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*Presented By:*  
The International  
Model Car Builders'  
Museum

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## Construction Guidelines

We have prepared these guidelines to assist you in selecting, planning, and constructing your entry and presentation for The Masters Challenge Invitational. This overview, along with the Rules for The Challenge found in The Masters Challenge Invitational brochure and on the website, will acquaint you with the philosophy and goals of The Challenge, and the ways in which it is different from other contests.

The following sections will be the basis for the Judging Sheets that will be used by each competitor in evaluating the other entries. (Please note, however, that each of the points in these guidelines will not necessarily be included as *specific* items in the Judging Sheet. They are presented here to help you understand what will be evaluated during judging, and what you need to consider while planning and constructing your entry.)

Every entry in The Challenge will be expected to incorporate and display superb basic and advanced craftsmanship, detailing, and creativity. Each entry should, at the *minimum*, display accurate scale panel thickness; realistic moldings, trim pieces and weather stripping; optically-correct glass; realistic upholstery; convincing powertrain components; fully-articulated suspension; accurate and to-scale wiring, fuel, and brake lines and working linkages; scale hinges and latches that work solidly and smoothly; and other details that create a truly realistic miniature, all rendered in superb detail and fidelity. Paint and finishes with accurate appearances and textures are mandatory.

But these are only starting points. The concept behind The Challenge is to push *beyond* the best contemporary work by today's top builders. The goal is to define what the *next* generation of realism in scale miniature vehicles will be. Where that leads is an open question.

Legendary builders including Dave Shuklis, Jim Keelor, and Angie Hiscano set new standards in the 1960s with until-then unheard of working features, including folding convertible tops and roll-up windows, operating reciprocating and valvetrain components in engines, and working brake shoes and steering boxes. What new working features and components will we see in Challenge entries? What new materials, techniques, and technologies will find their way into the construction of the models? Can we expect power convertible tops and windows? Will models exhibit operating head and tail lights, controlled by in-scale dashboard switches, that display accurate levels of illumination and beam patterns? How about fully-operational emergency lighting on a police or fire vehicle? Can control levers and hydraulic or electric systems activate a fully-articulated crane boom or backhoe? Will vehicles be self-propelled, moving and steering at the touch of remote, or on-board, controls?

In addition to the emphasis on craftsmanship, there is an obvious emphasis on technology in this contest. We think that more and more technologies will be used to both build the models, and as parts and components in the models themselves. How can audio, video, computer, microchip or other technologies be incorporated and used to enhance scale accuracy, realism, and functions?

These are elements we expect to be commonly found on the ultra-realistic scale vehicle miniatures that will be tomorrow's top-caliber models.

There is of course another aspect to The Challenge. The emphasis on craftsmanship, working features, and technologies has to be married to the creativity, design, and artistry that are integral parts of why we build to begin with ... and perhaps that is the greatest challenge of all.

As you read this overview, think about how these elements will influence your choice of subject matter. Choose carefully. Your entry will have to be a subject you can be passionate about. The subject you choose may not be the type of model you usually build, but one that gives you the opportunity to plan and construct an entry with enough creativity, detailing opportunities, and operating features to intrigue and impress the judges — your fellow competitors. Choose a subject that will allow you to present the widest possible range of skills, craftsmanship, problem-solving, and detailing. Your model may be a replica of an existing vehicle, a prototypical vehicle, or a creation wholly of your own imagination and design.

Also, think about the required documentation and presentation as you develop your model. Both are important aspects of your entry and the judging criteria. All these elements must be part of a cohesive, thorough, and well-thought-out package.

As you make each decision, step back and evaluate your ideas and work from a judge's perspective. This will help you focus on what is realistic, convincing, and competitive. Remember: the primary goals of The Masters Challenge Invitational are the creation of truly realistic "miniature vehicles" in 1/24–1/25 scale; pushing each competitor to expand their skills and to *take risks*; and to define the *next* generation of accurate, ultra-realistic scale vehicles.

Use The Challenge website ([www.TheMastersChallenge.com](http://www.TheMastersChallenge.com)) to ask questions, get advice from other builders, find sources for techniques, technologies, and supplies, and to challenge fellow competitors. The website will be actively monitored, and we encourage you to use it.

