the illusion of a lens, as clear epoxy has a slight yellow color to it. This yellow tint enhances the overall effect.

Mix a small amount of the epoxy and immediately put a spot of it onto the chrome plated lens. Start in the middle of the lens and work it, in circular motions, to the headlight/parking light rim. Keep the epoxy inside the rim. Make every effort to keep bubbles in the epoxy to a minimum. There will probably be some tiny bubbles, but these will not be noticeable. The other very important thing to remember is to keep the lens horizontal while the epoxy sets up. You do not want the epoxy pooling to one side of the lens. It should lay evenly over the whole lens. You also want to get the epoxy spread over the lens while it is still very liquid. For this reason, only do one or two lenses at a time. Let them set up, then mix more epoxy and do a coupe of more.

ADDITIONAL NOTES:

This trick also works over chrome foil. An example of this would be for fender turn signal lights. Foil the indicator light trim ring and lens. Once you have mixed the epoxy, you can tint it with clear red or orange acrylic paint, like the TAMIYA brand. Apply the epoxy to the lens area and allow it to cure.

STACKING PHOTOETCH PARTS TO ACHIEVE THICKNESS

Materials Needed:	Tools Needed:
Photoetched Parts to be "Stacked"	Tweezers - 2 Pairs
Clear Paint or Superglue	Fine Paint Brush
	Pin Vise & Drills

Some photoetch parts look good from the side that you see the overall shape, but disappear when viewed edge-on. Some examples are Valve Cover "T" Bolts, Wire Looms, Carburetor Linkage and Wheel Knock-offs. The reason is the thickness of the metal in which the parts are etched. This thickness is usually about .006 inches. At times the part being represented is thicker than this, even when scaled down. The solution is to "stack" several of the same shape part and glue them together.

Using Valve Cover "T" Bolts as an example, we find that the DETAIL MASTER items look good when seen from the side, but from other angles are almost invisible. Remove the parts from the metal sprue tree and clean up the attachment point with an abrasive disc in a Dremel Tool. For more on this abrasive disc tip, refer to the MODEL BUILDING TIPS.

In preparation for the next step, drill several holes in a piece of scrap plastic, the size of the end of the "T" Bolts. Also, open the bottle of clear paint.

Three of these look good when held together. Stack them, line them up and hold them in a pair of tweezers. Use the second pair to wiggle the three pieces into alignment. Use the clear paint as an adhesive. Apply it to the edges of the parts with a fine paint brush. Put the part in the previously drilled hole while it dries.

The clear paint is a weak adhesive, but I like it because it all but disappears when applied. Super glue can also be used, but some of it may remain on the edge of the pieces.

THROTTLE RETURN SPRINGS

Materials Needed:	Tools Needed:
Stranded, Insulated, Fine Model Train Wire - stranded wire should be .002" to .004" diameter	Fine, Pointed, Tweezers - 2 pairs
	Small Pin Vise
	Jewelers File, No. 4 Flat or 400 Grit wet/dry sandpaper
Brass wire - .010" diameter	

There are a couple of aftermarket suppliers who offer Throttle Return Springs. These are fine for some applications, but I am very "scale conscious", so I make my own springs when I want them even smaller. Here's how!

First, you need to find the correct kind of wire. I use a wire offered by WALTHERS model train suppliers, called "HOOKUP WIRE", part #942-414. A package contains 6' lengths of red, green, black and brown insulated wire that is .022" in diameter. The wire has three strands of silver colored wire, each .004" diameter. Most of the springs I've seen used on cars are silver in color, so the silver wire is important.

The .010" brass wire is available from SPECIAL SHAPES COMPANY and other sources. Cut a 1" length and put it in the pin vise, with about 1/16" sticking out. Dress the end of the wire with the file or sandpaper so that it is smooth (i.e. no burrs). Now pull the brass wire out of the pin vise until there is about 1/4" to 3/8" sticking out. Take a length of the stranded wire and the pin vise in one hand, grab the other end of the stranded wire with your other hand and start winding the strand around the .010" brass wire, keeping the coils tight together. When you have about an 1/8" of coils, slide the "spring" off the .010" wire. Grab each end of the "spring" with a pair of tweezers and gently pull it apart until it "looks right". Lay it next to the place on the engine where it will eventually end up. If it is to short or to long, make another, adding or subtracting coils until it fits between its connecting points. Once you have the right length, bend loops in each end and install the "spring" on your engine. You can change the size of the spring by using a different size stranded wire and/or a different size brass wire.

