

How to Build Better Auto Models

***The Judging Guidelines and Model
Construction Considerations of the
GSL Championships***

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Section One: Administrative Rules

- 1. Policy.** The GSL Championship provides a hospitable arena in which scale vehicle modelers may compete with the assurance of a fair and unbiased evaluation of each model entered in competition, regardless of scale, subject matter or building materials used. There is no effort to “spread the gold”: A great model may win Best of Class and any number of Master Awards, including Best of Show.
- 2. Determining the Qualification of Each Model for Each Class.** Though the greatest latitude is afforded each contestant in the placement of a model in a Class, the final determination of the appropriate placement of each model in each Class is reserved for the GSL Judges. In the case of incorrect or questionable placement of a model in a particular Class, the judges will attempt to contact the contestant (or the contestant’s representative) and discuss the problem. If the contestant or contestant’s representative cannot be found, the GSL Judges reserve the right to reclassify any model.
- 3. Judging Procedures.** A three-person GSL judging panel evaluates the entries, continuing on a Class-by-Class basis. The judges “walk through” the Class, doing an initial examination of the entries, and eliminating those models with gross craftsmanship flaws from further judging. A technically-sophisticated model lacking basic craftsmanship will not win a Class award. The remaining models are then judged on detailing, technical innovation, operational features and other distinguishing characteristics. No written score “points” sheet is used, and all decisions by the judges are agreed upon by unanimous vote following multiple examinations and evaluations of each entry in a Class. All decisions are final.
- 4. Judging Privacy.** No contestant is permitted in the Contest Hall during judging. Only *preauthorized* representatives of the hobby media are permitted entrance and then only for photography. Additional administrative personnel may also be admitted at the discretion of the judges.
- 5. Disqualification Rules.** Any model entered in competition may be disqualified if it:

7. Entries. Once officially entered (defined as registering, paying a fee – except for Junior Class entries or entries by builders 16 years of age or younger – receiving a registration slip and entering the Contest Hall), a model **may not** be withdrawn from competition and must remain in the Contest Hall. All models must be placed in the Contest Hall by 5:00 p.m. Saturday: NO late entries will be accepted. No work, other than repairs, may be

Section Two: Construction Guidelines & Considerations

The following is offered as a guideline for the modeler who is building for serious competition, or who wishes to explore new techniques for constructing more realistic models.

1. Necessary Model Features. ALL models must be **USE-LEGAL** for the Class entered. "USE-LEGAL" is defined as being functional according to its intended use.

For example, Factory Stock Class models must be road-use legal for the time of their manufacture. Competition-Class models must have all applicable safety equipment (roll bars, scattershields, fire extinguishers and so forth) required by the sanctioning organizations for the vintage vehicle. Custom/Street Rod/Street Machine and models in either Commercial Vehicle Class must be display common equipment required by the vehicle code (if applicable) for the vintage vehicle constructed. All models must be designed and built with the "practicality of use" in mind. For example, there must be space in fender wells to allow wheels to turn without interference, there must be reasonable space between a steering wheel and seat, and so forth. Similarly, entries in all other classes must be functional and practical for their use.

2. Model Construction Considerations. To create a model that convincingly represents the vehicle you wish to portray, consider the following guidelines as you plan and construct your model:

A). Define what you want your model to be. Get a CLEAR overview of what you want to build and how you wish to build it before you begin. This process will give you a goal to work toward, and produce standards to work to as you build. Visualize how your subject matter must look to represent the intended style / category / type of vehicle: Analyze what the viewer/judge will need to see to be convinced of the

realism of your model. In the case of a “weathered” vehicle, it may help to create a “story” or “history” of the model to clarify how and why it appears as it does. Also, research what equipment was available at the time the model represents. For example, don't put new radial tires on a 1953 domestic vehicle entered in the Factory Stock Class.

- B). *Set Schedules.*** Estimate how long you can or wish to spend on a model, then divide the overall project into blocks of time for each major component or stage. This will help give you a sense of completion, not just the sensation of being overwhelmed by an unending project.
- C). *Research/present your subject.*** If you are replicating a specific vehicle, be sure of your subject. If the model represents a specific point of time in that vehicle's life, “freeze” that moment and construct your model to accurately reflect it. For example, if you are replicating a custom that has been restyled several times, research and confirm the details particular to a specific “version” of that vehicle. Don't forget to document that research for the judges!
- D). *Think in terms of sub-assemblies.*** Once you have defined your goal(s), divide your project into sets of sub-assemblies rather than visualizing the project as a single whole. In doing so, the entire scope becomes more manageable and less daunting, especially complex models. This approach also reduces the sense of getting overwhelmed, and gives you the ability to work on different sub-assemblies while waiting for paint or glue to dry, parts to arrive, and so forth. *Treat each sub-assembly as a model in itself.*
- E). *Build models like “real” automobiles.*** Auto manufacturers build their cars the way they do for ease of assembly. If your goals are realism and a relatively trouble-free assembly, then build your models as if they were in 1:1 scale. Break down the model into major assemblies which are integrated with other sub-assemblies to create a complete model.
- i). *Determine the basic assembly design of your model.*
Are you going to build a body-on-frame model or a unibody model? Do the necessary research: Factory or

auto dealer literature is often a good source of information.