Most of all, *challenge yourself*. Expand your skills and knowledge, take risks, and push your own building to the next level ... then to a level beyond that.

We look forward to seeing you and your entry in Phoenix, Arizona in 2011.

Dan Baker / Bob Wick

P.S. You may also find the publication "How to Build More Realistic Miniature Vehicles" helpful in planning and building your entry. Published by Championship Publishing, LLC, it is available as a PDF download from <http://www.themodelcarmuseum.org/howto2.pdf>.

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# I. Body/Exterior

## BASIC CRAFTSMANSHIP

- Are all mold lines, sink and ejector pin marks, and other unrealistic engraving removed
- Do all components fit cleanly and accurately

## VEHICLE DESIGN PRACTICALITY AND FUNCTION

- Are there adequate and realistic clearances between the body and opening panels, and are the openings realistic and usable
- Are components and equipment necessary for registration and licensing, if appropriate to the vehicle, present
- Are knobs, handles, and latches appropriately sized and placed
- Does the vehicle design allow for practical ride height, approach and departure angles, and scrub lines
- Do the above elements create a realistic and convincing appearance

## BODY WORK

- Are body lines sharp and accurate
- Do opening panels exhibit accurate scale thickness and show realistic structural detail
- Do panels align with surrounding surfaces when closed
- Are the fit and finish of body panels and panel gaps consistent
- Are components including gutters, vents, grills, brackets, and fasteners accurate and in scale
- Does the exterior have a realistic and convincing appearance

## OPERATING FEATURES

- Do opening/closing and movable panels and/or components operate smoothly and realistically
- Are latch and hinge operations smooth and solid
- Can any component(s) be disassembled/reassembled
- Do headlights, taillights, signals, marker lights, and other exterior lighting exhibit realistic brightness and function
- Do the operating features have a realistic and convincing appearance

## USE OF MATERIALS

- Are there innovative uses of materials to solve design and/or construction problems
- Does the use of materials, textures, and finishes have a realistic and convincing appearance

## USE OF TECHNOLOGY

- How was technology used to create parts, pieces, and/or components
- How was technology used to make working features function

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## **II. Drivetrain: Engine and Power-transmission Components and Compartments**

### **BASIC CRAFTSMANSHIP**

- Are all mold lines, sink and ejector pin marks, and other unrealistic engraving removed
- Do all components including housings, linkages, fasteners, mounts, trim, cables, lines, details, and accessories fit cleanly and accurately

### **DETAILING/COMPLETENESS OF SYSTEMS**

- Are all appropriate fuel, electrical, hydraulic, mechanical and air systems, components, and linkages present and accurate
- Are details sharp
- Does the scale accuracy and detailing of these elements create a realistic and convincing appearance

### **OPERATING FEATURES**

- Does the vehicle move under its own power
- Do all operating linkages and other moving parts have smooth and accurate function
- Can any component(s) be disassembled/reassembled
- Do the operating features have a realistic and convincing appearance

### **USE OF MATERIALS**

- Are there innovative uses of materials to solve design and/or construction problems
- Does the use of materials, textures, and finishes have a realistic and convincing appearance

### **USE OF TECHNOLOGY**

- How was technology used to create parts, pieces, and/or components
- How was technology used to make working features function

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## **III. Chassis, Suspension, Brakes, Steering, Wheels, and Tires**

### **BASIC CRAFTSMANSHIP**

- Are all mold separation lines, sink and ejector pin marks, and other unrealistic engraving removed
- Do all components fit cleanly and accurately

### **CHASSIS DESIGN PRACTICALITY AND FUNCTION**

- Are the chassis/suspension design and components appropriate to the size, weight, and use of the vehicle
- Are body stampings, braces, gussets, mounts, crossmembers, and other structural components properly and accurately detailed
- Do the chassis and suspension components have a realistic and convincing appearance

### **DETAILING/COMPLETENESS OF SYSTEMS**

- Are all appropriate fuel, electrical, hydraulic, mechanical and air systems, components, and linkages present and accurate
- Are details sharp
- Does the scale accuracy and detailing of these elements create a realistic and convincing appearance