DISTRIBUTOR BOOTS - 90 DEGREE TYPE

Materials Needed:	**Tools Needed:**
Your choosen ignition wire	X-Acto Knife with No. 11 Blade
Wire Insulation that fits over the ignition wire, matching or contrasting color	Tweezers
	Straight Pin
	Pin Vise
Superglue	

Again, this is a part that is offered by the aftermarket, in this case R.B. Motion. They even have these right angle distributor boots in four scales: 1/25, 1/16, 1/12 & 1/8. However, this technique seems to work best for 1/24-1/25 scale engines.

Determine the ignition wire you will use to wire your engine. We prefer the DETAIL MASTER 1020 or 1050 series ignition wire. It comes in 8 colors, the 1020 series being about .011" diameter and the other .016"diameter. When the core wire is pulled out, the wire insulation that you use for the boot material should fit snugly over the ignition wire. If you want red or black boots, DETAIL MASTER's Coolant Hose will work. If you want the boots in another color, you may have to look around.

Take a 3-4 inch length of the wire insulation you will use for boot material, with the core wire removed. The boot wants to be about .020" to .030" on each side of the 90 degree bend. With a sharp X-Acto blade, make a triangular notch in the side of the wire, just before the end of the wire. Leave just enough material so the insulation stays in one piece.

Now we'll make a little tool. Remove the head of the straight pin and put the cut end into the pin vise. Leave a quarter to one half inch sticking out. If you have a concrete floor or piece of brick around, rub the sharp point of the pin on its surface to dull it slightly, and round it off. If you have trouble getting the ignition wire into the boot wire, use this tool to expand the diameter of the boot wire slightly, so the ignition wire will fit into it.

Once you have the ignition wire inside the boot and all the way across the notch, cut the boot away from the rest of the boot material. Make the cut so the length of the boot either side of the notch is equal. Now push the boot further onto the ignition wire. Using tweezers, bend the ignition wire 90 degrees at the notch. It should stay in this shape, but put a tiny drop of superglue at the notch and make sure it stays a 90 degree bend while the glue sets up. You have your first 90 degree Spark Plug or Distributor Cap Boot. If only the distributor or the plugs on your particular project uses 90 degree boots, then you have seven more to make (assuming an 8 cylinder engine). If the 90 degree boots are used at both ends of the ignition wire, then you have 15 more to make.

If your ignition wire has 90 degree boots at both ends, you will have to make the wires to the exact length before installing them on your engine. The 90 degree boots will not slide on the wire, once bent. To make this easier, you may want to install an extra piece of ignition wire from each distributor point to each plug location, without any glue. Get it to lay where you want it, then nick the wire insulation at each end. Remove the wire and straighten it out. Cut it at each nick and use it to measure the ignition wire with the 90 degree boots. Be sure to allow a little extra wire at each end for the bend and to go into the hole in the cap and at the plug location. Also, be sure to put wire looms on the wires before you put the second boot on. Loom location is something else to figure out before the wires are fit to the engine.

OIL DIP STICK AND DIP STICK TUBE

Materials Needed:	**Tools Needed:**
Brass tubing, thin wall, 1/32" Dia. Get from SPECIAL SHAPES	X-Acto Knife w/ No 11 Blade
DETAIL MASTER DM-1152 .015" Fuel/Brake/ Nitrous Line	Tweezers
MODEL CAR GARAGE MCG-609 Nut & Bolthead Details or Replicas & Miniatures RM-26C .031NS Last Nut & Bolt	Round, Needle Nose Pliers
Sheet Styrene - .015" Thick - for base plate	Drill bits - Size 61 - 80
	Pin Vise

This is a neat little detail that adds a lot to an engine and almost always seems to draw the response "Oh, it has a Dip Stick!". The first order of business is to determine where it will go on the engine. Refer to some engine photos or the car you are modeling, if possible. If you are building a shelf model and just adding a little engine detail, then the important thing is to locate it in a "convincing" place. Sometimes, the model engine block will have a bulge down the side of the block or a little triangular plate just above the oil pan. Some Chevy engines have the bulge and that is where the dip stick enters the block and goes down into the oil pan. On other engines, a tube would go to the triangular plate, but this tube is rarely modeled on a kit engine. It is this latter instance that we will be modeling. Along with the dip stick and dip stick tube, you may, or may not, have to make the triangular base plate. Also, for this seminar, we are dealing with V-8's. Some research will be necessary for other types of engines.

