

NATIONAL WORLD SKILLS JAMAICA COMPETITION

Competitions Sub-Committee

TRANSPORT & AUTOMOTIVE – **CAR PAINTING**

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INTRODUCTION

WorldSkills Jamaica, by a resolution of the National Organizing Committee and in accordance with the Constitution, the Standing Orders and the Competition Rules, has adopted the following minimum requirements for this skill for the National Skills Competition.

The Technical Description consists of the following:

- Section 1 – Technical/Competition Description (TD)
- Section 2 – Project Design Criteria (PD)
- Section 3 – Skill Management Procedures (SM)
- Section 4 – Workshop Setup (WS)
- Section 5 – Infrastructure List (IL)
- Section 6 – Appendices

Effective 01.04.07

Grace Mclean (GM)

Chairman, Competition Committee

01.04.07

Daphne Simmonds

Co-Chair

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The National Skills Competition Committee has adopted the following minimum requirements for applicants' entry in the National Skills Competition.

The effective date will be that date on which this document is issued, subject to change by the WorldSkills Jamaica Competition organizing Committee.

1. NAME AND DESCRIPTION OF SKILL AREA:

1.1 The name of the trade is:

1.1.1. Car Painting

1.2 The car painter applies various types of coating materials, such as primers, fillers and paints, to bodywork and vehicle parts.

He/She repairs minor damage to the paintwork and the body-work, by applying the following techniques:

- filling dents
- applying primer and filler (polyester)
- sanding
- painting
- finishing (polishing)
- applying decoration such as pin stripes, bands, colour shots
- fording transfers
- minor damage repair
- blending of basecoat, clearcoat and 2K solid colours

1.3 This technical description must be known to every candidate.

2. SCOPE OF WORK FOR THE COMPETITION

2.1 The skill of the car painter must be demonstrated primarily in a practical way.

2.2 Theoretical knowledge must always be related to the practical skills.

3. PRACTICAL WORK

2.3.1 The competitor must be able to carry out independently the following activities:

- preparing, cleaning and degreasing parts
- masking areas not to be processed
- bringing bodywork back to its original shape by filling and sanding
- applying primer and filler or a mixture of both
- sanding and masking
- mixing the finishing paint, applying the correct colour formula; preparing a colour sample
- Sanding and polishing defects
- Applying decoration such as stripes, bands and shades
- Spraying of finishing paint:
 - o 2K Solid colour acrylic urethane
 - o Water base coats
 - o Clear over base metallic
 - o 2 layer pearl
 - o 3 layer pearl
 - o High solid clear
 - o Medium solid clear
 - o Conventional base coats
 - o Special decorative paints such as chromaflare and tinted clearcoat

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- Substrates to be painted:
 - o Metal panels (bare, prepainted or OEM)
 - o Plastic parts

No figures or objects may be painted.

2.3.2 The competitor must take and use the following personal safety equipment:

- protection mask (carbon filter)
- gloves and goggles
- ear protection
- safety shoes
- dust free overall with hood
- air fed mask
- Safety measures have to be taken at the work station (extractors for dry sanding and spraying)

2.3.3 The competitor must master the following techniques:

- o Degreasing, cleaning, applying polyester fillers, sanding, masking, preparing and applying primer and filler, mixing and matching paint by formula and by eye, painting, smoothing and polishing defective areas, sticking patterns, spraying of colour shades, use of stencils;
- o Work with due regards to cost and limit waste.
- o Apply good housekeeping standards.

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4. SKILL MANAGEMENT PROCEDURES (SM)

4.1. DOCUMENTS REQUIRED

3.1.1 The Chief Expert will have available a current copy of all documents associated with this skill for the Competition.

3.1.2 The documents required are:

- Technical Description
- Competition Rules
- Health and Safety documents
- QAMS – all documents
- Any other documents referred to in the documents listed above.

3.1.3 While it is understood that the Chief Expert will have a copy of these documents in there shall also be a complete set that is available for the experts and other competition workers.

3.1.4 The Chief Expert is expected to have a sound knowledge of the requirements and procedures specified in the documentation.

3.1.5 The Jury President is expected to have a thorough knowledge and understanding of the requirements and procedures specified in the documentation.