### **OPERATING FEATURES**

- Does the vehicle steer by on-board controls
- Do moving parts have smooth and accurate function
- Are there accurate and practical clearances between components
- Can any component(s) be disassembled/reassembled
- Do the operating features have a realistic and convincing appearance

### **USE OF MATERIALS**

- Are there innovative uses of materials to solve design and/or construction problems
- Does the use of materials, textures, and finishes have a realistic and convincing appearance

### **USE OF TECHNOLOGY**

- How was technology used to create parts, pieces, and/or components
- How was technology used to make working features function

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## **IV. Interior: Passenger and Cargo Components and Compartments**

### **BASIC CRAFTSMANSHIP**

- Are all mold lines, sink and ejector pin marks, and other unrealistic engraving removed
- Do all components fit cleanly and accurately

### **PRACTICALITY AND ERGONOMICS**

- Are there appropriate and functional spaces for driver, passengers, and cargo
- Are there realistic spatial relationships between the seat, pedals, steering, and other controls
- Are sizes and placement of knobs and controls realistic and convincing
- Are visibility and sightlines realistic and practical

### **OPERATING FEATURES**

- Do moving parts have smooth and accurate functions
- Do glovebox, console, or other panels or doors open
- Do seats slide, adjust, or move
- Do seats have a realistic "feel"; are springs, foam, padding, and upholstery used
- Do windows operate
- Do interior, dashboard, and control panel lights work
- Do switches initiate and control functions of other components
- Are there removable/replaceable components

### **USE OF MATERIALS**

- Are there innovative uses of materials to solve design and/or construction problems
- Does the use of materials, textures, and finishes have a realistic and convincing appearance

### **USE OF TECHNOLOGY**

- How was technology used to create parts, pieces, and/or components
- How was technology used to make working features function

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## V. Surfaces, Paints, and Finishes

### BASIC CRAFTSMANSHIP

- Preparation: Are surfaces free of sanding marks, scratches, dust, particles, ghost lines, or other flaws

### APPLICATION OF PAINTS/FINISHES

- Are the applications of paint and other finishes appropriately smooth, textured, and consistent
- Are the uses of gloss, satin, matt, flat, and metallic finishes appropriate and realistic
- Is there realistic weathering, rust, dirt, or other signs of use or neglect, if appropriate to the subject
- Does the overall use of paints and finishes create a realistic and convincing appearance

### METAL SURFACES AND METALLIZING FINISHES

- Are the finishes on metal components accurate and convincing
- Are the uses of metallizing finishes accurate and convincing
- Is chrome or other plating smooth, even, and convincing in use and appearance
- If metal foil is used, how well is it applied and how realistic does it appear

### OTHER MATERIALS

- Are other materials such as canvas tops, vinyl roof coverings, wooden body panels, etc. used appropriately
- Are there innovative uses of materials or finishes to solve design and/or construction problems
- Does their use create a realistic and convincing appearance

### TECHNICAL EXPERTISE

- How difficult were the various finishes to apply
- Are all finishes of each type consistent and uniform in their appearance
- If used, are decals, signage, and/or other applied graphic elements appropriate, realistic, and convincing
- If present, are striping, flames, scallops, and/or other painted graphics appropriate, realistic, and convincing

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## VI. Presentation

### A. INITIAL VERBAL PRESENTATION AND Q&A

- Is the presentation well thought-out
- Is the information organized and concisely presented

### B. ORGANIZATION AND PRESENTATION OF VISUAL MATERIALS

- Are the drawings, photos, videos, and other visual elements well organized
- Are they logically and clearly presented
- Are the visual material easy to understand

### C. THOROUGHNESS OF PRESENTATION

- Is the selection of the subject explained
- Are the elements the builder considers the most important aspects of the entry's construction covered adequately
- Are the explanations of the technical, technological, and construction details understandable
- Does documentation support and explain why various components, materials, and finishes were selected for building the entry

### D. VALUE OF INFORMATION

- Does the verbal and visual presentations deliver new, useful and valuable information, techniques and ideas
- Do they give the judges a new/greater appreciation for the entry and its construction

### E. DISPLAY BASE

(This is a non-judged element)

- If a base is included, does it fit within the scope and description included in the Rules of the Challenge
- Does it present views of the model that will help the judges and viewers better see and appreciate the details, construction, and features.