On most V-8 engines I have seen, the dip stick tube comes up the side of the block from the oil pan and comes out between the block and exhaust manifold. To model this you will have to determine if there is enough room to do this on your project. If not, you will have to do some filing on either part so the 1/32" tubing will fit between the two pieces without interference.

The tubing I use comes from SPECIAL SHAPES COMPANY in Illinois. This "thin wall tubing" has a .006" wall thickness and comes in 11 diameters from 1/32" to 3/16". It is also telescoping. The larger sizes work well for exhaust pipe ends. I use the smallest sizes for all kinds of things. We'll use the 1/32" for the dip stick tube. Cutting a length of it is as simple as rolling the tubing, on a hard flat surface, under a sharp No. 11 X-Acto blade. Once scored, it will snap in half. The larger diameters can be cut the same way, but you may have to back it up with the next smaller size inside the size you're cutting. Refer to the MODEL BUILDING TIPS later in this text for other tips on working with this tubing.

Determine if the tube has to have any bends to get from the bottom of the block to the top of the head. If you can keep the tube more or less straight, the dip stick can be made to function. If the tube has even a slight bend, the dip stick will probably bind up inside the tube, at the bends.

To make the dip stick, take a length of the DETAIL MASTER .015" Fuel/ Brake/Nitrous Line, which is a soft aluminum wire, and hold it on a hard, smooth surface. Remove the blade from an X-Acto handle and

use it like a rolling pin to flatten the aluminum wire. Keep the pressure constant so the wire maintains a uniform thickness. You only need about a 1/4" of the wire flattened. The round part of the wire goes down the dip stick tube. Bend the flattened end around the fine end of the Round Nose Pliers or the smooth end of a No. 61 Drill Bit. This makes the finger pull part of the dip stick. THE MODEL CAR GARAGE MCG-609 Nut & Bolthead Details also has washers. Superglue one of these at the point where the round and flat part of the wire come together. This represents the "cap" that covers the top end of the tube. Cut the round portion of the dip stick to a length that fits into the brass dip stick tube.

Drill a 1/32" hole in the .015" styrene sheet. Then cut a tiny triangular shape with this hole in its center. This is the dip stick tube base plate. Glue it at the place where the tube enters the block. Put a tiny photoetch nut at each corner of the base plate.

Leave the dip stick its natural finish. Check your research to see if the dip stick tube is engine block color or another color.

MANUAL TRANSMISSION LINKAGE

Materials Needed:	**Tools Needed:**
Manual Transmission of your choice, with or without cast-in linkage	X-Acto Knife w/ No. 11 Blade
DETAIL MASTER DM-1153 .020" Fuel/Brake/ Nitrous Line or other .020" wire	Drill Bits - Sizes 61 to 80
THE MODEL CAR GARAGE MCG-2031 Throttle Linkage or DETAIL MASTER DM-2420 Carburetor Linkage & Hardware	Pin Vise
1/16" Styrene Sheet - Small piece	File - Flat - 4 Cut
	Tweezers
	Needle Nose Pliers

A lot of model kit manual transmissions come with the linkage arms cast into the side of the tranny. Because of the way styrene is cast, these arms are a solid piece back to the body of the tranny. They look much better if there is some air between the linkage arm and the tranny. The first thing we must do is carve this "cast-in" detail off of the tranny side. Some people do not fancy the prospect of cutting up the model kit pieces. I guess there is always the fear that if you slip and ruin the part, suddenly you have a parts model, whether you wanted one or not. This is a very simple operation, and you don't have to be a surgeon. Using a sharp X-Acto No. 11 Blade, just carefully shave very thin layers off the cast-in arms. It may take a few minutes, but the results will be worth it. Once you get close to the side of the tranny, follow the tranny shape and continue to shave off thin layers, working into the corners, etc. When you are as far as you can go, hold the blade like you are going to scrape off mold lines, and scrape the final bit of the linkage area so it is smooth with the tranny side. If the tranny has that "cast" texture, do not worry about restoring it. Once the tranny is painted, it will be barely noticeable. If the linkage arm went over some bolt detail on the tranny side cover, it can be restored with a photoetch nut/bolt. Files are also helpful in restoring the tranny shape.