4.2. PRE-COMPETITION RESPONSIBILITIES

3.2.1 In the period between one National Skills Competition and the next, the elected Chief Expert is responsible to ensure that the requirements of Section 2 – Project Design Criteria are complied with.

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4.3. SKILL MANAGEMENT PROCEDURES FOR THE CHIEF EXPERTS

The following speaks to the procedures prior to and during the Competition:

3.3.1 The procedures specified below must be adhered to.

3.3.2 On arrival at the Competition site for the first time, the Chief Expert must:

- Welcome the experts and ensure introductions are made
- Inform them of their duties and responsibilities in terms of the Competition Rules and Standing Orders
- Ensure that the project is endorsed by all the experts and that a copy is signed by all the experts

3.3.3 The Chief Expert will then divide the experts into teams for the following activities:

- Verify that the material on site is appropriate and sufficient
- Verify again that the quantities of material as specified on the material list is accurate
- Develop a program for the competitors to complete the modules
- Develop timetables for activities
- Set up equipment
- Confirm that the layout, work areas and equipment are in accordance with the workshop setup requirements
- Confirm that all machinery/equipment is in a safe working order
- Confirm that all workstations/machinery/equipment are in accordance with the plan, and that they are numbered
- Confirm that there is sufficient illumination
- Confirm that there is sufficient space for the competitors to work efficiently
- Confirm that the barriers are far enough removed from the competitors to ensure that there will be no interference, and if they are not, set up a roster among the experts to police the area during the Competition
- If necessary, set up duty rosters for activities during the Competition – e.g. keeping watch during lunch, preventing access of unauthorised persons, etc

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- 3.3.4 The Chief Expert will then divide the experts into teams for purpose of marking and setting up marking schedules in accordance with the requirements.
- 3.3.5 Suggestions and comments for the revision and improvement of the Technical Description are to be provided to the Deputy Chief Expert in writing. The Deputy Chief Expert will reduce the information to a single typed document ready for discussion by all experts. Prior to leaving the Competition site, the Chief Expert, the Deputy Chief Expert and the Jury President will facilitate the discussion and revision of the Technical Description.
- 3.3.6 At any time that a unanimous decision is not achieved within a reasonable time, the Chief Expert will put the matter under discussion to the vote. A majority will be 50% of the experts present plus one. This decision will be final. In the event that an expert is absent at the time that the vote takes place, he/she has the right to be informed of the decision but the matter will not be raised again or voted upon again. The exception to this majority rule will be in the case of approval of the changes to the Technical Description, where the majority of 80% is required.
- 3.3.7 In the event that an extension of time is requested for the Competition to exceed the allotted hours, the matter must be discussed with the Jury President. All possible alternative solutions must be investigated before approval of an extension of time is requested, or will be approved.
- 3.3.8 Prior to the end of the Competition, the Jury President will facilitate the selection of the Chief Expert and Deputy Chief Expert for the next national Skills Competition.
- 3.3.9 Experts are eligible for selection as a Chief Expert if they:
- Have attended the National Skills Competition at least twice before (if less than 4 experts have been to the National Skills Competition before, this criterion may be relaxed at the discretion of the Jury President)
 - Demonstrate a high degree of expertise in the skill
 - Demonstrate leadership qualities.
 - Are competent using a computer and the Internet – specifically to facilitate the Discussion Forum for their skill category.

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3.3.10 The process by which selection will take place is by secret ballot and is as follows:

- Each expert present will list their choice of three experts in order of preference •
- The Jury President will allocate a score of three (3) points to each experts first preference, two (2) points to the second preference and one (1) point to the third preference
- The Jury President will then calculate total scores and announce the three highest scoring experts
- The expert with the highest score will be appointed Chief Expert for the next National Skills Competition
- If the first choice cannot attend, then the second choice will be Chief Expert
- If the first and second choice cannot attend, then the third choice will attend
- If none of the choices can attend, then the jury president will appoint, or facilitate the appointment of a Chief Expert
- The names of the selected experts will be entered into the provided documentation and signed by the Jury President and returned to the co-chair of the competitions committee.

3.3.11 Changes to the method of Competition design or suggestions offered for the next Competition design process or tasks must be written down and signed by 80% of the experts.