- a). If you are modeling a unibody car, construct the underbody platform (either by modifying the kit piece or by scratch-building one), but do not attach it to the body until you have finished all of the work that requires full access to the "inside" of the body. If you are going to open the doors, hood and trunk, modify the body, or smooth out the inside of the roof (to remove ejection pin marks, etc.), complete these tasks *first*. Build your door/hood/trunk hinges and make sure they fit. Make whatever changes are necessary to the underbody platform, including suspension pick-up points, and then mate the platform to the body shell. This body/platform assembling procedure allows you to stabilize a body that has been weakened by opening the doors, hood and trunk. Of course, you will assemble your model through the openings, but that isn't much of a problem if you work on the sub-assembly approach, and install these sub-assemblies in their proper sequence.

- b). If your model uses body-on-frame construction, you will have to create a floorboard and a separate frame. Cut the kit's flooring away from the frame and scratch build a new underbody from raw materials (plastic or brass), using the kit part as a rough guide. The plastic frame can then be used (after clean-up) or you can take it to a jeweler and have it cast in brass. Either way, you have simplified your final construction tasks, and created a fresh canvas to apply your detailing tricks. The frame should have small pins affixed to the top side which will fit into correctly-located holes on the body so that you can always test-fit that frame to the same place on your body. Also, cut open your doors, trunk and hood, fit the hinges, and then attach the floorboard to the body shell. Again, you'll have to assemble the model through the openings in the body, but if all the major components have been previously and positively located, this is not the difficult task that it seems.

- ii) *Use a "locating pin" approach to install most components.* The sub-assemblies on your model must be test-fit repeatedly before completion to be certain that the parts fit together in the same place EACH TIME. Install small brass pins in pieces to locate the various major and minor components.
- iii) *Think about interfacing all parts.* It is probably impossible to think completely about the shape and size of every part, and how those parts interact with all other parts early in the planning stages. However, as sub-assemblies and components are built, they should be fitted to other parts or sub-assemblies by the positive locating techniques described above. This approach should also lead you to start to think seriously about how the dimensions of major sub-assemblies and their components, and will influence the use and placement of other sub-components.
- iv) *Assemble major sub-assemblies.* For example, assemble the rear axle as a unit, then fit it to the springs, and then test-install that assembly on the frame or unibody. If you doubt an assembly will survive much handling, glue together a "mule" (of exact exterior dimension and mounting points) and use it as a fitting guide.

F). *Make each part, and each sub-assembly, a masterpiece model in itself.* It is important to fashion each element of the model as if it could be entered in a contest without being combined with other parts. By treating each part, then each sub-assembly, as if it *alone* would determine the character and quality of the entire scale vehicle, you are more likely to make sure that the fit, finish, and realistic appearance are consistent and convincing throughout.

G). *Test-fit everything repeatedly.* As you continue to create levels of detail, you will always be amazed at how many glitches will show up as you check and recheck the fit of the pieces that you have crafted. The goal is to reduce the number and severity of final fit and finish problems that *always* crop up during final assembly.

H). Compound Errors "Downward." By establishing the "outer parameters" of each sub-assembly and how they fit with other assemblies *in the early stages*, you can work within the confines of those parameters and ensure correct fit of the entire sub-assembly into the model. This also means that dimensional errors (or "tolerance drift") will be contained within each sub-assembly, and not compounded throughout the entire model.

- i). *Eliminate the compounding of tolerance drift* When you get many parts that fit together, the combined physical intervals between those parts compound to the point that a seemingly insignificant misfit in each area can result in a significant misfit of parts or entire sub-assemblies with an adjacent area. Think about ways to reduce these tolerances.
- ii). *"Cheat" parts fit so that they appear to be the correct size, or that the entire part is present.* We build in small sizes which means that the compounding of panel thickness, the fit between parts, and structural requirements often don't leave space for an accurately-sized part. In that case, try to place the part so that the fact the part is too short, is simplified, or is otherwise inaccurate is hidden.
- iii). *Test-fit body parts to check for paint interference.* Before you apply your final coats of paint, test fit the major exterior body pieces (doors, trunk, and hood and allow for paint thickness which can foul up the best plans at final assembly). If necessary, lightly sand interfacing panels (e.g., opening door-to-fender interface) on the edge to reduce the thickness of the paint before applying the final coat of paint.
- iv). *Paint the exterior of the body early.* This will permit you the time to find and fix any flaws. Leave enough time – at least three weeks – for the paint to shrink or "settle" before polishing.