The two or three linkage arms, or shift arms, meet at the back of the tranny at a linkage "junction box", where they are controlled by the shift lever. If this part on the kit piece has a well defined triangular shape, do not remove it. If it is an indistinguishable "blob", get rid of it. If it is not there at all, you will have to make one from the 1/16" styrene sheet. If you are using one of those kit manual trannys that has no shifter arm detail, you can go straight to the fabrication of the shifter linkage.

The cover on the side of the tranny usually has two pins coming out of it and each of these pins has a small linkage arm hanging off of it. These linkage arms can be made from .010" by .040" strip styrene or they can be obtained from THE MODEL CAR GARAGE or DETAIL MASTER Carburetor Linkage photoetch sets. Look for the straight arms, about 1/16" long, with a hole at each end. If you make them,

drill two .021" holes about 1/16" apart in the strip styrene. Then cut the linkage arm off the strip stock. Drill out the pins on the side of the tranny and put a short length of the .020" wire in each hole. Leave just enough sticking out for the linkage arms. In the case of a four speed tranny, there is a third shift arm. It comes out at the back of the gear box portion of the tranny, where the long cone shaped part begins. If you are modeling one of these, put a third hole, pin and linkage arm at this point.

If you have to make a linkage "junction box", cut a triangular shape out of the 1/16 styrene sheet, so that each side of the triangle is about 1/16" long. Clean up the cut marks with a file, then round off one corner of the triangle. This is the top. Mount this piece at the very back of the tranny and to the left side. Very short linkage arms come out of the bottom of this junction box; two or three, depending on whether it is a three or four speed.

When you make the shifter arms from the .020" DETAIL MASTER wire, you can just make a 90 degree bend and put the wire into the bottom of the junction box. Those of you that are really gluttons for detail punishment can fit portions of the photoetch carb linkage arms into the bottom of the junction box and hook the shifter arms to these.

The .020" wire shifter arms will have to have bends and kinks in them, to get from the junction box to the side of the tranny. They will run more or less parallel with each other, so fit each arm so they would not "bang into each other". You only see this detail when you turn the model over and view the chassis, but when seen, it is sure to bring out some "Ohs" and "Aahs".

This covers the detailing tips I wanted to share with you in this seminar. Before we wrap this up, however, I'd like to tell you about some general model building tips that you might find useful.

MODEL BUILDING TIPS

1. **USING MAGNIFICATION**. In the last couple of years I have noticed I can not see the fine detail that I use to take for granted. There are several kinds of magnifiers to choose from. I have been using the OptiVISOR brand magnifier with a No. 4 lens for several years and like it very much. It is binocular and fits on your head. As such, it moves wherever your head, and eyes, do. The "visor that the lenses are attached to swings up out of the way when you want to see normally. When down for use, you can still glance below the lenses if you need to check something with normal vision.

Many of us "baby boomers" are getting older and our eye sight isn't what it use to be. The point is, get some kind of magnification, if you, too, have found it harder to see the details. You will lower eye strain, and build better models.

2. **DETAILS FROM STYRENE STRIP STOCK**. Do you use styrene strip stock, such as the EVERGREEN brand, to fabricate details? If you have first been cutting off the piece you plan to use and then drilling or shaping this tiny part, try reversing the procedure. Use the strip stock as a handle. Do as much drilling, shaping, sanding, finishing, etc. as possible before you cut the part from the rest of the strip.

This would also apply to wire. Do the shaping and filing first, then remove the piece from the rest of the wire. Also, use a pin vise to hold small pieces of wire while you work on it. That's one of the jobs they were designed to do.