3.3.12 The Deputy Chief Expert's primary role is to ensure that the Technical Description is updated to reflect the technological advances of the skill category and include overall improvements for the preparation and running of the Competition. He/she will ensure that all changes to the Technical Description are entered, that all experts sign it, and that it is delivered to the co-chair of the competitions committee as a hard copy and digitally.

3.3.13 The Deputy Chief Expert also assists in the distribution and collection of the QAMS Audit Questionnaires and assists the Chief Expert where necessary.

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4.4. HONESTY AND TRANSPARENCY

- 3.4.1 The competitors that attend the National Skills Competition have the right to expect fair and honest treatment during the Competition in terms of the following:
- Instructions that are clear and unambiguous
 - Marking schedules that provide no advantage to an opposing competitor
 - All necessary equipment and material specified within the skill documentation that are required to complete the Competition
 - The assistance necessary from judges and officials to ensure that he is able to complete the project. (The assistance deemed necessary will be provided equally and at the same time to all competitors present)
 - No undue interference by officials or spectators that may hinder them in the completion of their project
- 3.4.2 Every competitor has the right to expect and demand that no opposing competitors will receive undue or unfair assistance or intervention that may provide that opposing competitor with an unfair advantage.
- 3.4.3 All officials and judges present on the Competition site are expected to ensure that paragraphs 3.4.1 and 3.4.2 above are complied with and maintained.
- 3.4.4 It is the responsibility of the Chief Expert or his Deputy to ensure that all competitors, interpreters, officials and judges comply with and maintain the integrity of the Competition, and additionally ensure that all necessary steps are taken to ensure that:
- Outside influences do not unduly improve or decrease competitors' abilities to provide a worthy performance.
- 3.4.5 A briefing will be provided to all experts and competitors on the requirements for integrity during the Competition.
- 3.4.6 Additionally, the Chief Expert is expected to identify these and any other factors that may exist on the Competition site that may results in the contravention of

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paragraphs 3.4.1 and 3.4.2 above, and reduce them to a checklist for continuous reference.

- 3.4.7 In the event that any competitor, judge, official, observer or competitor compatriot is found to be attempting to gain or provide assistance in any form that may result in an unfair advantage, the Chief Expert is to immediately refer the matter to the Jury President.
- 3.4.8 The Chief Expert will receive nominations and appoint a Security Officer whose responsibility it will be to ensure that these requirements are carried out.
- 3.4.9 It will be explained to all experts and competitors that nothing is to come in or out of the site unless specified by the Chief Expert as being allowed after being briefed on this topic.
- 3.4.10 Security checks will be carried out each day on experts and competitors (by experts and competitors) upon entry and exit to the site.

4.5. INFORMATION POLICY

- 3.5.1 During the competition a modified project plan without measurements is to be made available to the public.

5. THEORETICAL KNOWLEDGE

- 4.1 Knowledge of materials and processes as indicated by the paint company.
- 4.2 Knowledge of the utilization of tools, utensils, painter's technical equipment, data sheets and paint information storage systems.
- 4.3 Knowledge of safety regulations and accident prevention.
- 4.4 Knowledge of personal health equipment.

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4.5 Knowledge of environmental protection, adequate waste disposal, and regulations on removal of special refuse.

6. MATERIALS

5.1 The competitors must indicate which brands and types of polyester fillers, primers, fillers, paints and abrasives will be available. The bodywork parts will also be indicated as well as the environmental rules, safety rules.

5.2 The competitor will provide the following materials:

- car parts to be processed, for example fender, wings, doors, bonnets and plastic parts. Parts must be to original, good quality, undamaged standard
- paint thinner, pre-cleaning solvent
- polyester mastics
- primers and fillers
- finishing paints
- hardener
- additives, accelerators, flex additives, anti-silicone, matting paste
- abrasives for dry and wet sanding, by hand or with machines
- masking material such as adhesive tape, paper, plastic sheet
- cotton or cellulose cloth for cleaning
- polishing material
- active carbon respirators for the experts

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7. WORKSHOP INSTALLATIONS

- 6 to 10 competitors: 2 spray booths and 1 drying oven
- 11 to 16 competitors: 3 spray booths and 1 drying oven
- An over pressured spraying booth (1 booth per 5 competitors) may be panel booth, with heating, suitable for spraying and drying the bodywork parts (a combined booth, or separate spraying and drying booths). All booths must be downdraught
- Inside measures of the spraying booth: 6000 mm long, 4000 mm large, 2500 mm high.
- A system for infrared drying (1 per 2 candidates)
- Oil less compressors to provide quality air for spraying and breathing