I). Make your final assembly area surgically clean. Wear cotton gloves, and lay an old white T-shirt or soft cotton cloth over your work area. Consider placing a piece of glass over a white or light gray background on your work surface, so you can easily see paint, glue or other

contaminants. Keep the adhesives "off site" and import small amounts of adhesive to the model as needed. Never work above your model with any tool, adhesive, sandpaper, or any heavy or threatening object that will damage the model if it falls, is dropped, or is dripped on the model or a component.

J). *Get Advice from other Builders.* Scale vehicle modelers are generous in sharing their solutions to various building problems, including which materials and techniques work best. If you see something you like, ask how it was done. If someone asks you how you accomplished a particular task, explain it. The exchange of information is a big help in better building and is one of the most fun and enjoyable aspects of the hobby of scale vehicle construction.

K). *Take Your Time.* A great enemy to quality building is impatience and its companion -- the belief that spending a lot of time on a single model is inconsistent with enjoying the hobby. Excellence in building has a price and, if you pay it, you will be richly rewarded with a work of miniature automotive art.

Finally, relax a bit. Remember that not every model has to be a contest winner if you don't want it to be. Alternate "slammer," curbside or modestly-detailed models with the major projects to keep your interest alive and your modeling fresh.

Section Three: Judging Criteria & Guidelines

1. Judging Criteria. GSL Judging criteria focuses on the basic craftsmanship and realism of each model, including elements of scale thickness of panels, realistic use of color, authentic hydraulic/electrical/ mechanical detailing, quality of paint, and a convincing overall appearance. Too often, models displaying sophisticated detailing and operational features do not win because they lack in areas of basic craftsmanship. The GSL Judges evaluate the sophisticated elements of any entry only **after** basic craftsmanship criteria have been evaluated.

The success of the GSL Championship depends on the personal integrity and good-faith conduct by everyone, including participants, contestants, GSL staff and judges. Everyone's enjoyment of the GSL Championship is enhanced when we all abide by the written rules and common courtesy,

and when no one tries to "bend the rules" or take advantage by entering a model they have not built in accordance with the rules of the GSL Championship.

2. A Few Words about Basic Craftsmanship. Each contestant should be certain that *basic* craftsmanship considerations are met:

- A. *Absence of Seams.*** Remove all seams where parts are joined, by filling with putty, followed by careful sanding, priming and painting. GSL Judges carefully examine all parts for seams, especially in hard-to-reach spots.

- B. *Removal of Parting Lines.*** Parting lines (slightly raised ridges), created when multi-piece dies are used in the production of model kits, are present on parts of all models. Carefully examine all parts of the model and remove parting lines by using fine sandpaper or a fine-grit sanding stick. When removing parting lines from round parts, care must be taken to avoid creating "flat" spots on the part. GSL Judges carefully examine all parts of each model to determine if the modeler has removed all parting lines.

- C. *Removal of Ejection Pin Marks and Copyright Notices.*** Ejection pins (round raised areas or round debossed areas) leave marks when the freshly-injected plastic parts are ejected from the dies. Take care to grind out and fill embossed ejection pin marks, or fill debossed ejection pin marks, to present a more realistic appearance. Often, these ejection pins appear under hoods, under roofs, on flat areas of undercarriages or chassis, and are sometimes difficult to remove. GSL Judges thoroughly examine all areas of the model to determine if all ejection pin marks have been removed. Copyright notices also often appear on the chassis, or on other visible surfaces, and need to be removed.

- D. *Careful use of Adhesives.*** A common problem is the incorrect and/or excessive use of adhesives that can mar the exterior finish or other parts of a model. Consider these guidelines:
 - i) Don't use instant glues to attach clear parts. It is better to use Krystal Kleer™ or similar products to affix windshields, headlights/taillights, gauge fascias and similar parts.

- ii). Instant glues are used when permanent, hidden joints are desired. Depending upon application, gap-filling or the thin variety may be used.
- iii). 5-minute, two-part epoxies are best when hidden recesses need to be filled when attaching parts.
- iv). Design your model so that attachment points between parts are hidden during the final assembly. For instance, create ledges on which parts like seats, dashboards, unified chassis/underbodies can rest and then attach them by locating pins, and leave no obvious adhesive joints.