3. **TUBING TIPS**. There are times when you will want very tiny wafers of either aluminum or brass tubing. When using the cutting technique of rolling the tubing under a knife blade, nine times out of ten the piece takes off for that shag carpeting. Here are two ways to keep this from happening. The first one is

to fasten a piece of masking tape, sticky side up, to your work surface, then place the tubing on the tape and do the roll and cut procedure. The tiny part should stick to the tape when parted from the main stock. The other trick is to put a piece of wire inside the tubing, then do the roll and cut procedure. Make sure the wire is as close as possible in diameter to the inside diameter of the tubing. The wire holds the tiny wafer when it separates from the main stock.

4. **IMPROVING "HI-TECH" WIRE LOOMS**. These ignition wire looms are offered in photoetch from DETAIL MASTER and THE MODEL CAR GARAGE. They add a lot to modern street rod engines, however, here is a little detail trick that will make them look even better. The wire "stand-offs" that hold the ignition wire actually have some thickness to them, on the order of 1/2". This is about .020" in scale. The photoetch metal parts are about .006". Get a piece of EVERGREEN styrene strip .015" or .020" thick by the height of the wire stand-offs. Be sure to leave the tabs exposed that secure the looms to the loom rack. Superglue each stand-off to the strip stock, laying them out in a row, with some space between each. Take a drill bit the size of the hole in the stand-off and with a pin vise drill each hole, using the metal stand-off as a guide. Clean up the back side of the holes and then cut the stand-offs apart. These are usually a color other than metallic, so paint them to match or contrast your engine color. The final detail is put a dot of silver paint or photoetch nut/bolts on the top edge. If you add these, make sure they are between the wires. Check photos of the real thing to see what I mean.

5. **PHOTOETCH STRAPS OR HOSE CLAMPS**. There are hose clamps offered in photoetch by a couple of aftermarket companies. If you are in a pinch and need something quick to finish a project, look no further that the photoetch "frames" or sprues that some photoetch parts come attached to. They are usually .030" to .040" wide and 1/4" to 3/8" long between junctions. This stuff makes great straps or hose clamps.

6. **CLEAN UP OF SPRUE POINTS ON STAINLESS STEEL PHOTOETCH**. Stainless steel is pretty much impervious to the average needle file. If you are looking for something that will remove those little nubs left on stainless steel photoetch detail parts, try this. DREMEL makes little abrasive discs that usually come packaged with about three dozen in a small container. It is Part No. 409. Get some of these and the special arbor that holds them. Use it in your DREMEL tool at moderate speed, and wear eye protection, to "grind" off those sprue nubs. Be sure to hold the part being ground on with needle nose pliers.

7. **RESEARCH**. The last subject we'll discuss is research. There are lots of magazines out there on every subject under the sun. There is bound to be one on your favorite type of vehicle. Then there is a veritable gold mine of books on automotive topics. Get a CLASSIS MOTORBOOKS catalog. Even if you don't build "replica stock" models, research is still important. Research shows you how the real cars are built. It also provides an "idea" file for future model projects, whether or not you get "modelers block". Besides, for most car modelers, it is just fun reading and learning about real vehicles. Another source not to be overlooked is car shows. Get a still camera or video recorder to capture all those details you will never remember when working on that killer project.

As Buggsy would say, "Th-th-that's all folks!" Keep building and keep your fingers clean.

INFORMATION ON COMPANIES MENTIONED IN THIS SEMINAR:
When contacting them for a catalog, please include a LARGE, STAMPED, SELF-ADDRESSED envelope.

SPECIAL SHAPES CO
P.O. Box 7487
1356 Naperville Dr.
Romeoville, IL 60446-0487
630-759-1970
Brass stock & shapes, some tools

THE MODEL CAR GARAGE
2908 S.E. Bella Rd.
Port St. Lucie, FL 34984
561-343-0495
Photoetch & aluminum detail parts

DETAIL MASTER
146 Halstead Street #117
Rochester, NY 14610
716-482-0970
Detailing wire, fittings, photoetch & aluminum parts

RB MOTION
P.O. box 47
Bryon, OH 43506
419-636-0139
Aluminum details & spark plug boots

REPLICAS AND MINIATURES CO. OF MD
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Milwaukee, WI 53218
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