6.2 The following are general requirements:

- a complete paint mixing installation, with sufficient colours for all competitors
- an accelerated drying system with compressed air for water based paints
- a specific zone for wet sanding if this kind of sanding is authorized. polishing machines with various polishing pads
- a well ventilated paint mixing area
- an area for colour matching which contains a light box colour matcher as well as access to natural day light
- a secure storage area for completed panels
- electronic paint film thickness gauges
- photo-spectrometer (for judging colour matching)
- electronic orange-peel measuring equipment

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6.3 The personal working area for each competitor shall be at least 4m x 3m, and shall also allow for the equipment and machines specified.

6.4 The following equipment will be made available to each competitor:

- Personal protection equipment, such as clothing, protective masks, ear protection and gloves
- Each competitor's work station should have a ac power supply and an 8 bar compressed air connection, with 4 pressure regulators at least 8 mm min. internal diameter.
- Mobile racks, with adequate fixtures for processing parts and panel stands
- For sanding work an eccentric sanding machine, with suitable dust extraction.
- A bucket with a sponge and a block for hand sanding.
- Each work station must have lighting which serves the work station and is equivalent to the levels found in most spray booths (natural daylight)
- A system for infrared drying (1 per 2 candidates)

6.5 Any other tools, special equipment personal safety equipment and materials personally required, have to be provided by the competitor himself. These have to be presented to the experts for inspection the day before the competition. The experts may exclude any item not considered standard car painter tools, which might give the competitor an unfair advantage.

8. TEST PROJECT MARKING

7.1 The experts will decide together on the test project, the marking criteria and the dimensional tolerances and will prepare the material list.

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8.1. MARKS:

Perfect	=	10 points
Very good	=	9 points
Good	=	8 points
Rather good	=	7points
Sufficient	=	6 points
Medium	=	5 points
Weak	=	4 points
Insufficient	=	3 points
Very bad	=	2 points
Zero	=	1 point

8.2. RATING

Section	Item	Maximum Points
A	Preparation for paint finish	20
B	Matching colour	20
C	Application of base coat colours	10
D	Application of clear coats and solid colours	20
E	Preparation and painting of plastic parts	10
F	Measuring and decorating	13
G	Correct safety procedures	7

Points will also be awarded for creativity, innovation, speed etc. (This will be developed by the judges depending on the nature of the test project).

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9. COMPETITION PROCEDURE

- 8.1 The competition will be worked on over two days. Modules will be completed on each day for all competitors so that progressive marking can take place, and for results to be made available each day.
- 8.2 Competitors will have time made available to familiarise themselves with material and processes. Where processes are particularly difficult, the competition's committee will provide a subject matter expert to demonstrate the process and the competitors will be given the opportunity to practice.
- 8.3 The competitors will be given all competition documents including the marking criteria prior to the commencement of the competition so that they may study the requirements, and have any clarifications explained.
- 8.4 Prior to the start of the competition, each competitor will receive a detailed timetable reflecting the timing for completion of modules or tasks.

10. JUDGING PROCEDURAL REQUIREMENTS

- 9.1 The experts that attend the competition will be divided into marking groups to deal with each section of the marking criteria.
- 9.2 Each completed module or task will be marked on the same day in which it was completed.

11. GENERAL SAFETY REQUIREMENTS

10.1 All competitors must use safety glasses when using any hand, power or machine tools or equipment likely to cause or create chips or fragments that may injure the eyes

10.2 All competitors must wear appropriate clothing and regulation safety footwear.

10.3 All competitors must wear hearing protection when necessary.

10.4 All machinery, equipment and safety clothing must comply with the safety rules.

10.5 Competitors must keep their workspace clear of obstacles and the floor space clean of material and equipment - any items likely to cause the competitor to trip, slip or fall.

10.6 Failure by the competitor to comply with safety directions or instructions will incur loss of marks for safety.

10.7 Judges will wear the appropriate personal safety equipment when inspecting, checking or otherwise working with a competitor's project.