E. Judging Elements. The following guidelines will be considered by the GSL Judges as each entry is evaluated. The items below are not to be taken, necessarily, as requirements for each entry/model. They are only suggested checklists for construction elements that the GSL judges look at when judging, and can be used by the modeler as a guideline by which to build and detail his or her models.

Engine

- A. Basic Craftsmanship.
- B. Finish - colors, textures, decals, labels.
- C. Fuel System - fuel pump, fuel lines, fittings, filters, tanks, injectors, carburetors, blowers.
- D. Electrical Systems- coil or magneto and plug wiring, battery, starter, solenoid.
- E. Mechanical Systems - linkages, operating parts, belts, pulleys, valvetrain, cams, gears, drains, crankshafts, pistons, covers.
- F. Cooling - radiator, heater, trans. cooler, hoses, clamps, etc.
- G. Exhaust - headers, exhaust pipes, muffler, tailpipes, clamps, hangers, turbocharger, plumbing.
- H. Operating or Removable Parts - pedals, butterflies, linkages, valve covers, air cleaners, etc.
- I. Scale Realism - Do the parts appear real in respect to colors, fittings, thicknesses of material, and so forth.
- J. Technical Innovation.

Chassis

- A. Basic Craftsmanship
- B. Tires - colors, decals, labels, tread, realistic appearance.
- C. Wheels - lug nuts, valve stems, knockoffs, decals, labels.

- D. Brakes - hydraulic/mechanical lines, linkages, master cylinder, springs, junction boxes.
- E. Suspension/Frame - springs, bolts, shackles, sway bars, "A" frames, shocks, bolts, weld beads, braces, brackets.
- F. Driveline - driveshafts, axles, U-joints, hangers, snubbers, transmission, linkages and mounts, drain bolts.
- G. Colors/Textures - accuracy of colors, appropriate textures, labels, decals.
- H. Steering - linkages, columns, wheels, levers, kingpins, pitman arms, gearboxes, rack-and-pinion parts, and so forth.
- I. Operating Features - operating shocks, springs, steering, etc.
- J. Scale Realism - Do the parts appear real in colors, fit, thicknesses of parts, etc.
- K. Technical Innovation.

Interior

- A. Basic Craftsmanship
- B. Color/Textures/Materials - Are the finishing materials realistic and appropriate to the vehicle and its use?
- C. Instrumentation - dials, lighting, switches.
- D. Upholstery - colors, texture, seats, door panels, carpeting, headliner, handles, cranks.
- E. Trim - mats, pedals, door locks, window moldings.
- F. Operating Features - folding seats, operating sun visors, operating shift levers, pedals, glove box door.
- G. Scale Realism - Do the parts and materials appear real; are scale thicknesses and textures convincing?
- H. Technical Innovation.

Paint/Finish

- A. Basic Craftsmanship.
- B. Colors/Textures/Appropriateness to subject - uniformity and appropriateness of colors for vehicle type, use and Class.
- C. No Dirt - no dirt or dust in paint.
- D. No runs, sags or drips.
- E. Consistency of Finish - If polished, are there uniform reflections, glass-like finish, no orange peel. If "weathered", is finish appropriate, not over-done; if "primer", is finish realistic and convincing?
- F. Trim - How convincing is the door, window and chrome trim?
- G. Scale Realism - Does the paint thickness hide any details; if a weathered finish, is it realistic, etc.
- H. Technical Innovation

Body

- A. Basic Craftsmanship
- B. Removable or Opening Panels - opening doors, hoods, trunks, gas filler door, hinges, headlight doors when NOT supplied in the kit.
- C. Effort - How much work did the builder perform to get the body in its current condition? Consider custom work (chopping, sectioning, etc.), stock conversions (from one model or body style to another) and efforts to correct kit inaccuracies and insure realism.
- D. Scale Thickness - Do the panels, window moldings, etc. look right for the scale? How thick would the panels be in 1:1 scale?
- E. Body Preparation - Are the surfaces realistic and convincing? If "smooth", is the surface free of dents, pits, "sink holes," bangs, bumps or ripples and is it smooth in shape? Do lines flow smoothly and evenly? If "damaged," are dents in scale and do they convincingly represent surface material and substructure damage?
- F. Technical Innovations.

Documentation

- A. Is required documentation present?
- B. Has the builder clearly explained features, details, construction elements to help the Judges evaluate the extent and accuracy of the work?

Diorama (Separate criteria)

- A. Basic Craftsmanship
- B. Size - Is the display large enough to provide sufficient size for realism?
- C. Scale - Are the various parts of proper thickness to be realistic?
- D. Theme - Is the theme unified; Does the scene "tell a story" or readily involve the viewer? Are all elements integrated to the suggested year of location, does it "fit" the car being displayed, etc.
- E. Innovation - Including working features, lights, sound, etc.?